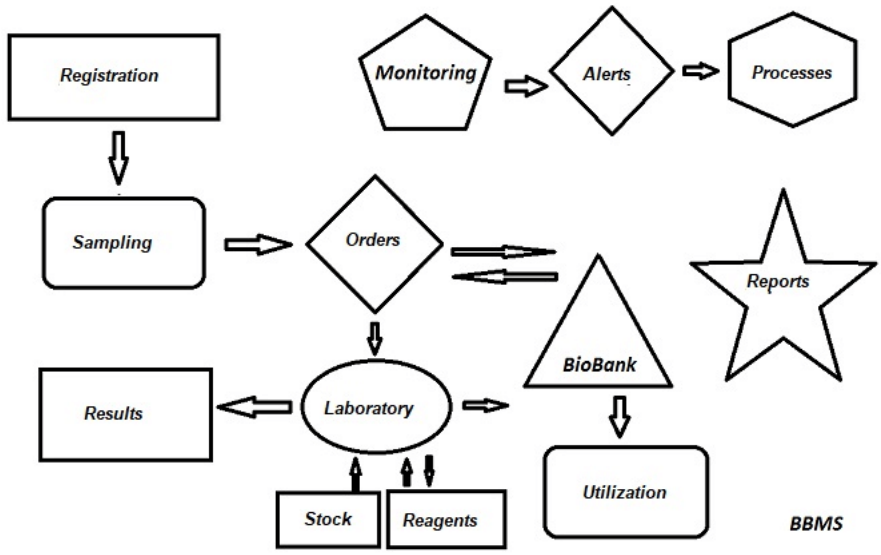
BBMS dbf 3.77 - BBMS sql 2.53

BioBank Management System

Biobank and laboratory infrastructure management and equipment control system.



Overview:
- no web browser needed
- has no restrictions and limitations
- no Internet connection required (isolated system)
- may operate in a network on any number of workstations (server recommended)
- documented and open database structure
- facilitates creation of user subbases
- compatible with Microsoft Office and OpenOffice
- data import from Excel/Calc/Access and any SQL databases via ODBC
- compatible with barcode printers via their scripts: Zebra (ZPL), Sato (E+), and Brady (LFC)
- compatible with 1D (any) and 2D scanners (LabMind, FluidX, Micronic)
- user-defined report module that can print/export any data
- in-depth permission system (to windows and database elements)
- compatible with LanKontroler modules for monitoring environmental conditions
- acquires data directly from Q-MSystem database module
- on-line or local network update
- definable XML export/import module
- interface languages:

Polish, English, German, French, Spanish, Italian, Swedish, Dutch, Esperanto, Norwegian, Danish, Finnish, and Estonian
- context help (F1 key) in each interface language
- conforms to PN-EN ISO 17025 and ISO 15189 standards
- no dongle, no USB port required
- manages laboratory documentation using an attachment system
- resource registry for monitoring equipment
- automatic generation of a series of reports for multiple e-mail accounts
- quick data search and filter in window
- data in window can be copied to a container (clipboard)
- text alerts on any user defined event sent to user defined phone number

LabMind, provider of this software, is a specialist in biobank and laboratory automation.
We have developed more applications that are inter-compatible.

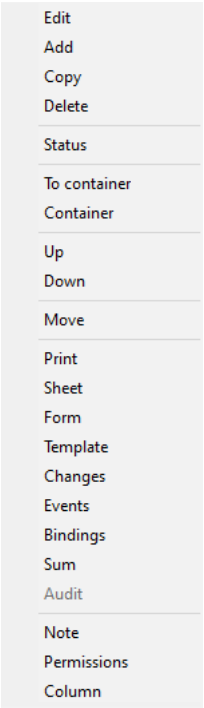
BBMS version for biobank and laboratory includes the following additional software: Yeti (freezer robot),
Agata (lab-scale gantry crane), Adjunct (micro-crane for sorter), Sorter (vial sorter controller),
2D (2D scanner controller), Agent (communication with other terminals),
Robot (software for implementing programmed processes using Agents), and many others.

Valid version of the document in PDF can be found at http://bbms.pl/BBMS_EN.pdf.

The software can be updated on-line at http://bbms.pl/ or by activating a relevant action in the Help menu.

Operation

Each table has a context menu activated by right mouse button.



The new position can be added using the "Add" menu command or by pressing the [Ins] key, and deleted using the "Delete" command or the [Del] key.
"Status" - changes the status of one or more selected items.
"Container" copies the selected table row to the container.
The "Up" and "Down" commands move the selected line in the right direction.
Many windows have the Drag-and-drop functionality enabled, allowing you to move elements in the tree to another branch using the left mouse button - equivalent to the "Move" command from the popup menu.
"Print" - allows printing data from the window, not only to the printer, but also to a file in one of many formats
"Sheet" - sending data to a spreadsheet. Any office suite should be installed on the computer, and if there are two, you can choose the default resource.
"Changes" - preview of changes made in the indicated table position.
"Sum" - works in selected modules - starts the procedure of adding data, e.g. states.
"Note" - allows you to enter a note to a selected position, the same command appears in the edit window.
"Permissions" - granting or removing permissions for the current window or tables rewritten to the window. Admin has rights to these activities, and others can check current permissions.
Editing pane:
In each editing window, after placing the mouse pointer over the field, a description of this field will be displayed, and a description of the field with the cursor will appear on the status bars.
Editing windows in addition to entering data allow you to connect and manage documents in electronic form using a set of buttons [+], [>], [-].
After attaching the document, a link to it will appear and the document will be copied.

Startup parameters:
The software can be run with parameters entering data or settings.

/ Fbase
e.g. C: \ BBMS \ EXE \ BBMS.exe / FC: \ TEST
C: \ TEST database will be automatically selected

/ Uuser
e.g. C: \ BBMS \ EXE \ BBMS.exe / Uadmin
The default user for logging in is "admin" and if there is no password defined, it will be automatically logged in

/ Hpassword
e.g. C: \ BBMS \ EXE \ BBMS.exe / Uadmin / Hadmin
gives the admin password for the admin user and if it is the real password, login will take place

/ Sdrv

e.g. C: \ BBMS \ EXE \ BBMS.exe / SCD
only scan C and D disks for BBMS databases

\\ path
e.g. C: \ BBMS \ EXE \ BBMS.exe \\ SRV \ DB
resource indication using UNC path

/ 1
e.g. C: \ BBMS \ EXE \ BBMS.exe / 1
run only one instance,
option used on the server with ROBOT login

/ Mnnn
e.g. C: \ BBMS \ EXE \ BBMS.exe / M128
reserve and use the indicated amount of memory in mega bytes,
This parameter should be used if memory problems occur while the software is running.
Minimum 16, maximum 256, optimal and default 64.
If the computer has up to 4GB, use the parameter <= 64, because you will lose performance due to virtual memory support.

Computer Network - automation and integration

The software may be used in a computer network and share all data. There are no limitations in this regard and some methods may optimise operation.

1. All shared data should be stored on a computer that shares a hard drive in such a way that the \BBMS\DBF\ folder is visible
2. Program files, i.e. content of \BBMS\EXE can and should be on a local hard drive, e.g. C:\BBMS\EXE

After start, the software scans local and mapped shared hard drives for \BBMS\DBF. If you want to limit the number of scanned drives, start the program with parameter /S.

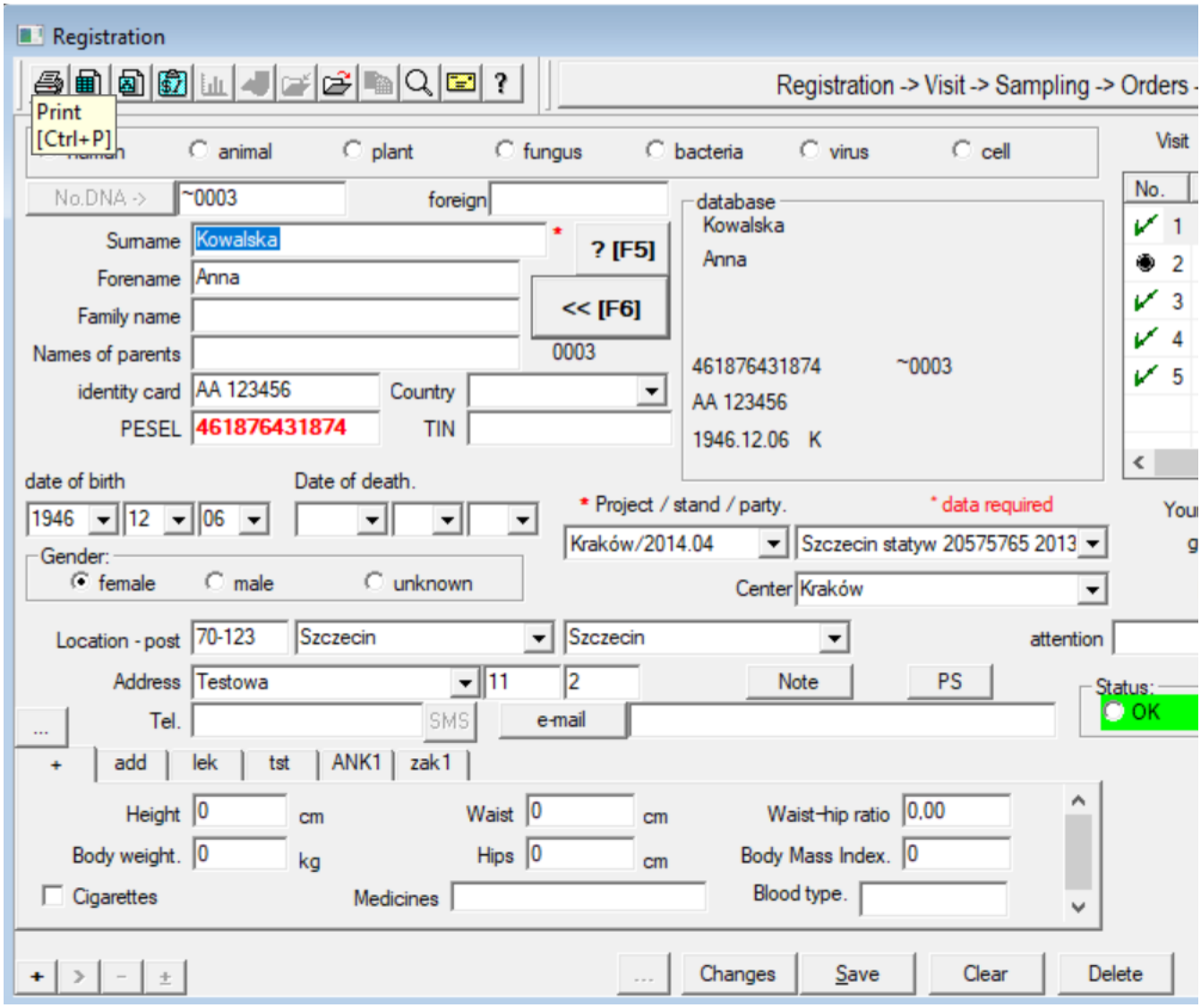
Example:
A facility has seven computers in a network and has no server: BOSS, SECRET, REG, LAB1, LAB2, BB1.

The SECRET (secretary) computer has a large local hard drive divided into partitions. Hence data is installed in folder D:\BBMS\BAZY\BIOBANK. This drive is shared in the network and mapped on the other computers. The letter assigned to the mapped drive can be defined by the user but letters used for floppy or CD-ROM drives by default are not used. Assuming the drive is mapped as F.
The configuration is:
SECRET D:\BBMS\DBF\BIOBANK
BOSS and others F:\BBMS\DBF\BIOBANK
The next step is to optimise software networking. It is only natural that software works faster when the maximum amount of data is read from a local hard drive, e.g. C. This is not in the spirit of networking, so the applied solution is to transfer software and all possible data to a local hard drive. All is needed is to copy the whole folder \BBMS\EXE from SECRET drive to a local drive of a computer being prepared. The computers then have C:\BBMS\EXE and drive F: has data.

There is no need to copy the folder with data (BAZY). What is more it should not be done so as not to cause confusion in the future.
The above-mentioned configuration is sufficient for networking. All there is to resolve is the issue of software update and data backup copy.
Updates (and installations) are by default made to C:\BBMS\EXE, so it suffices to update the software on one computer and then “manually” copy all folder content to the shared drive, e.g. F:\BBMS\EXE.
“Manually” is in quotation marks as the operation can be performed with the xcopy command.

Creation of data backup is essential to ensure that after damage or destruction of databases, user's effort is not wasted.
There are two backup mechanisms: manual in the System menu and automatic, in Alerts, using the Backup() function.

Registration



Recording of identification data of the Proband/Donor and visits.

If the acceptance of the material begins with registration, this is the window in which you can enter the data and its subsequent visits.

The window has a quick search function, the effects of which can be seen next to the fields with the proband's data in the "Database" area.

If the software finds any data, you can click the [<<] button or the shortcut key [F6] - allowing you to copy the data from the database to the form or display a list of similar ones.

The registration of visits is done in the table on the right side of the window, where you enter the type of examination and the material submitted for examination. The software automatically transfers the appropriate data to the next module Collection.

The [Control] button is used to start the procedure checking the correctness of the data in the database.

After completing the registration, click the [Save] button.

We start editing the data of the new proband by clearing the [Clear] form.

Important!

- The proband/donor must be assigned to the "Project" (Start menu -> Projects)

In the window, you can activate the survey form, you only need to define the survey in the sub-databases.

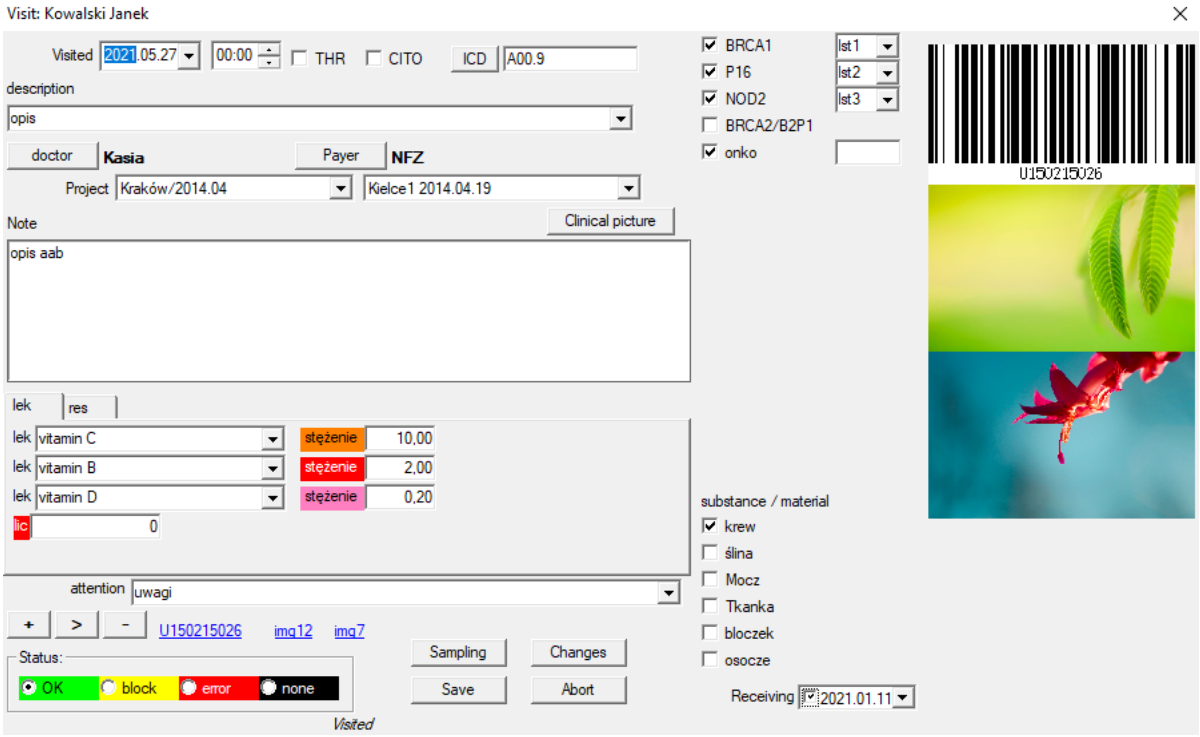
Surveys are assigned to project branches, i.e. after selecting the project, the appropriate survey should appear in the registration window.

The [?] button with the F5 keyboard shortcut is used to quickly fill in the Donor identification data with the taxonomy, e.g. fungi, bacteria and viruses.

Beforehand, you need to enter or import the taxonomy into the table in the sub-databases and indicate the rules for rewriting the taxonomy for registration by right-clicking on the [?] button

Visit

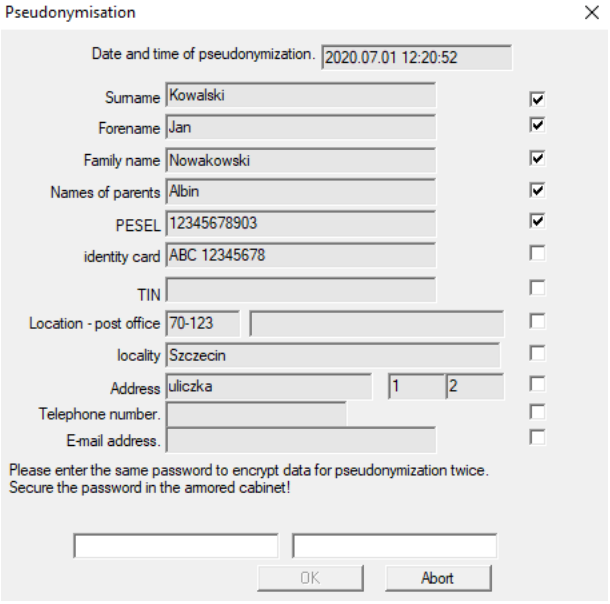
When editing a visit, you can select tests and sampled specimen type.



Test and specimen controls are set dynamically based on definitions in Work flows.

In this window, electronic documents may be attached.

Pseudonymisation



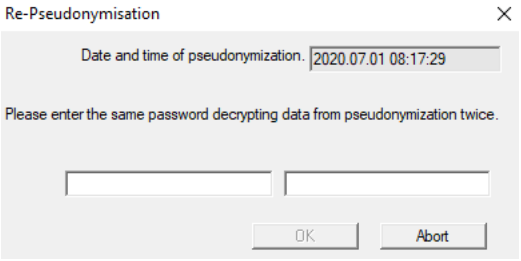
Pseudonymisation is a process of inverting the removal of selected identification data of a sample.
Technically, the process is carried out by rewriting to another table in an encrypted form.
The source table is OS1 and the target table is OS2. The fields have the same name.
For encryption, a password is used, which should be stored in a different place than the database, e.g. in a different location or armored cabinet.
In addition, the software saves the date and time of pseudonymization to the database.
The reverse process is re-pseudonymisation.

In addition to psedonymisation, other methods of data security can be carried out:
- anonymisation
- entitlement.

Anonymisation consists in irreversible deletion of identification data.

By using the authorization system in BBMS, you can hide selected fields of database tables for an indicated user.

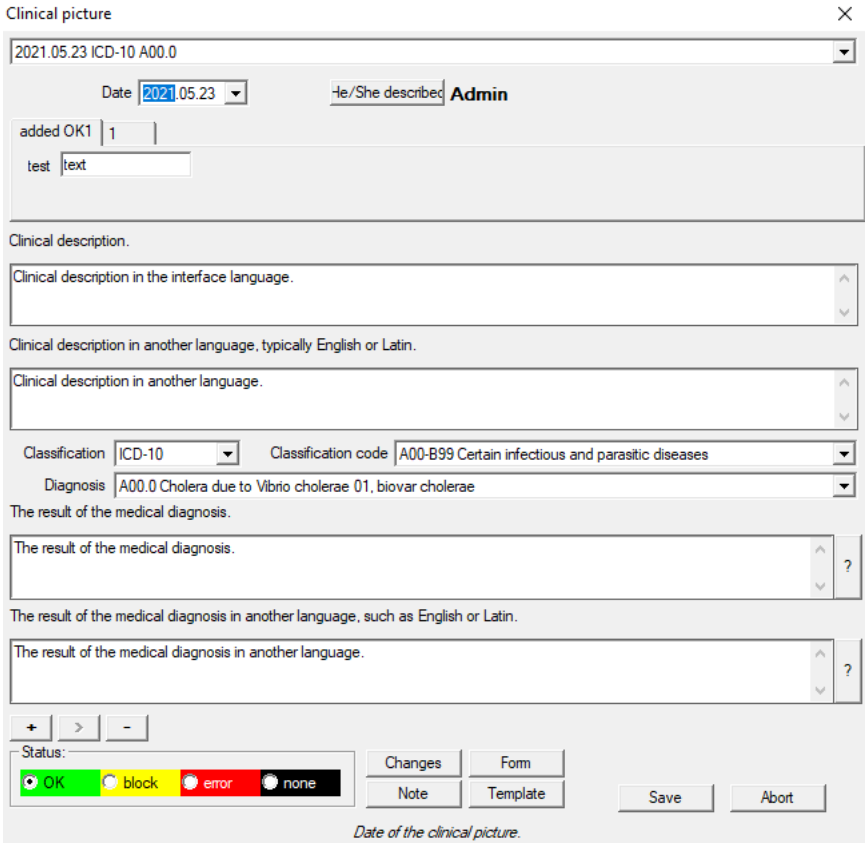
Re-Pseudonymisation



Re-pseudonymisation is the process of restoring the identification data of a probant after pseudonymisation.

A prerequisite is to have the password used for pseudonymization.

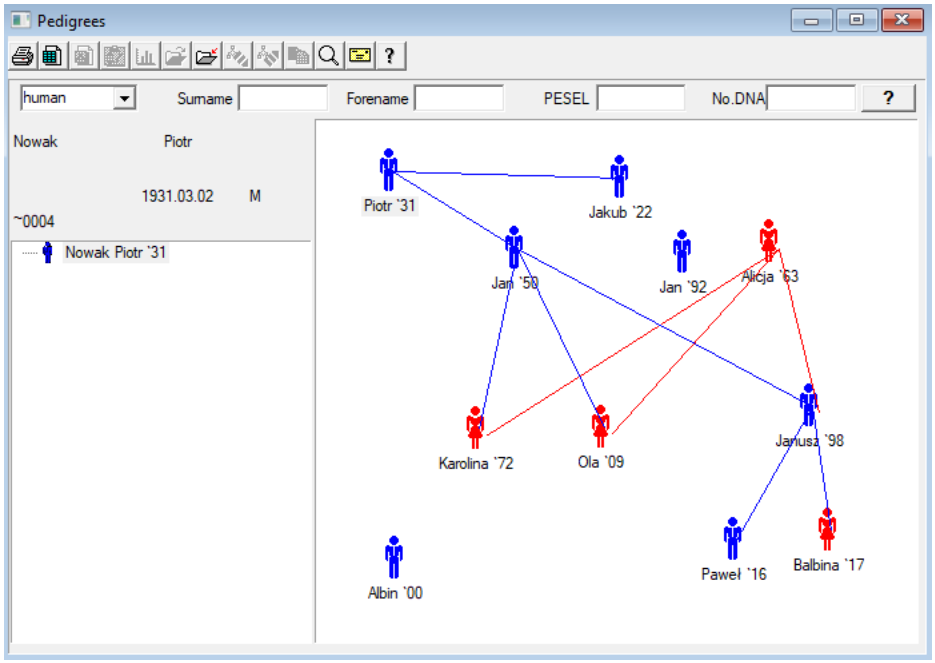
Clinical picture



The "Clinical Picture" window is available from the level: Registration, Visit, Order and Sample.
Contains edit fields for entering information related to diagnosis and diagnosis.
It is also possible to attach documents containing the necessary supplementary data.

The software supports many clinical images.

Pedigrees



By design, BBMS has to include a module Pedigrees, which is not a stand alone module on its own. On the contrary, works to fully synchronise lineage data with test results for biologically related family members are under way. This synchronisation should provide information as regards the need to perform genetic tests for persons who potentially have relevant mutations and have not been tested.

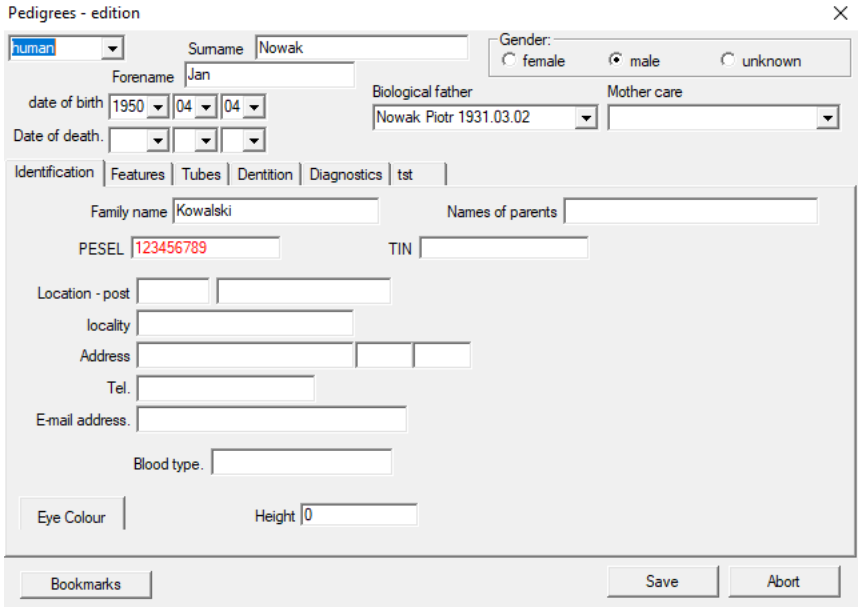
The next feature of the Pedigree module is automatic search for persons that may be related but are not included in a pedigree.

Pedigrees are used to build family trees based on probant records.
Each probant is assigned to one family tree and can have one mother and one father.
The icon window facilitates editing personal data and adding a new person to a family by selecting them in person database.

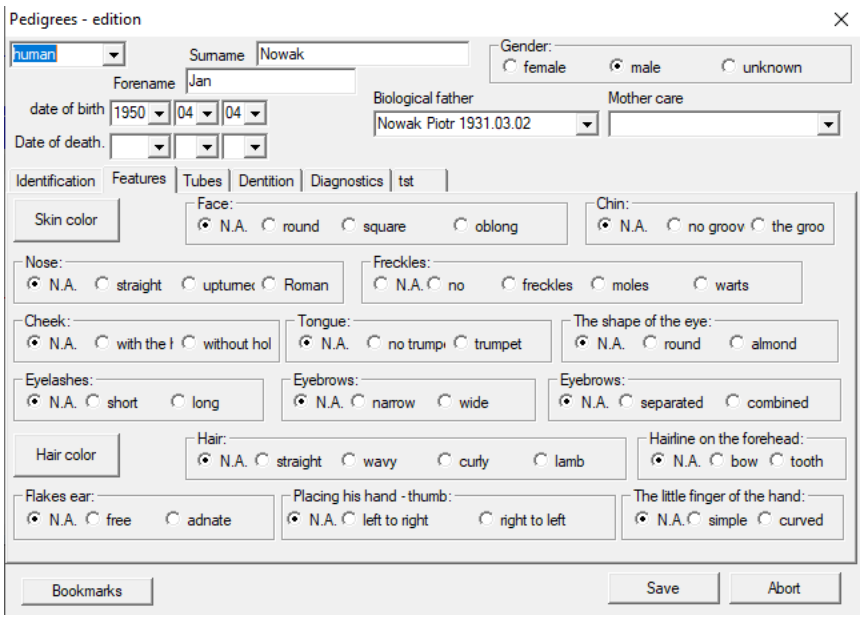
Pedigrees - Edit

Pedigree data is stored in the BBMS database.

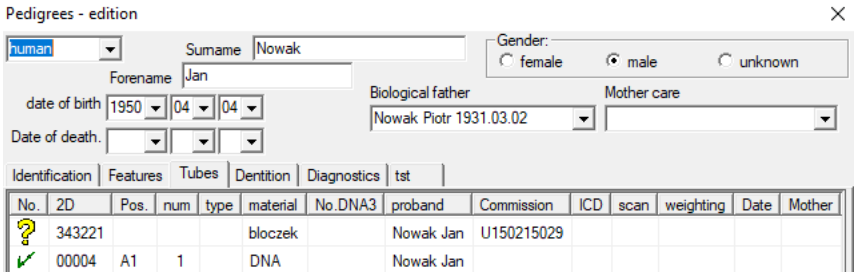
The window is divided into personal data and details. The details part includes the following tabs: “Identification”, “Traits”, and “Tubes”.



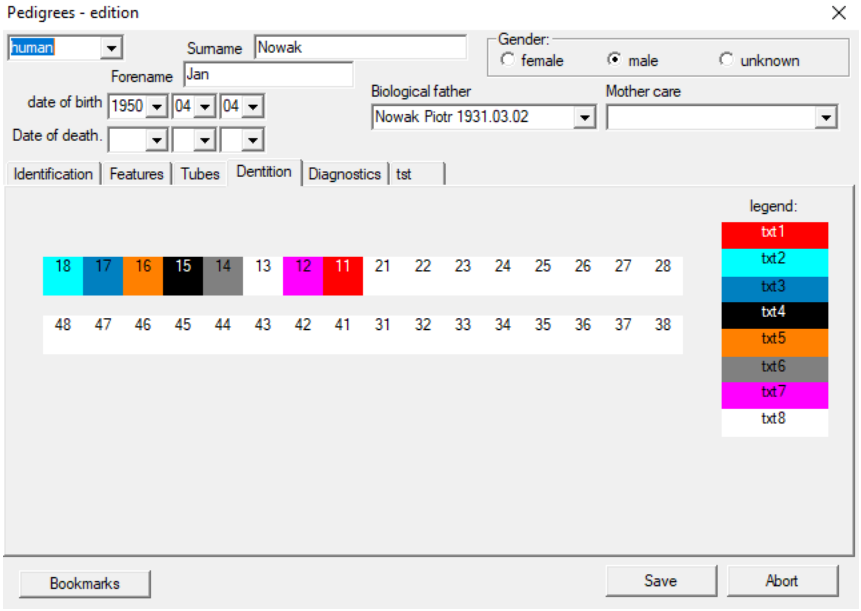
Identification data may come from person's ID card or a survey.
Traits on the screen shot below are used to verify lineage based on genetically inherited traits.

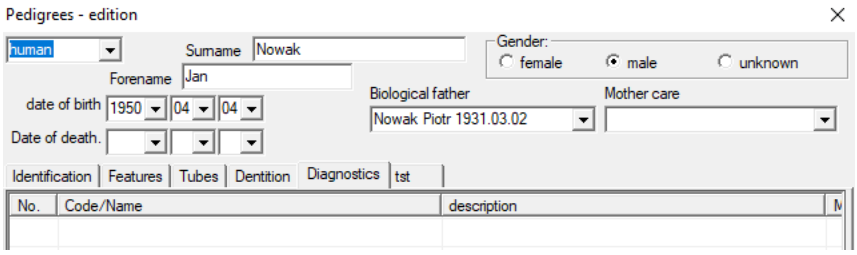


To facilitate searching for test specimens, the next tab shows a list of test tubes stored by the biobank.
The list may be printed out, exported to a spreadsheet, or sent to the Container from the context menu (Right Mouse Button).

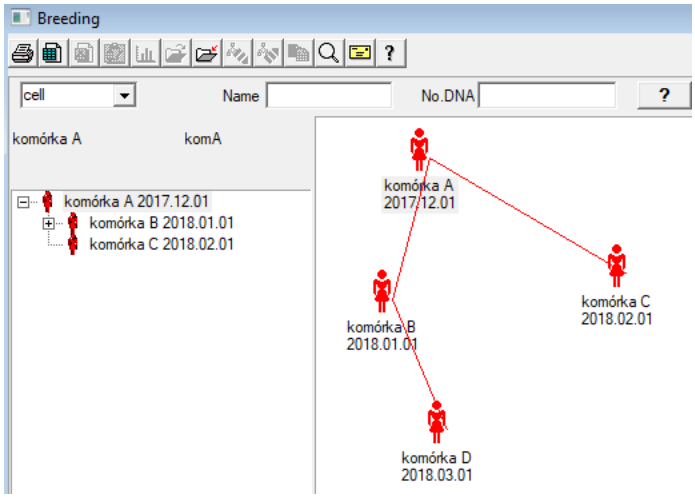


The next tab, Dentition facilitates input of dentition inheritance data.





Breeding

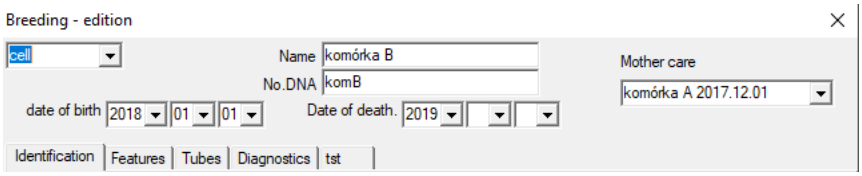


Breeding is Pedigree without a male :)

Here you can lead cell lines, bacterin and viruses, any creature without male reproduction (parthenogenesis).

In the Biobanks module you can breed in a different approach, there the source sample is called Mother for order, and a child daughter. However, Daughters do not have to arise through reproduction, because dilution is enough.

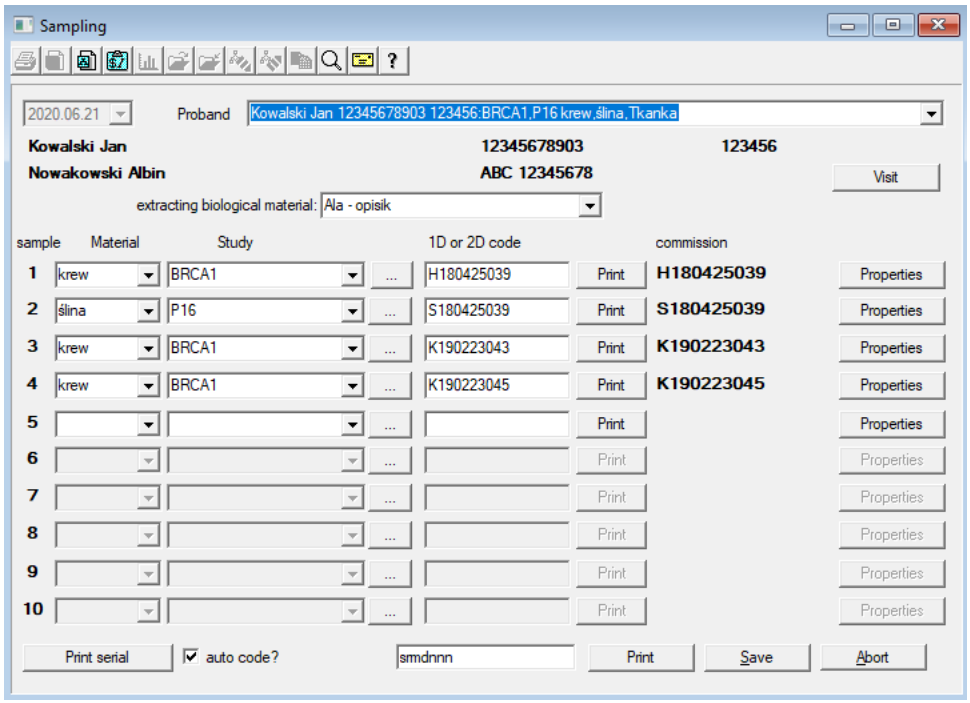
Breeding - edition



The edit properties pane for the sample in the culture will be expanded as needed.

Sampling

Labelling a specimen with a 1D or 2D code.
The window is called Sampling and it should support the sampling process or registration of otherwise provided specimen but its core objective is to label specimens.



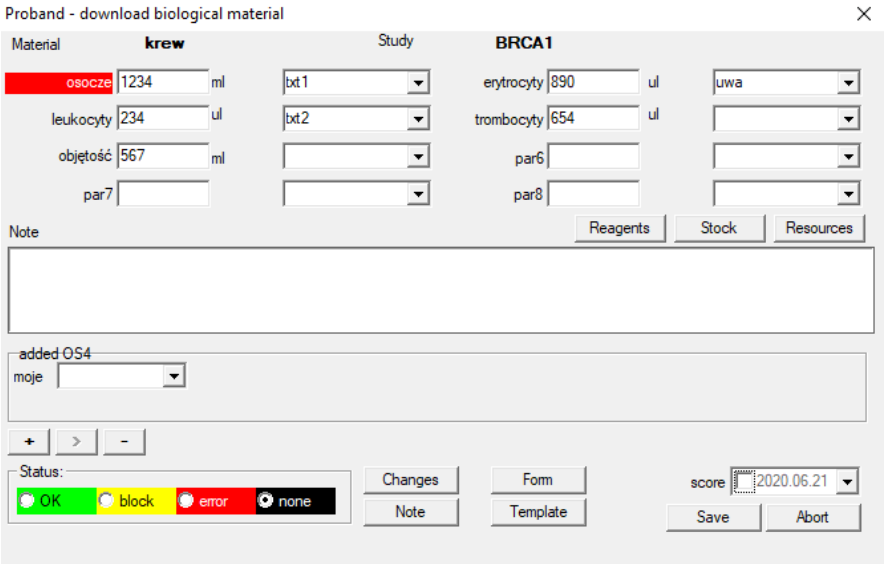
In other words, one visit is turned into multiple vials. Prior to sampling/labelling, select a probant from the list.
The list includes persons with a visit scheduled for this day and assigned to the selected project.
The assumption is to do as little additional actions as possible during sampling.
After sampling, you can print a barcode and stick it to the vial with the specimen.
Procedure:
Step 1: select person in the list
Step 2: select specimen type
Step 3: select test
Step 4: scan and enter the code to label the specimen
Step 5: optionally: print code to stick to the vial
Step 6: if done, click [Save], else repeat from step 2 in the next row

Notes
Step 1: the list includes persons scheduled for this day. Any missing items require only checking visit date in the Registration window. Steps 2, 3, and 4 are used to enter data.
After saving data and leaving the window, you can return to the same person to continue sampling or make corrections.

In this window, you can print a 1D/2D code using a code printer.
Automatic generation of a code involves replacement of code mask with information from the database. The following characters may be used to create a code mask:
“u” – symbol from user base, “prefix” column
“s” – specimen symbol from batch print, the same data can be found in Configuration -> Batch print
“r” – year, the last two digits of the sampling year
“m” – sampling date month
“d” – sampling date day
“n” – consecutive sampling number, multiple “n”s can be saved
"k" - site prefix

e.g. usrmnnnn

Sampling - edition

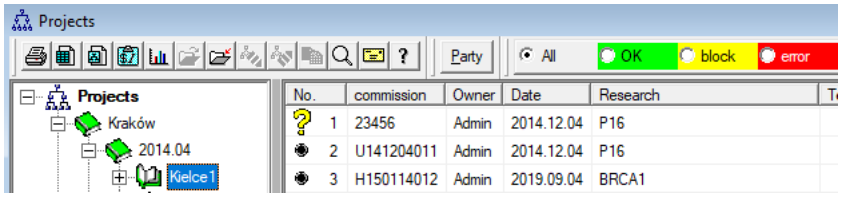


Controls with values of "blood" material parameters, visible in the window, are dynamically generated based on the definition of parameters of this material.
Check or complete the System-> Materials menu. Examples can be found in the TEST database.

In this window you can record the consumption of reagents, consumables and equipment.

Survey results are often presented using a form or template.

Projects



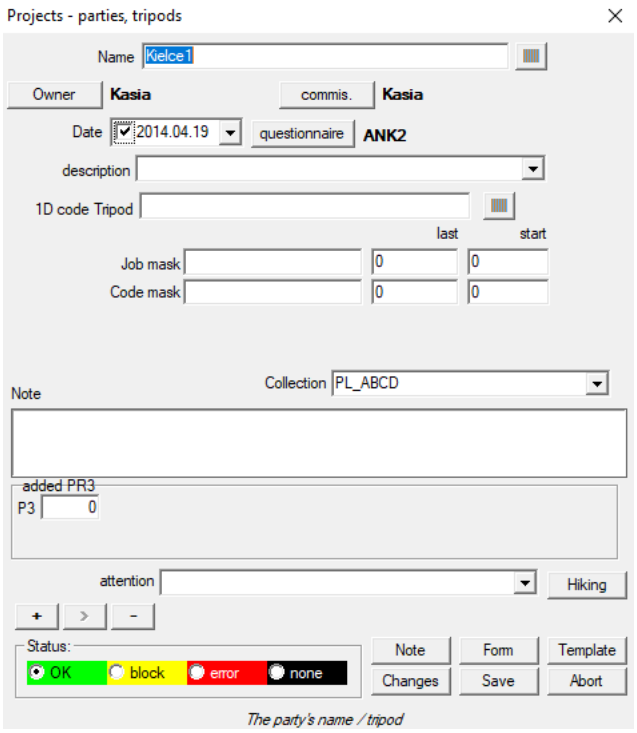
Nearly all research and development facilities, laboratories, and biobank operate by using projects or grants.
Even if there is a facility that does not carry out projects, it may divide its orders into stages, e.g. monthly or quarterly.

The Projects module organises orders by dividing them into groups.
Here, you can check the current stage of orders.

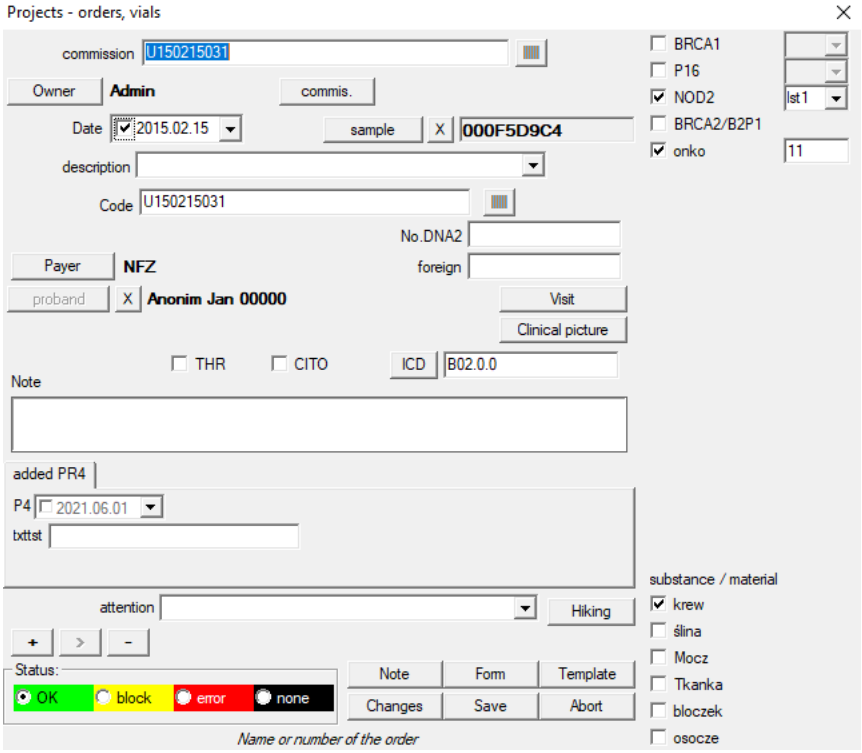
On each tree level, you can select an active survey.
A survey is a specific subbase that will be displayed in the Registration module when selected.

Projects - Edit

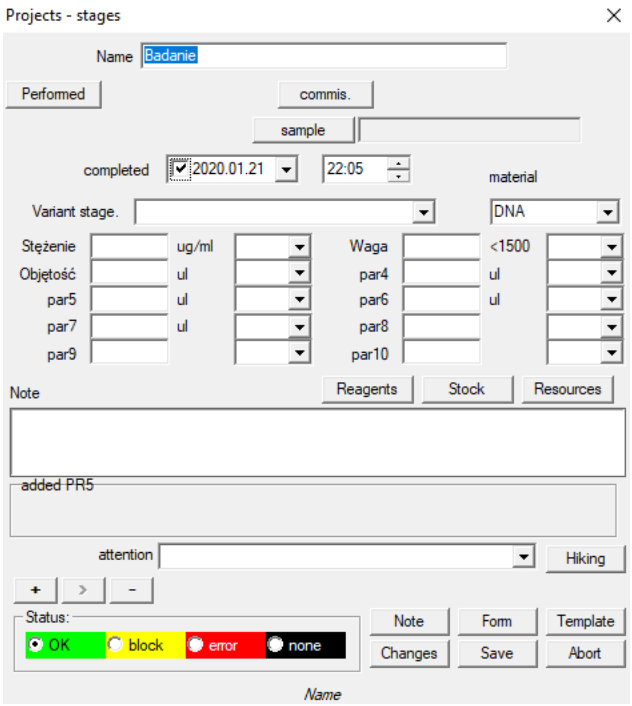
The Project edit window is context-dependant: relevant controls are active in appropriate places in the tree.
The branch with orders is the level corresponding to a stand or period or batch as selected by a specific facility.



In addition to input of project data, orders are edited on a certain tree level.
This window is used similarly to the one in the Orders module.



Each order consists of two stages. Every stage can be controlled with a status.


Projects - stages
Name
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sample
completed
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22:05
material
Variant stage.
DNA
Stężenie
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Waga
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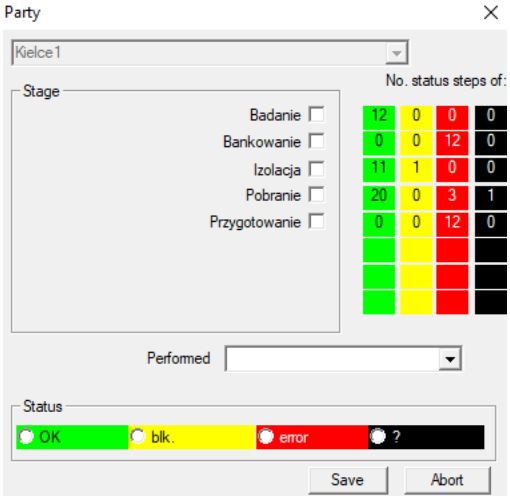
ul
par5
ul
par6
ul
par7
ul
par8
par9
par10
Note
Reagents
Stock
Resources
added PR5
attention
Hiking
+
>
-
Status:
OK
block
error
none
Note
Form
Template
Changes
Save
Abort
Name

Projects - Batch



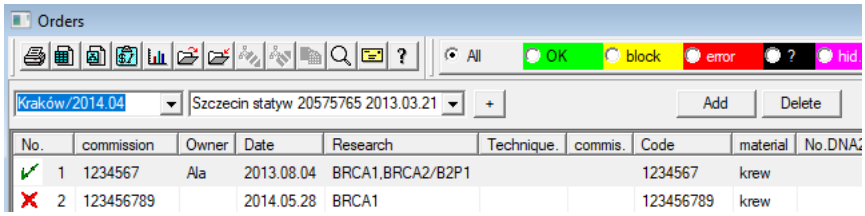
This window facilitates changing statuses of all stages of orders of a selected batch (on a stand).

First, select the Stage whose status you want changed; then select the Status and click Save.

You can complete, halt, or restart a stage with one click :)

Orders

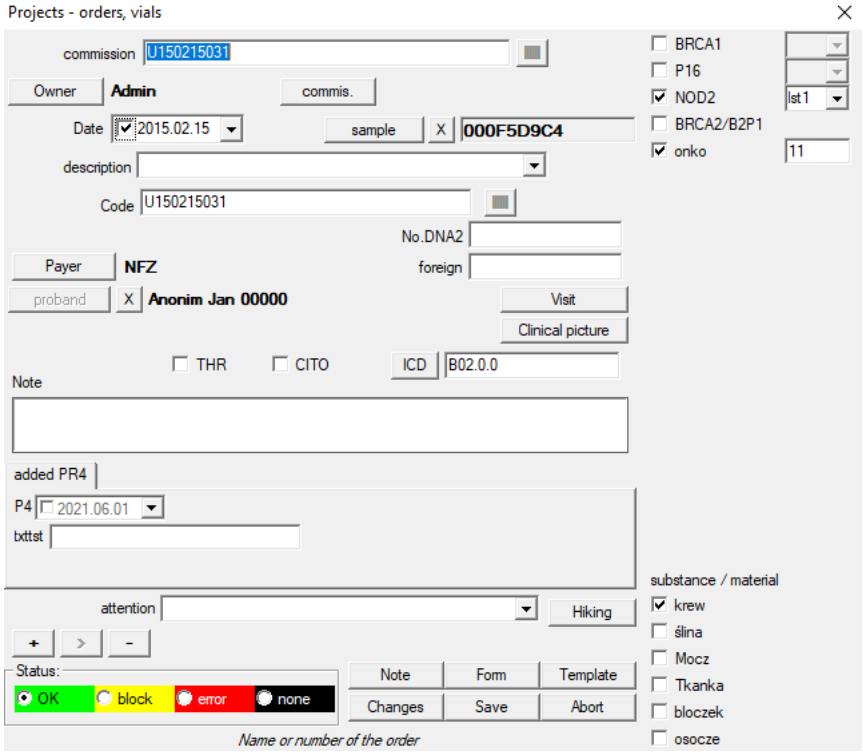
List of specimens (orders) to be tested or stored.



Here, you can specify what is to be tested and by whom.

All orders are grouped within projects. Project is a conventional term and does not have to refer to a specific event that is usually called a project.
A project may involve routine laboratory work. Division into project facilitates chronological record of orders, e.g. by months or weeks.
It is a mechanism for streamlining orders so that tedious going through thousands of orders is not necessary.
Additionally, each order (as in other modules) has a status and can be filtered by it: Status toolbar.

Orders - Edit

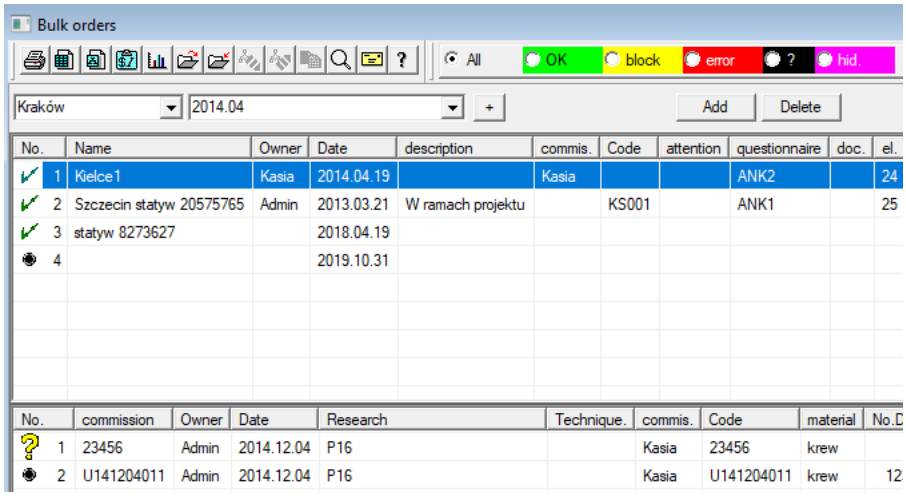


Controls for tests and specimens are defined in the Patterns module.

The [Probant] button is disabled if the order was created automatically during sampling.

Bulk orders

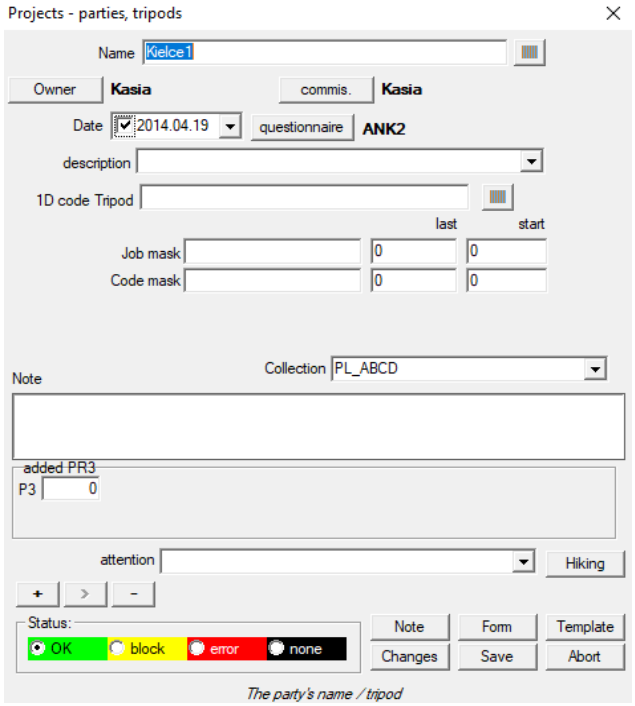
Listing of orders and studies in orders.

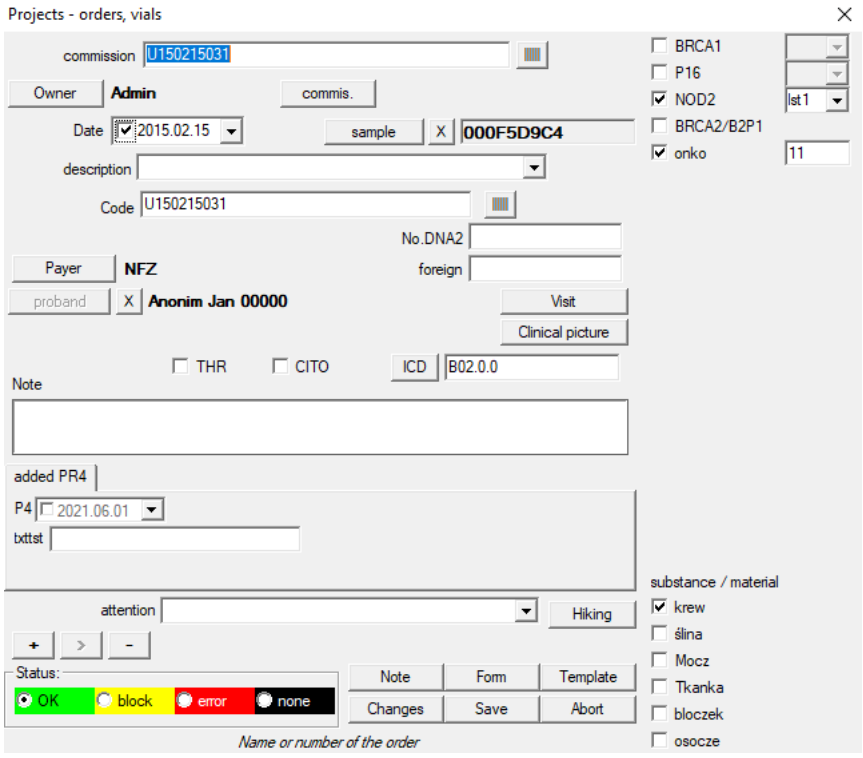


Bulk orders are grouped orders. Depending on the specifics of the work, the laboratory can be used:
"Orders", "Orders" and "Projects".

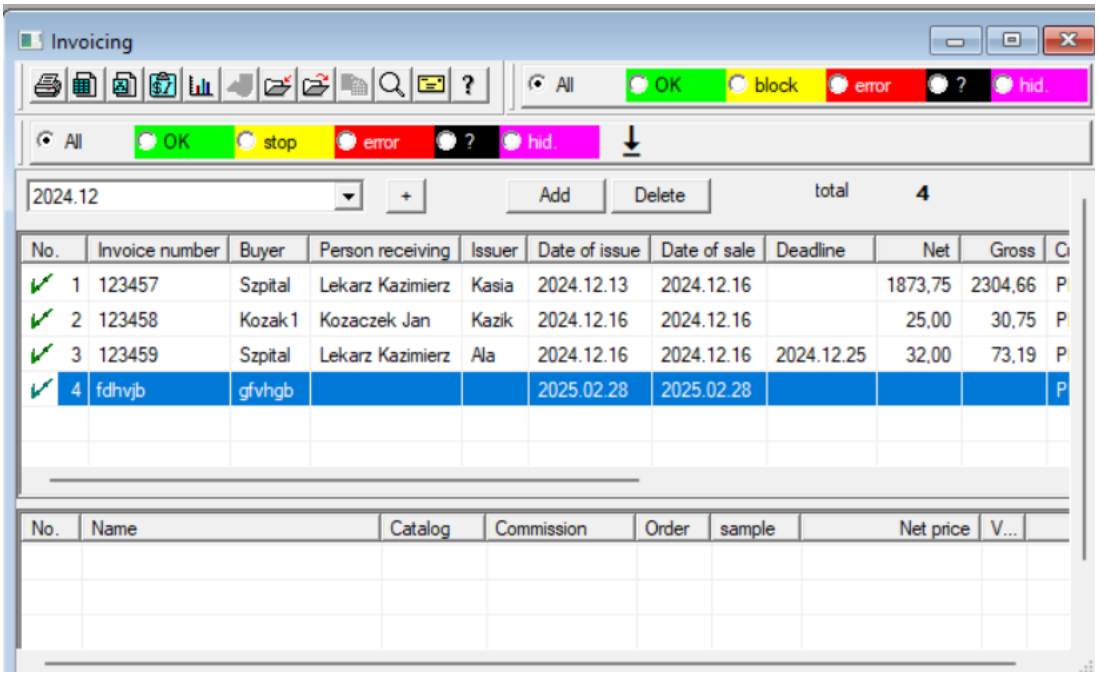
All orders are grouped within projects. A project is a contractual concept and does not have to involve a strictly defined project term.
The project can be a routine laboratory work, and the project division itself allows for chronological record of orders, eg within months or weeks.
This is a mechanism to improve order processing so that there is no need to browse thousands of orders in a window, which is very burdensome.

Bulk orders - edition

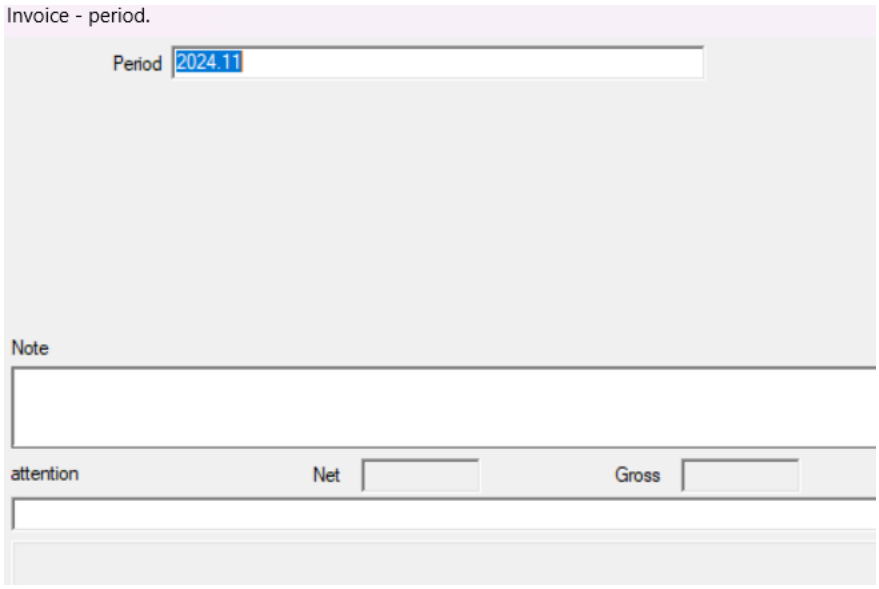




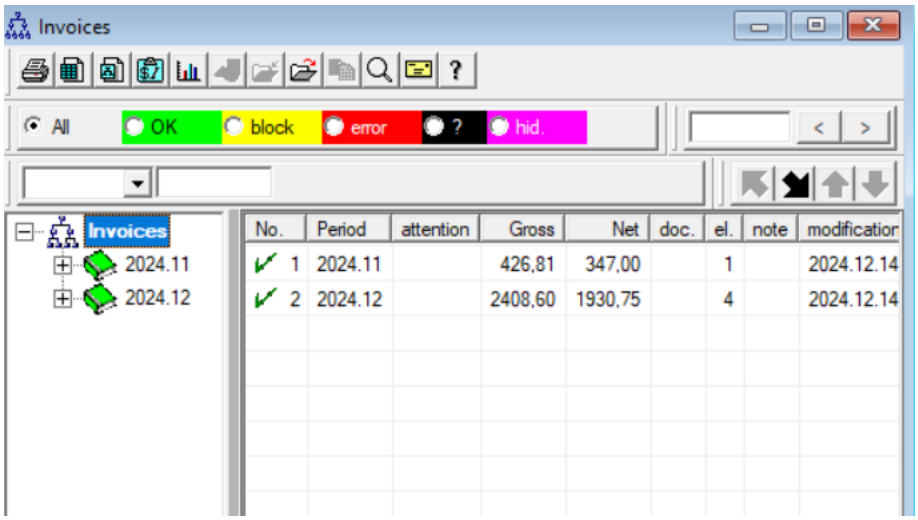
Invoicing


Invoicing
All
OK
block
error
?
hid.
All
OK
stop
error
?
hid.
2024.12
+
Add
Delete
total
4
No.
Invoice number
Buyer
Person receiving
Issuer
Date of issue
Date of sale
Deadline
Net
Gross
1 123457 Szpital Lekarz Kazimierz Kasia 2024.12.13 2024.12.16 1873,75 2304,66
2 123458 Kozak1 Kozaczek Jan Kazik 2024.12.16 2024.12.16 25,00 30,75
3 123459 Szpital Lekarz Kazimierz Ala 2024.12.16 2024.12.16 2024.12.25 32,00 73,19
4 fdhvjb gfvhgb 2025.02.28 2025.02.28
No.
Name
Catalog
Commission
Order
sample
Net price
V...

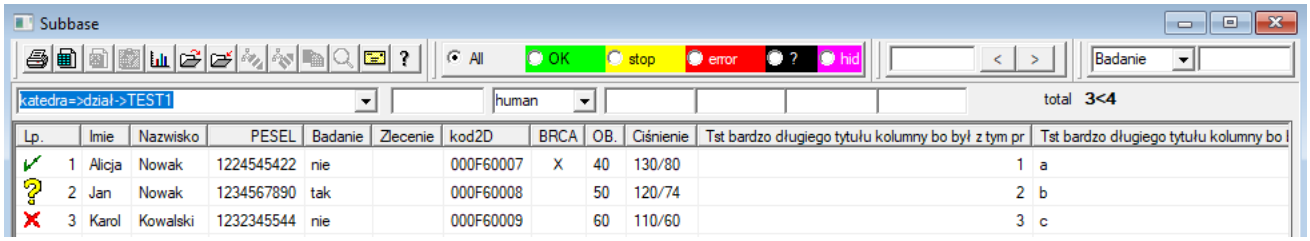
Invoices - edition



Invoices


Invoices
All
OK
block
error
?
hid.
Invoices
2024.11
2024.12
No.
Period
attention
Gross
Net
doc.
el.
note
modification
1 2024.11 426,81 347,00 1 2024.12.14
2 2024.12 2408,60 1930,75 4 2024.12.14

Subbase



Lp.	Imie	Nazwisko	PESEL	Badanie	Zlecenie	kod2D	BRCA	OB.	Ciśnienie	Tst bardzo długiego tytułu kolumny bo był z tym pr	Tst bardzo długiego tytułu kolumny bo l
1	Alicja	Nowak	1224545422	nie		000F60007	X	40	130/80	1	a
2	Jan	Nowak	1234567890	tak		000F60008		50	120/74	2	b
3	Karol	Kowalski	1232345544	nie		000F60009		60	110/60	3	c

BBMS uses system database and subbases.

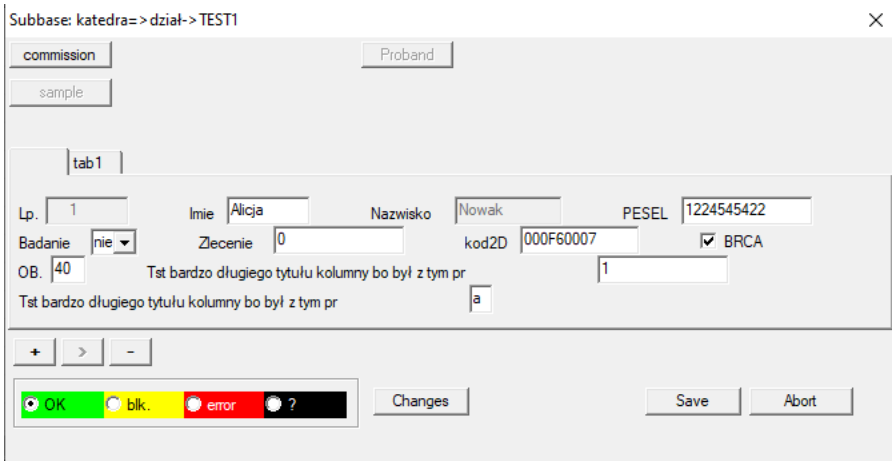
While the structure of the system database should be defined and set publicly as it is vital for operation of the software (not just BBMS), structure of subbases may be changed virtually freely.
The idea behind subbases is not just user-defined tables but the option to keep records in other databases and software, e.g. MS Access, MS Excel, SQL and import it.
Subbases are very flexible, yet highly integrated with the system database. The software can assign subbase data to a specific probant (person, patient) or specimen.
Subbase tables can be included in reports, so that they show data from both system database and subbases.

Based on the definition in System -> Subbase structure, you can create any subbase with extended data on some aspects, e.g. probant, test results, or records.
You can import bases from Access, SQL, and Excel/Calc to this module any time. The data can be reported with user defined reports. Most common scenarios:

- A facility has various records in MS Excel, MS Access and they need to be kept.
It is recommended to place these records in such a way so that the person importing them to BBMS can access the relevant records.

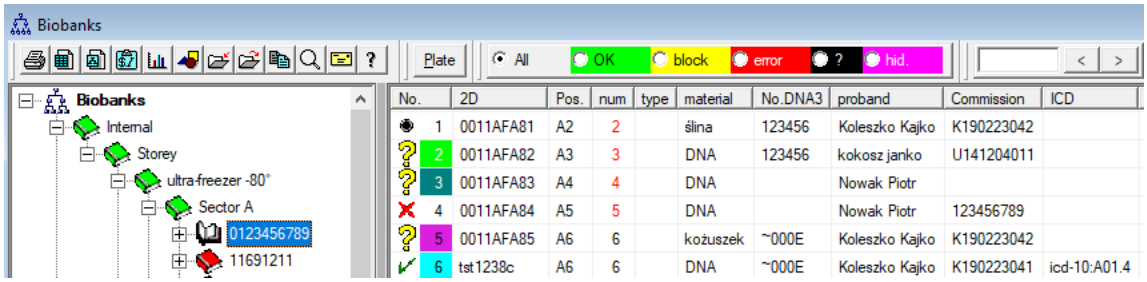
- Questionnaires needs to be recorded.
Using a spreadsheet or any base, you can input/import questionnaires and then use as a subbase in BBMS.
Currently, survey templates are not standardised and each user creates them as to suit their needs.

Subbase - Edit



Subbase structure and preferred fields are not known in advance.
Nevertheless, we strove to build an edit window with dynamic labels and fields.
An alternative solution is to introduce data to a subbase using other software and integrate it into BBMS.

Biobanks



Collecting biological material is much different to managing an ordinary warehouse. Each sample should have specific information that describes it such as code, address, storage parameters, history, and probant. Warehouse handling procedures may not be adopted because a specimen is not merchandise. Small samples of material may be taken from a specimen for testing, release and acceptance may have a significant impact on the quality of the material.

Biobank management should provide specific information on specimen address, history of releases, quality and environmental conditions. In BBMS, biobank records are organised as a geographical tree, making place of storage a vital piece of information. This window facilitates general overview of biobank structure. Specimen lookup is best done with the search tool (magnifying glass on the toolbar).

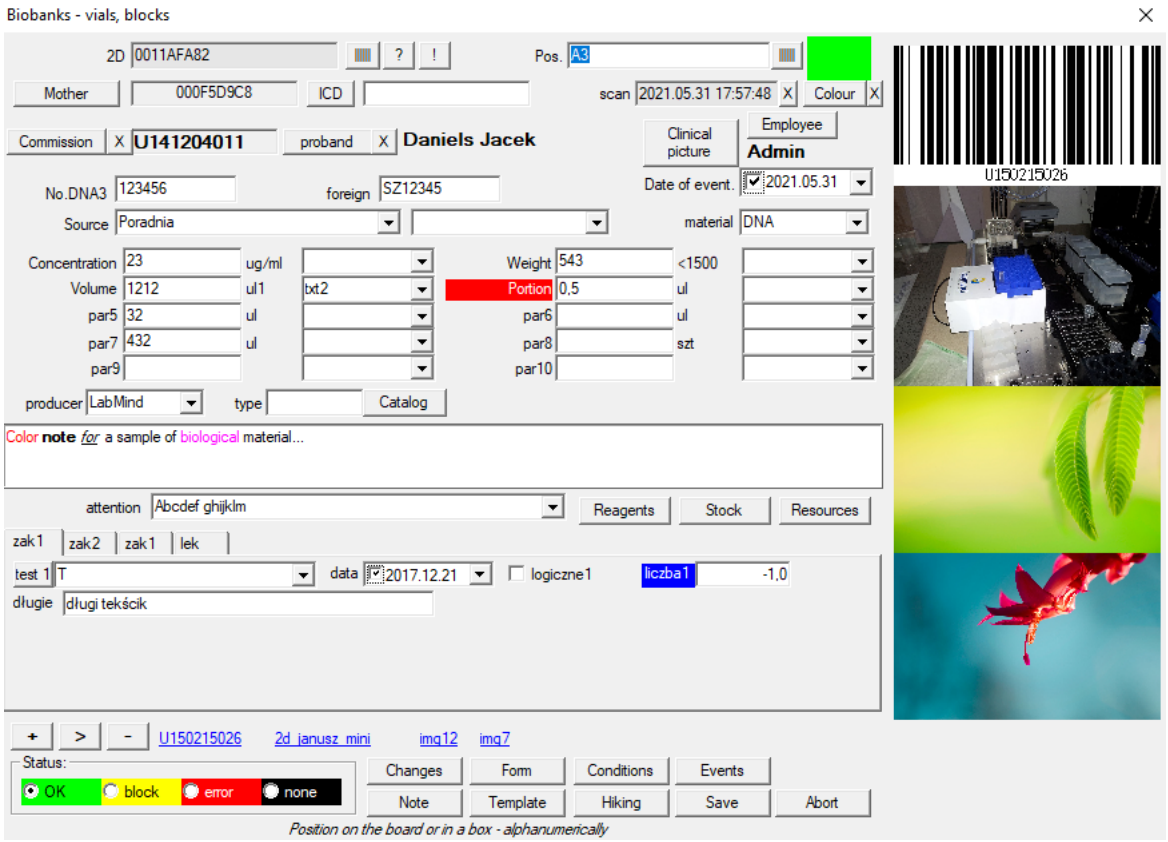
Plate handling is done in the window opened with the [Plate] button. You can scan the whole plate and/or just preview it.

This module facilitates complete record keeping for biological material in the form of biobanks or repositories.

It is absolutely necessary to:

1. code each tube/vial;
2. code each storage place;
3. scan tubes/vials prior to use;
4. provide manufacturer information in records if multiple biobanks cooperate.

Biobanks - Edit



A sample of biological or chemical material should be identified by choosing an Order or Probant.
If a new sample is added or there is no date to scan it, the supplement formulas defined under the [?] Button start.
Examples of auto-complete definitions can be found in the test database. It is used, among others, to choose the producer, save dates etc.

The [|||||] button enables the code to be printed on a barcode printer.
If the label printer is equipped, the code can be printed using the form and the Pic () function

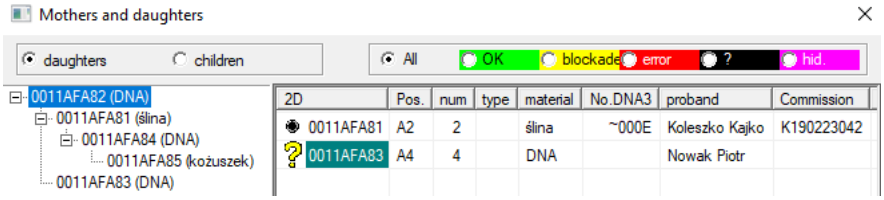
A sample can be assigned to many orders and many samples can be assigned to one order.

The [Mother] button allows you to select the source sample, and after clicking on the code, a window will open with the door of sample connections.

Electronic documents may be attached to a specimen using the [+], [>], and [-] buttons.

When editing an item related to a specimen storage device, pay attention to relation to the resource.
Environmental conditions monitoring device is also related to resources.
The above-mentioned actions facilitate tube/vial storage history reporting.

Mothers and daughters



The window presents the tree of connections between samples.
It opens after clicking on the mother sample code.

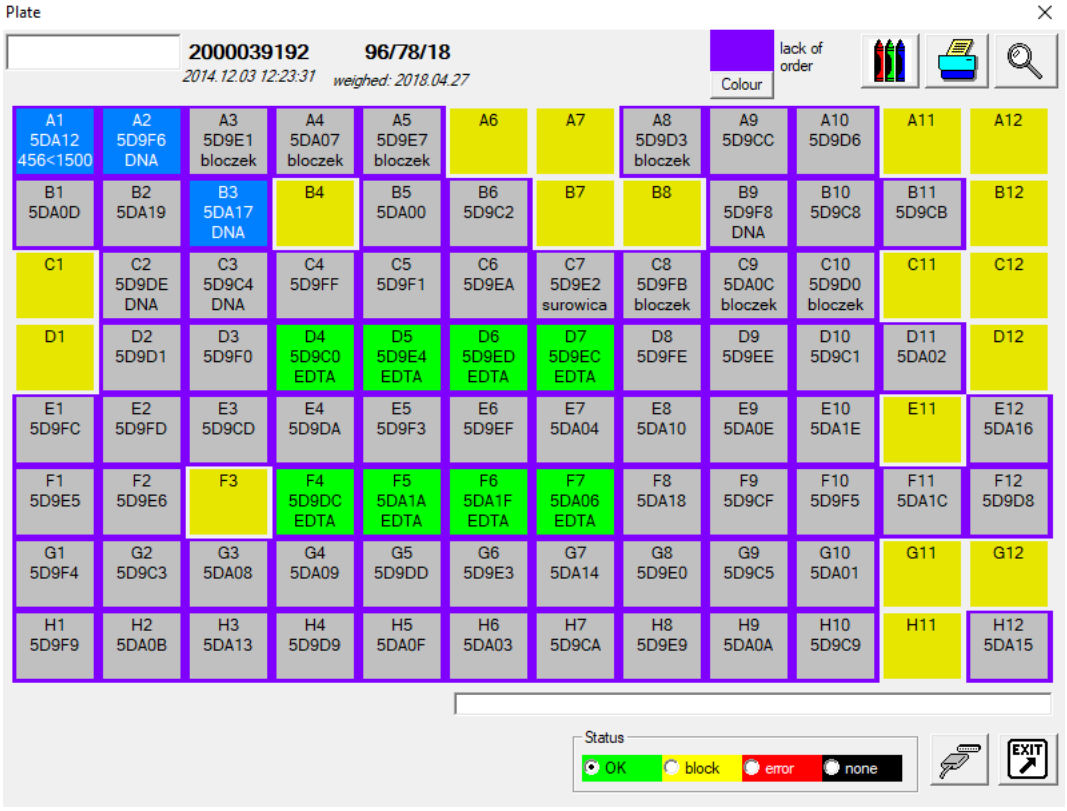
By design, all tree samples should be from the same probe.
The program allows the change of the probant, i.e. application in a different context.

Mothers and daughters can be exported in the reports module (field ID_BB6) and imported as part of the subbase system.

The "daughters-children" filter switches between the view of daughters of the selected sample and the view of all descendants of that sample.

The "status" filter normally limits the sample list to a specific stratus.

Biobanks - Plate

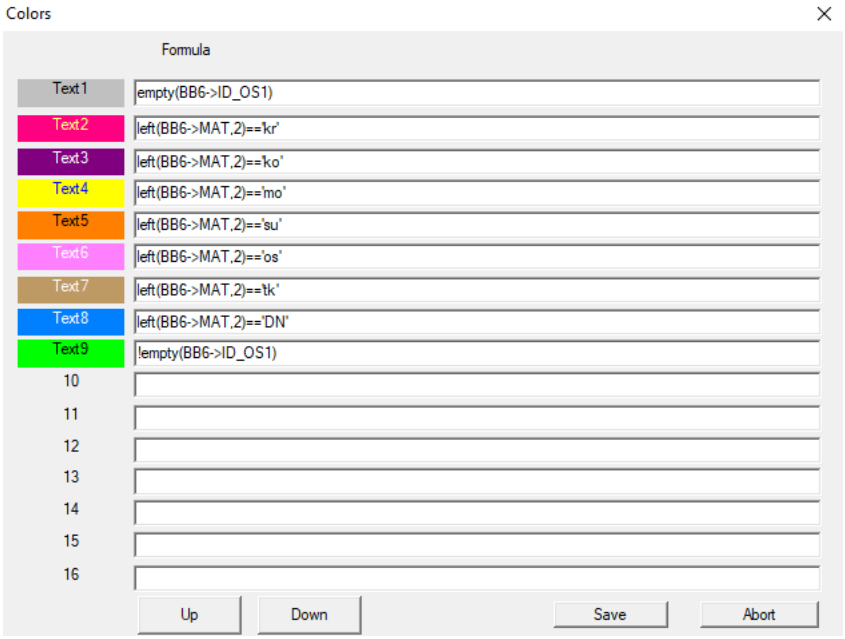


This window is intended to streamline handling of a whole plate.
Plate size or the number of vials in rows and columns is given as plate parameter in biobank. The default size may be entered in Configuration.

Here, the software operates 1D and 2D scanners. Whole plate 2D scanners are recommended, e.g. http://labmind.pl/skaner/
The software is compatible with 1D and 2D scanners by any manufacturer that emulate keyboard.
Whole plate 2D scanners by LabMind, Micronic, and Fluidx have been tested.
Waste-paper bin icon is used to remove tube/vial from a plate but not the database. After removal, the tube/vial and its data are kept in the database.

Note!
If LabMind 2D scanner is used, apart from 2D vial code, it reads its manufacturer, code type, and checksum.
The additional vial data is necessary because it is always possible for biobanks to exchange vials
or buy vials by another manufacturer. Double instances of “the same” vial may then occur.

Colours



Window "Colours" is used to define the background color and text.

The left mouse button to color the control allows you to select the background color,
and the right mouse button text color.

An example of the definition of a window przedstawij±ce plate in the biobank.

In the formula written expression that returns true or false.
If the result of the expression is "true", it assumes control defined colors,
and as "false", the program proceeds to check the next string.

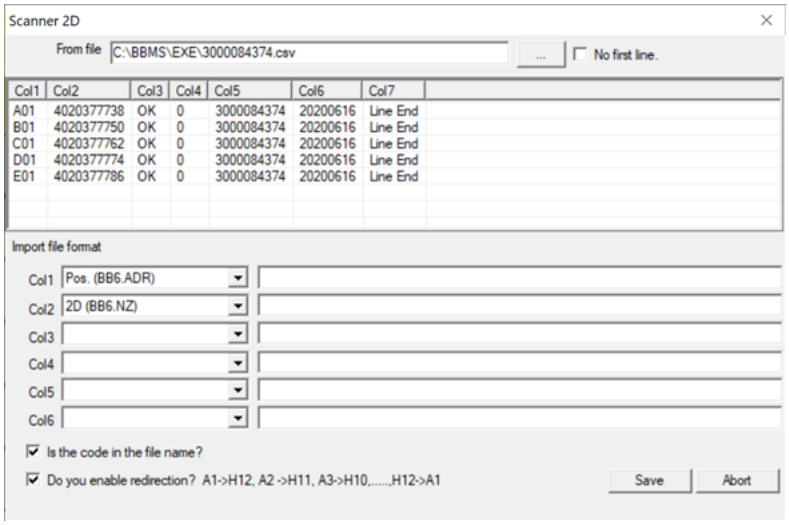
Given the above algorithm, the order is as defined,
because if, for example, the first expression will always zwracało "truth"
it never will be checked next.

Screenshot contains examples deficji colors with formulas.

Submission of expressions are identical to those used in reports, forms, etc.

A brief explanation of the sample formulas:
empty (BB6-> ID_OS1) - the vial is not assigned a patient?
left (BB6-> MAT, 2) == 'kr' - the name of the material in the vial starts with the letters "kr"?
!empty (BB6-> ID_OS1) - whether the vial assigned to the patient?

Scanner 2D



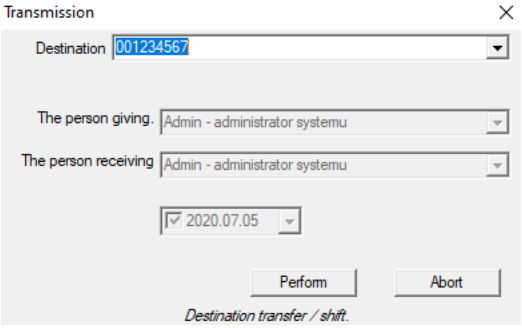
The cooperation of BBMS with whole plate scanners mainly consists in importing data from a text file.
There are various file formats and most often incompatible with the accepted poscyja / code convention.

In this pane, you can define columns that contain the sample position and code for a specific file extension.

In addition to this basic data, you can specify other fields of the BB6 table and use a conversion formula.

Data Import formatting does not apply to LabMind scanners and during an RS232 connection.

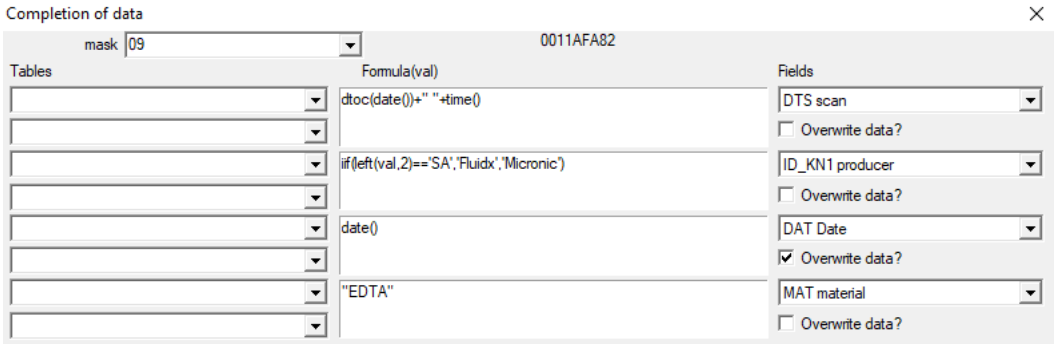
Hand Over



Hand over to another person or organisational unit involves moving a tree element to another branch.

If organisational units belong to different facilities upon handover, persons and dates need to be entered.

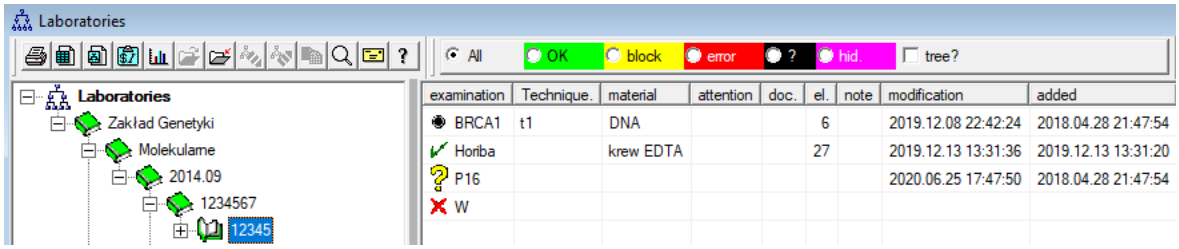
Completion of data



The window contains definitions of automatic data completion in the window.
Formulas will be activated if there is no scan date.

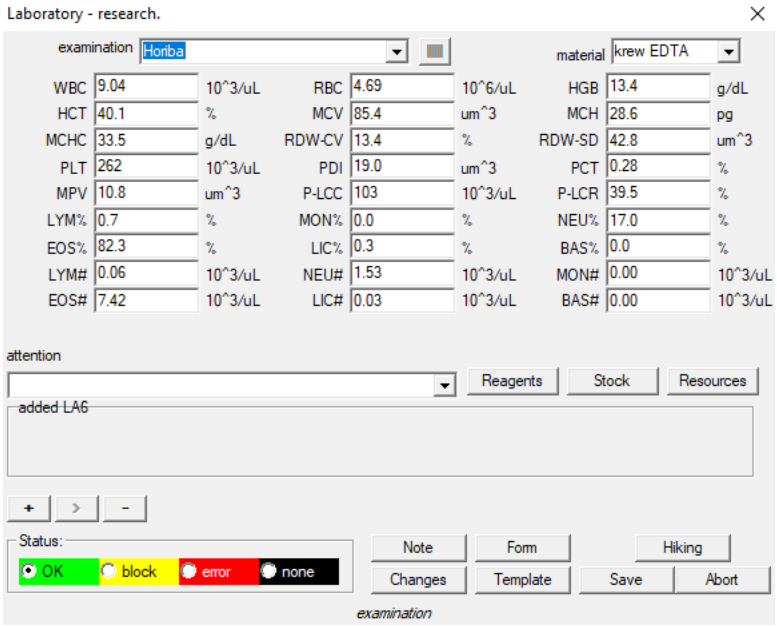
Based on the code form, a specific mask abbreviation is generated, allowing the preparation of definitions for codes differing in length or sperators.

Laboratories



Structure of laboratories that carry out ordered tests and test details.

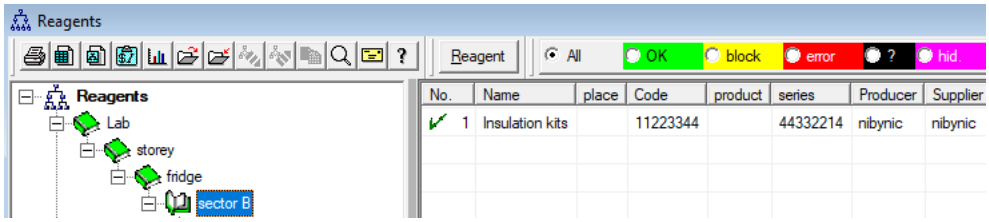
Laboratories - Edit



The parameter value fields of the tested material are dynamic and are defined in the materials.
The field labels correspond to the parameter names and the order corresponds to the order in the materials.
The window will fit 30 halves.

Labels can be colored depending on the thresholds defined in the material parameters.

Reagents

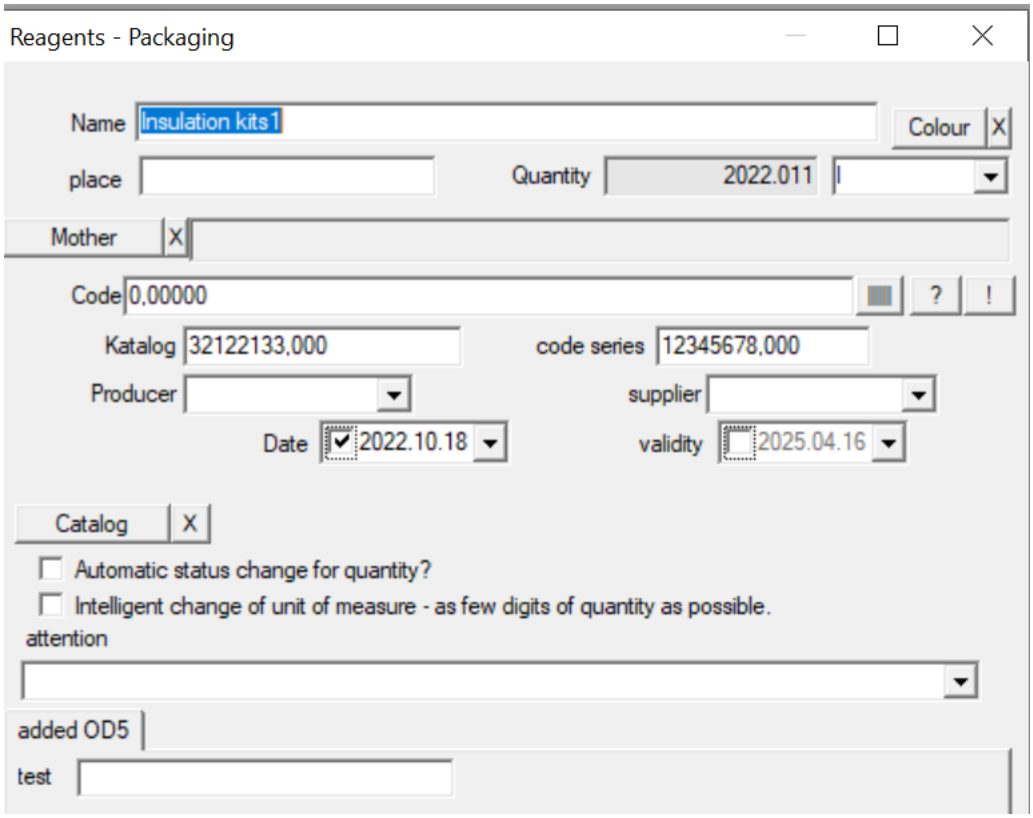


Reagent warehouse has different characteristics to cargo store. Each reagent has a form that cannot by defined as a unit unless you accept one package as a unit.
Reagent warehouse features:
- reagents are usually stored in freezers, so environmental conditions monitoring is necessary,
- no quantity in store item, each item is a separate container,
- no monitoring of reagent quantity in container, technically impossible,
- consumption by deliveries, delivery FIFO, must be applied,
- option to release and accept the same container multiple times,
- each reagent has an expiry date that should be used to order delivery FIFO,
- each reagent has its serial or lot number

Upon reagent acceptance, two items are scanned, product code and serial code.

For thought is to code reagents with codes, allowing for unambiguous identification of each container.

Reagents - Edit



Please note the use of your own barcode and its scanning into the "Code" field.

For a reagent, one of the most important pieces of information is the expiration date.

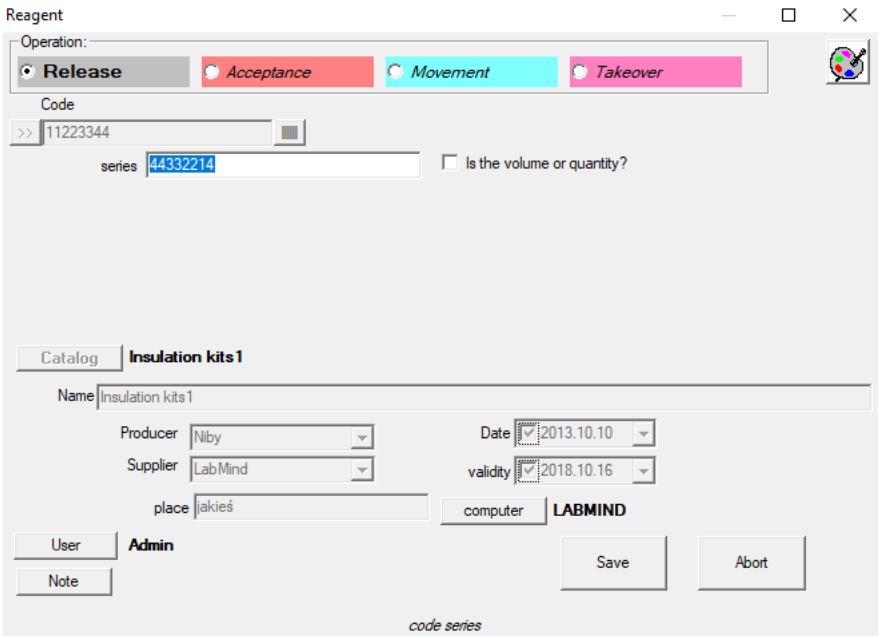
A document can be attached to each item in electronic form.

The [Mother] button allows you to associate it with the parent - source reagent.

"Automatic change of status ... " - after selecting, if the zero quantitative status is reached, the program will change the status to "block"

"Intelligent change of the unit of measure ... " - when calculating the quantitative status of the reagent, the program will select the unit of measure containing the fewest digits before the decimal point and without the power of ^3.

Reagent



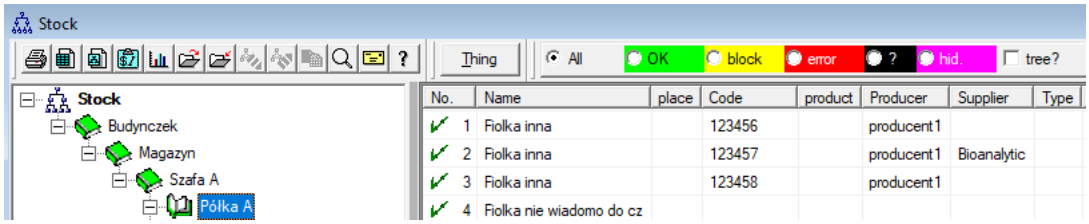
An interactive window was introduced to speed up the operation.
All activities can also be performed in the tree by editing.
The "Summarize" shortcut menu command also works in the tree to control the states.

Window controls are turned on, off, or hidden depending on what you are doing.

Each package can be assigned a catalog item, then the quantity states will be saved there.

If things don't go your way, you can correct the data in the tree at the wrapper or history level.

Warehouse



In BBMS, warehouse is just a conventional concept. It is not a warehouse as understood in the business domain.

Its basic characteristics are:

- quantities are always expressed in pieces,
- descending collective packaging is used: collective packaging may include smaller collective packaging
- the concept of a “piece” in a warehouse needs to be defined. There is no point to treat the smallest element as a piece. It can be for example a bag with some small elements
- consumption by deliveries, delivery FIFO, must be applied at the warehouse
- option to release and accept the same article multiple times
- minimum, alert quantities must be defined for the warehouse
- almost every article has an expiry date that should be used to put delivery FIFO in order

The basic operation in the warehouse is scanning 1D codes. In exceptional cases, i.e. new article, non-standard quantity, or correction, you have to use a keyboard to type in information. If an article is not coded, warehouse operations are significantly hindered.
Each article should have at least one code it can be identified with.
Using reports, you can make summaries for the warehouse(s), e.g. alarm states, exceeded expiry date, etc.

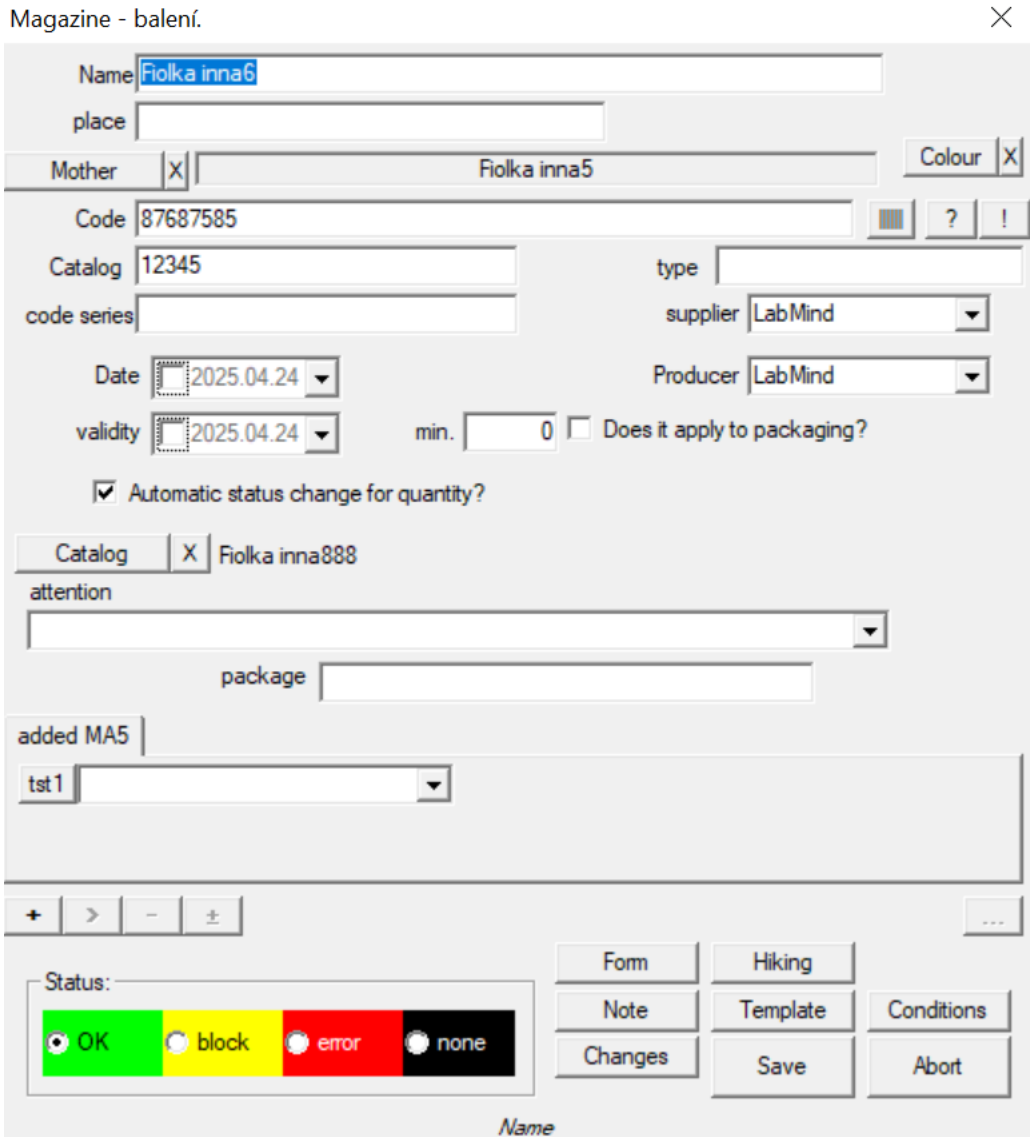
The Warehouse module facilitates construction of warehouse(s) structure in the form of a tree as regards location.

It is not a typical business warehouse management.

BBMS is intended to be used by biobanks, so warehouse operations were made to suit the needs of biobanks and laboratories.

The software automatically sums up the amounts available in the warehouse.

Warehouse - Edit

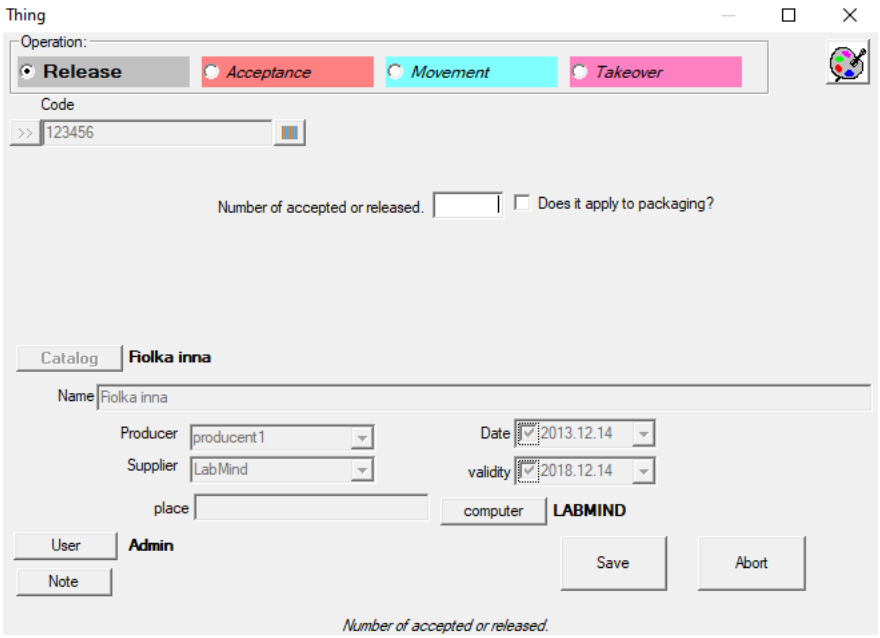


The most important parameters of the product: code, production dates and deadlines, and quantity. Useful reports on the status of warehouses and shortages in the warehouse can be built based on these parameters.

A document can be attached to each item in electronic form.

The [Mother] button allows you to associate a warehouse item with a parent item.
After clicking on the associated item, a window with a tree and a list of connections will open.
If the word [Mother] does not match, you can change it with the right mouse button.

Subject



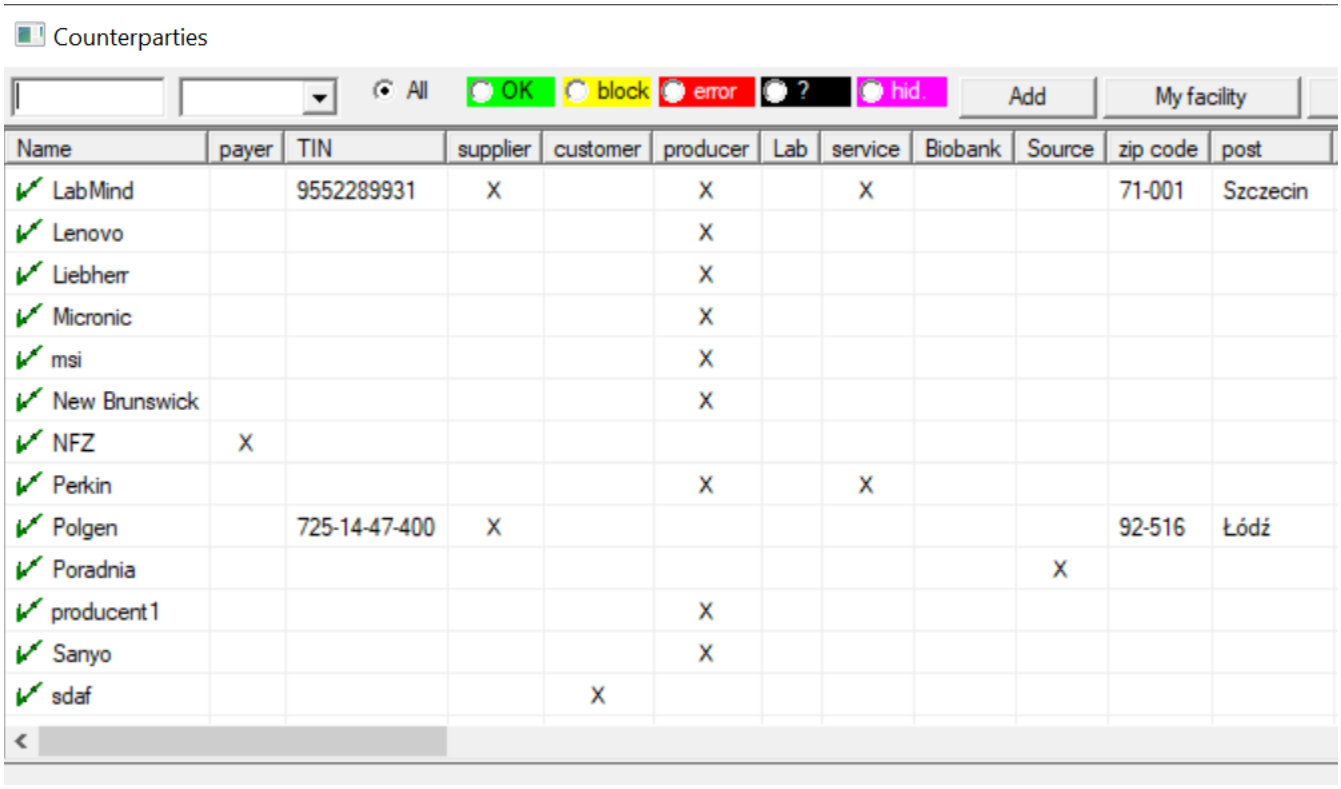
An interactive window was introduced to speed up the operation.
All activities can also be performed in the tree by editing.
The "Summarize" shortcut menu command also works in the tree to control the states.

Window controls are turned on, off, or hidden depending on what you are doing.

Each package can be assigned a catalog item, then the quantity states will be saved there.

If things don't go your way, you can correct the data in the tree at the wrapper or history level.

Counterparties



Name	payer	TIN	supplier	customer	producer	Lab	service	Biobank	Source	zip code	post
LabMind		9552289931	X		X		X			71-001	Szczecin
Lenovo					X						
Liebherr					X						
Micronic					X						
msi					X						
New Brunswick					X						
NFZ	X										
Perkin					X		X				
Polgen		725-14-47-400	X							92-516	Łódź
Poradnia									X		
producent1					X						
Sanyo					X						
sdaf				X							

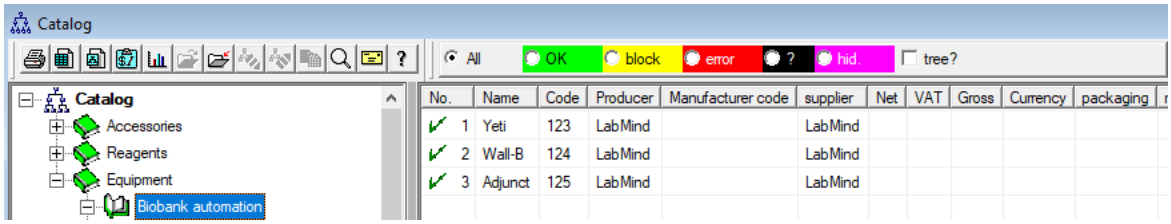
The above list is built by adding items in the window or edit windows with fields containing the contractor's name.

Within the BBMS network, it can be updated with data from other biobanks and laboratories.

Marking a contractor as, for example, "producer" causes it to appear on the list of manufacturers and similarly for other groups of contractors.

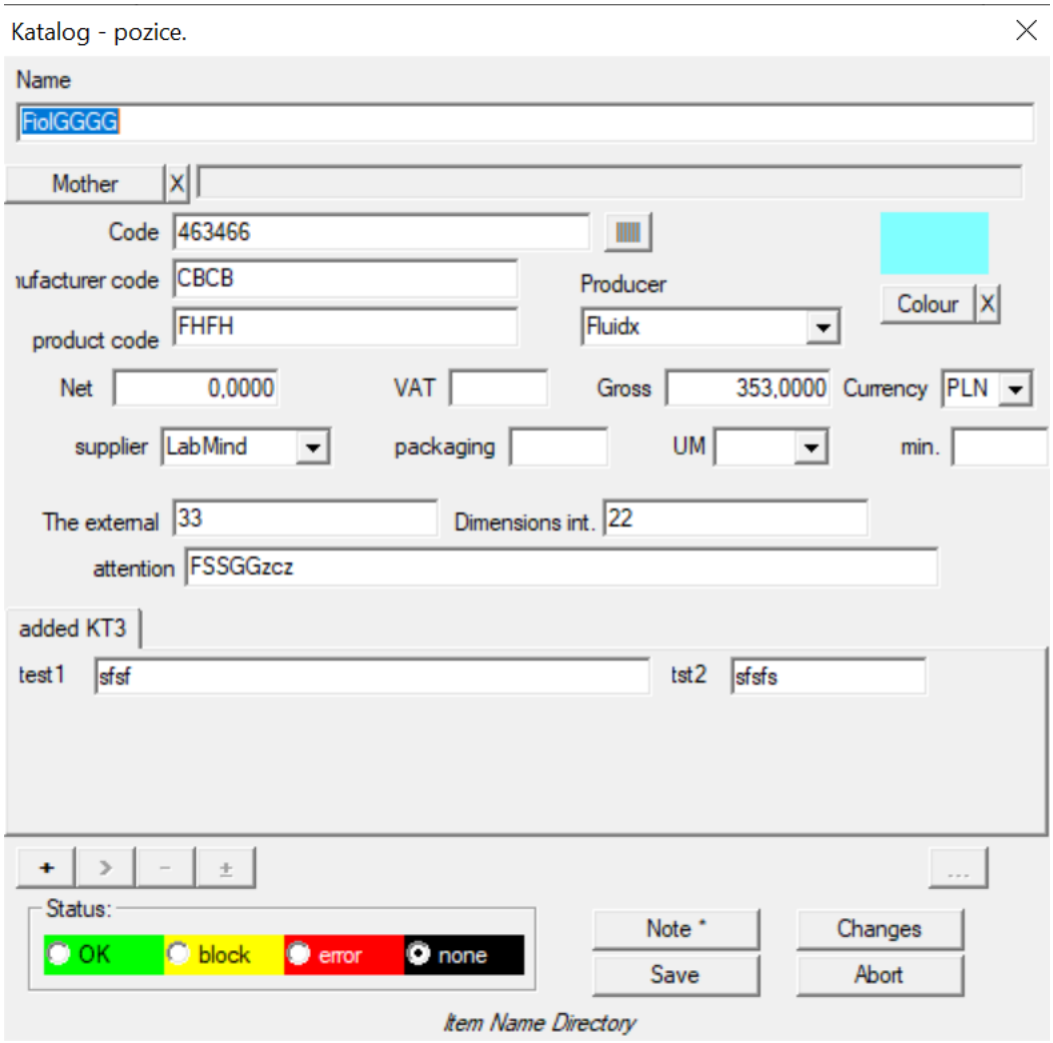

Transactor
Name
LabMind
*
PL-Polsko
*
BBMS
PL1
* data required
TIN
9552289931
Full name
REG
320853203
LabMind Sp. z o.o.
KRS
0000358274
EU TE code
description
BBMS software producer
Location - post office
71-001
Szczecin
Is a biobank?
locality
Szczecin
Is the lab ?
Do payer?
Address
ul.Południowa
25b
Is the supplier or seller?
Is the customer?
Country.
Polska
Is the producer?
Tel.
+48 600 990 462
SMS
prefix
Is the service?
e-mail
office@labmind.pl
*
Code
Is the material supplier ?
www
www.labmind.pl
www.bbms.pl
Bank
Mother
X
added KN1
text
test text
date
2020.06.05
logic
numeric
1234,56
time
09:13
list
lst1
+
>
-
±
Status:
OK
block
error
none
Big Data
Note
Save
Changes
Abort
Name partner: suppliers, resellers, manufacturer, customer, payer.

Catalog



The catalog is a list of articles, consumables, reagents, and spare parts.

Catalog - Edit



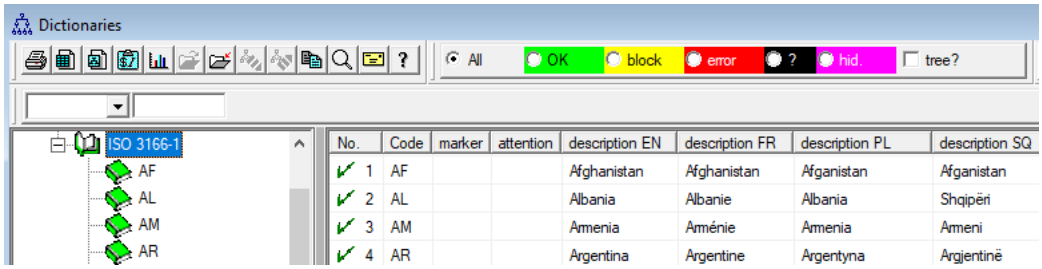
Editing a catalog entry.

The [Mother] button allows you to associate a catalog entry with a parent entry.

Clicking on the associated entry will open a window with a tree and a list of associations.

If the word [Mother] does not match, you can change it with the right mouse button.

Dictionaries

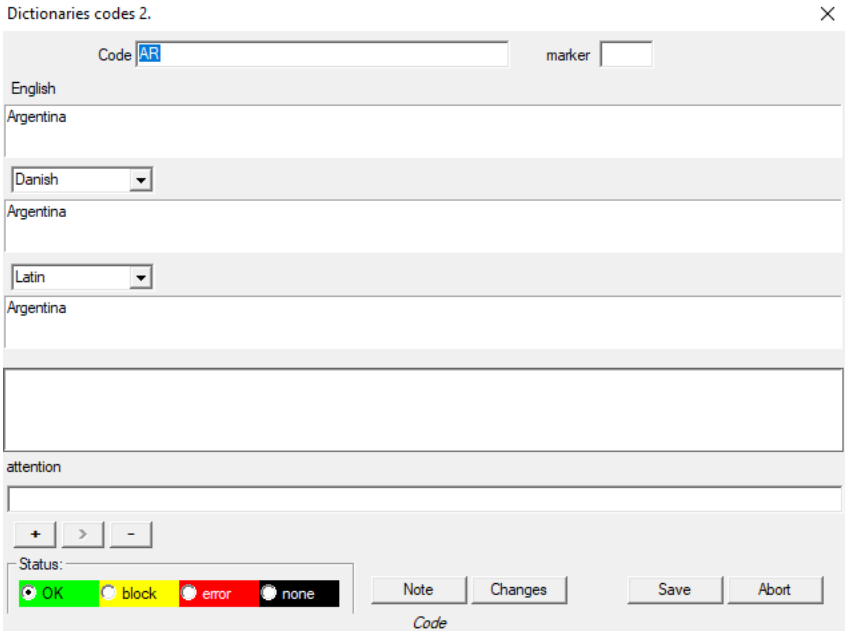


The window is used to register any codes.

Data can be extracted in surveys and forms.

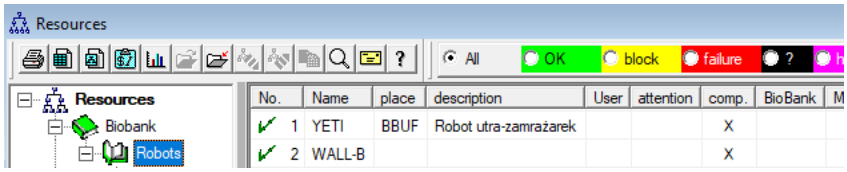
During software update, the code base is downloaded, which you can import by clicking on the Import command and pointing to the Help folder.

Dictionaries - edition



The construction of international dictionaries is a duty to ensure proper communication and standardize concepts.

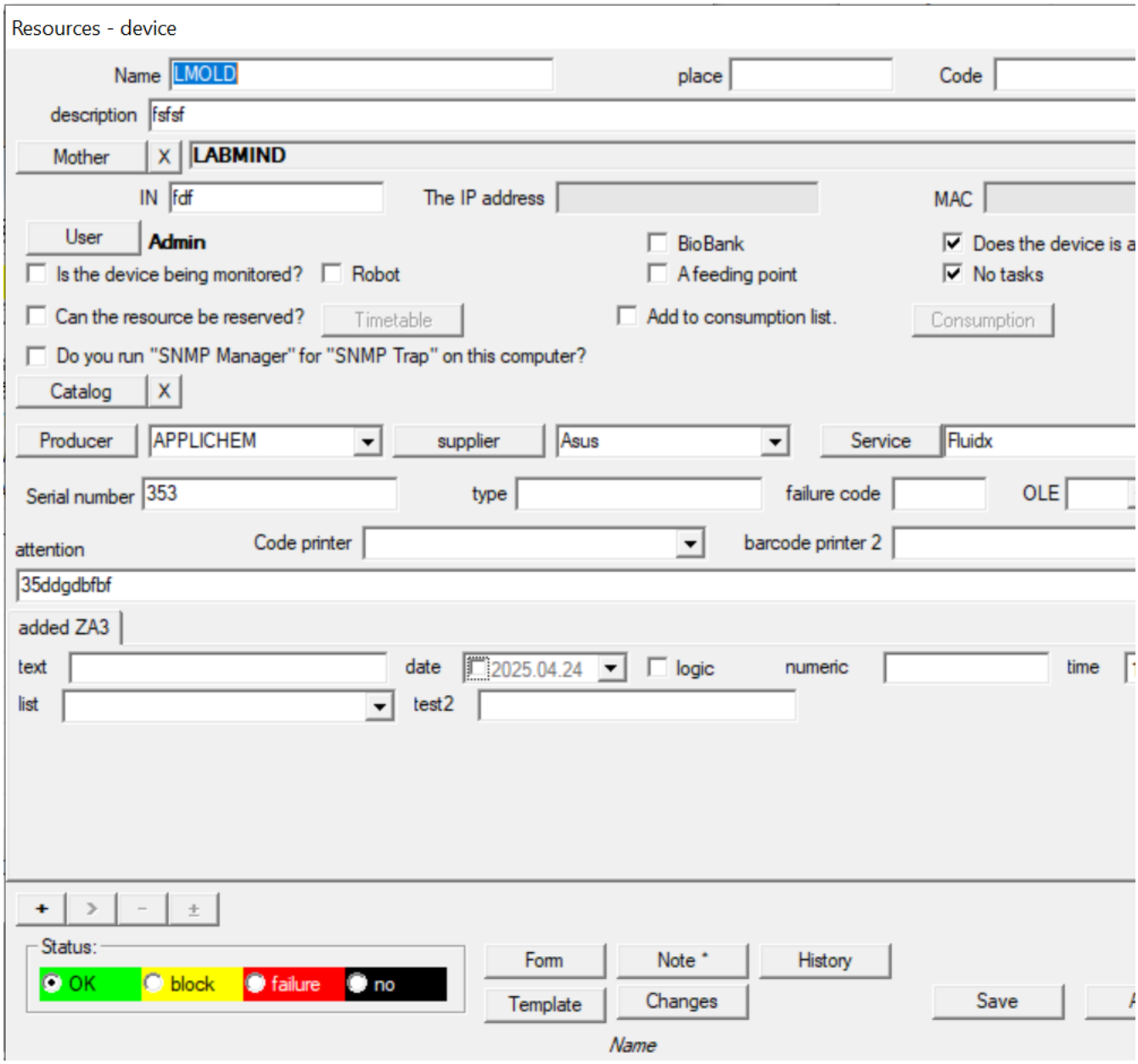
Resources



Equipment and apparatus.

Every biobank and laboratory has equipment resources.
Data in the Resources module is used in many other modules.
It is actually a list of equipment actively used for specimen storage and laboratory tests.
Resources are used by Biobanks, Monitoring, Reagents, and Processes modules.
The most important elements to be entered in this list are: cooling equipment and computers.
For each resource, a history of material consumption, inspections, and breakdowns can be recorded.
You can deduce a lot about a biobank or laboratory by looking at its resources.
It is a record not only in the terms of book keeping but primarily a list of manageable equipment with its operational history and record of inspections, repairs, etc.

Resources - Edit

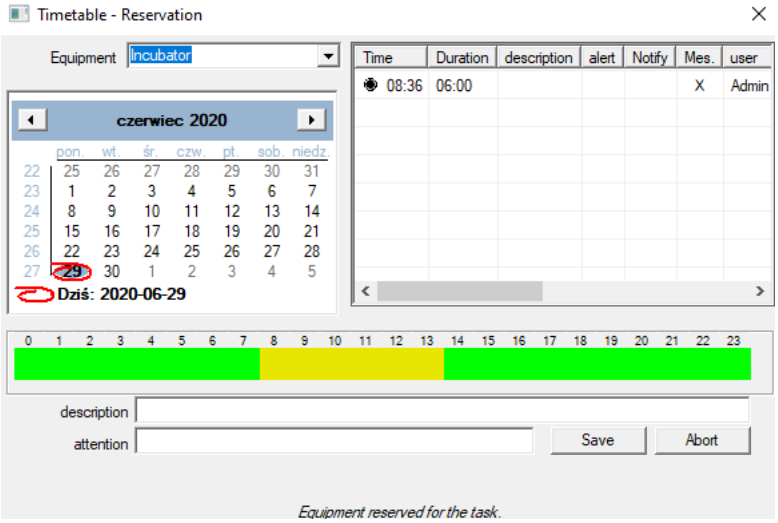


Based on the set of options: computer, biobank, monitoring, etc., selection lists are created.

The "SNMP Manager" option enables the ability to receive "SNMP TRAP" messages.
If, despite enabling, SNMP transmission does not work, then "FireWall" should be checked.
According to the SNMP standard, port 162 is opened.

The [Mother] button allows you to associate a resource with a parent resource.
After clicking on the associated resource, a window with a tree and a list of associations will open.
If the word [Mother] does not respond, you can change it with the right mouse button.

Timetable



The schedule makes it possible to book selected devices from biobank or laboratory resources.
The selection for booking is made when editing the device properties.

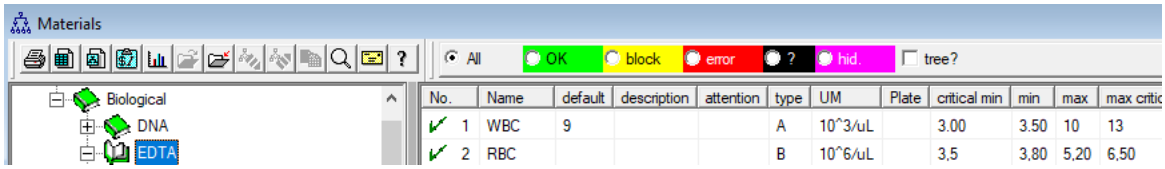
The schedule is available from the device editing level and event editing in the Organizer.

The meaning of colors in the daily plan:
- green - free time
- red - foreign reservation - double click to check whose
- yellow - Your reservation
- magenta - currently determined period using the mouse - you can use the Shift and Ctrl keys

The marked reservation will be effective after clicking on [Save]

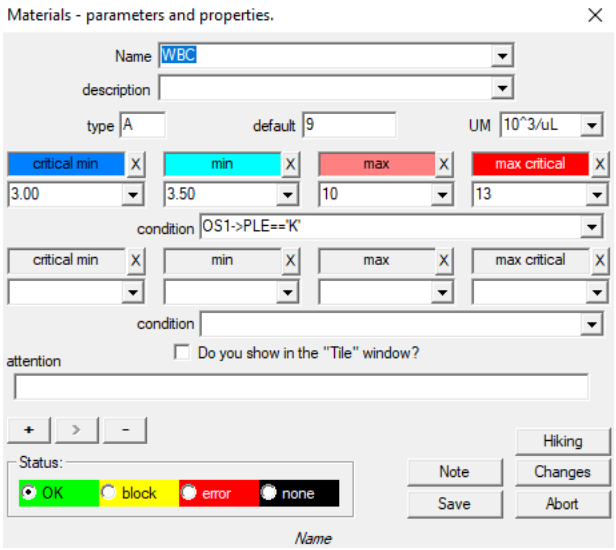
Reservation data is stored in table AL1 and can be used in Reports.

Materials



The introduction of a list of materials streamline edit the properties of a sample in a biobank.
Each material can be assigned parameters and their units of measure.

Materials - edition

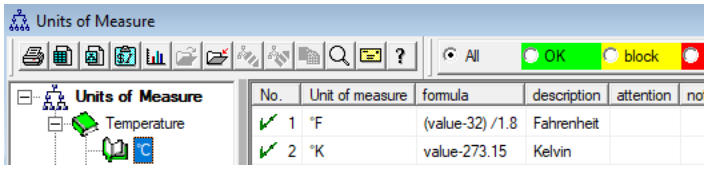


The parameter type is its one-character identifier, which is used in the measurement records.
It should be unique within the material and must not be changed if registration has already taken place anywhere.

The minimum and maximum values result from the norms for the parameter.
After clicking the left mouse button on the label, you can change the color to exceed the parameter value.
Color definitions are used in other modules, e.g. laboratories, biobank, ...

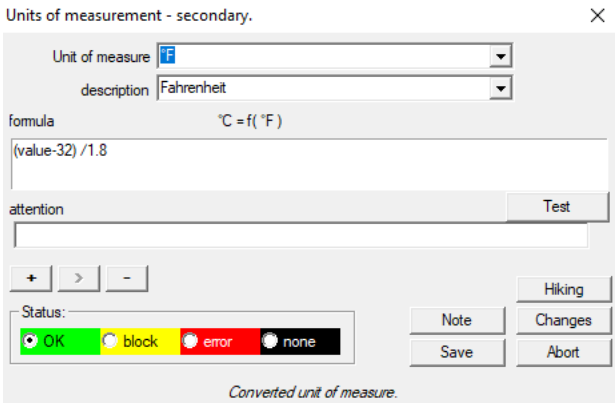
The units of measurement are written using ASCII characters and therefore cannot be used, e.g. 3

Units of Measure



The record of units of measure allows you to create a selection list for all modules with a unit of measure field.
In addition, it contains conversion formulas used for standardizing measurement results.

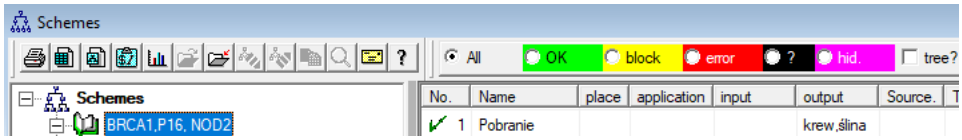
Units of Measure - edition



The unit conversion expression is built according to the syntax used in the other BBMS modules.

The value in the unit of measure entered in this window is substituted for the value "value".
The conversion result should be consistent with one measure of the parent window.

Work flows

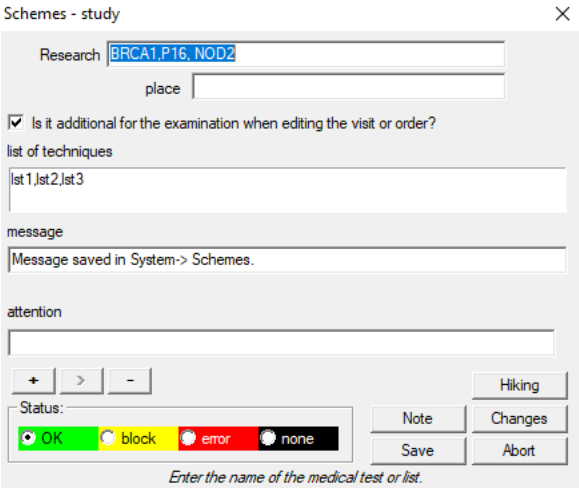


Work flows are used to define tests, necessary materials, and stages.

For example, when creating a BRCA1,P16, NOD2 work flow, you make the software add independent controls to select BRCA, P16, and NOD2 tests with the same material to be sampled and the same stages.

You can find many more examples in test database: TEST.

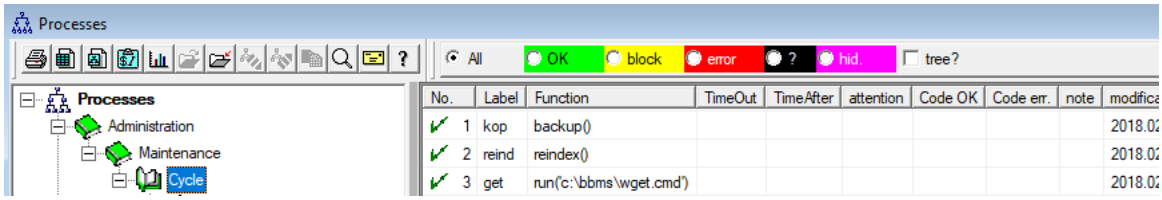
Work flow - Edit



Tests and necessary materials.

Here, you can define types of tests ordered in laboratory and necessary materials.

Processes



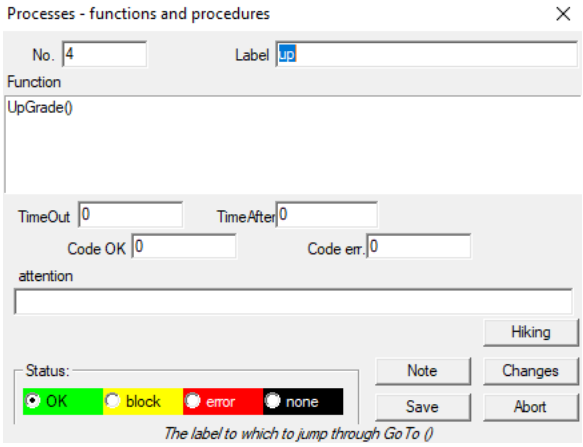
Processes make up a tree:

Group: is an arranging element, it provides a general division (e.g. by task type) of all processes.
Process: a set of executable procedures. A process is not triggered by an event. It just arranges procedures and is made up of independent procedures.
E.g. the Isolation process is made up of multiple procedures triggered by a certain event, e.g. completion of a previous process, scanning, activation of a device, etc.

Procedure: a task triggered by an event or another procedure. Procedures are triggered in Alerts. Procedures are triggered by a Robot.
E.g. file backup procedure for a remote computer involves sequential booting, copying of data, and computer shutdown, if required.

Function: basic step in a procedure.
Each step, execution of a function results in a success or failure.
If there is a success, the software proceeds to the next function. In the case of a failure, the function is repeated so long as to achieve a success or until time out.
.

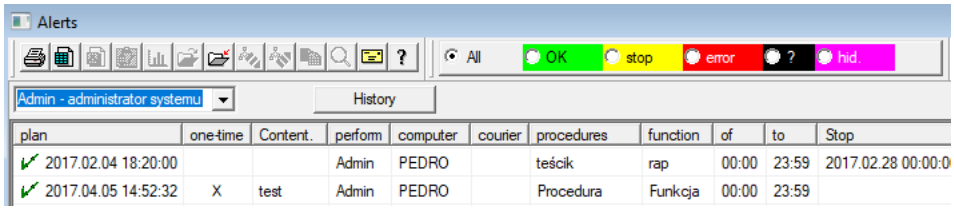
Processes - Edit



You can activate a number of integrated functions in processes.

A single row may contain one or many functions connected with “.or.” or “.and.”
You can use any function of the CLIPPER language (similar to Basic and Pascal).

Task scheduler



Automatic implemantation of commands.

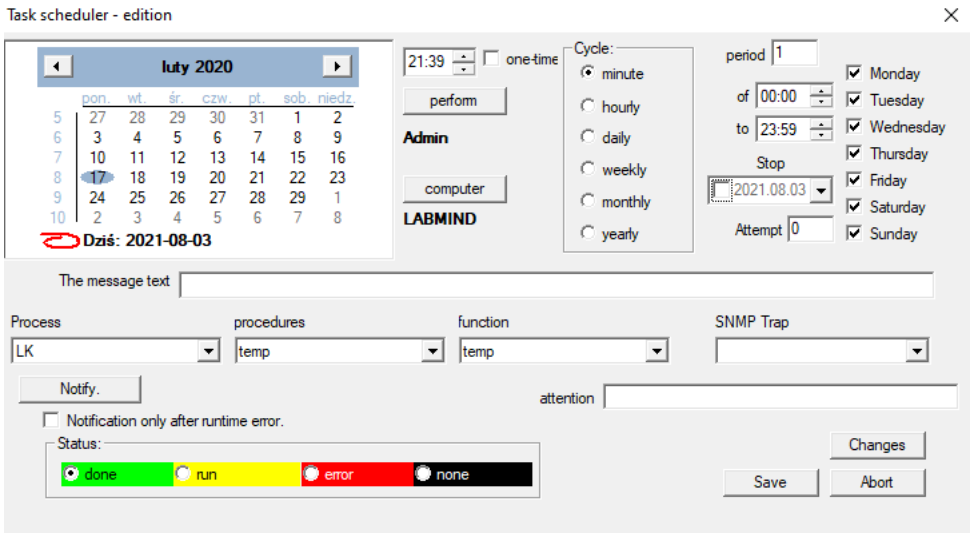
The purpose of the module is to perform a predefined action within a set time.

Alert list item to be performed may be added automatically in another BBMS module or manually.

Each alert has alert author, the user who prepared it and alert recipient, the person for whom it will be run.

These and other pieces of data can be edited.

Task scheduler - edition



Scheduler tasks can be divided into several types:

- one-time or cyclical
- messages or processes
- manual or automatic

While the first kind does not need to be explained, the next ones require a few words of explanation.

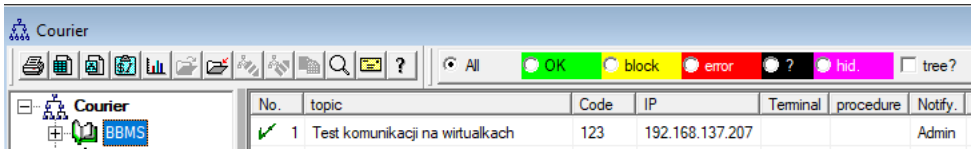
Alerts allow you to display a message at a specified time. The message may be the result of an event or it may be prepared manually. In each alert, you can select time parameters and indicate the person to whom the message is to appear. If the message is to appear after the event, it must be defined using the Courier (this is the notification system within the BBMS system).

The software supports "SNMP TRAP".
You can use these calls to run tasks, and within a sentence, processes / procedures / functions.
In this window, the sender of the "SNMP TRAP" frame is indicated.
The receipt is marked when editing resources, i.e. computer properties.

As a result of some event, the sender sends "SNMP TRAP" to the recipient, and the recipient performs the task that has the sender's address entered.

The mechanism is therefore simple and useful in situations where the task is immediately completed after an event,
e.g. opening the door, exceeding the permissible temperature, etc.

Courier



Event notification.

BMS is an event system. Each action, measurement, etc. is an event that results in a success, a failure, or goes on.

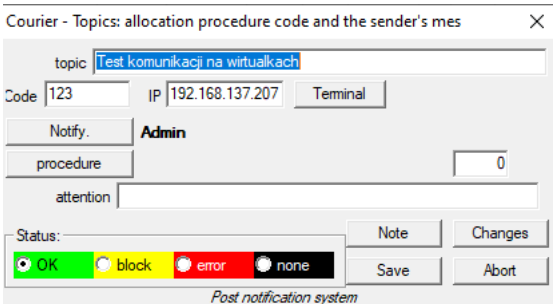
A reaction may be assigned to each event result using the Courier. The procedure is as follows: an event took place; the software retrieves a courier code for success or failure and checks the Courier module.

Here, you can define what happens after a certain code is sent. The reaction may involve activation of a process, message notification, report notification, etc.

The Courier has a list of actions performed after an event.
If an event has no courier code assigned, there is no reaction.
Courier is used as a relay in communication between any two devices in biobank/laboratory and the management system.
Actions are made based on messages.
The Courier is an important solution for biobank and laboratory automation as it facilitates building complex, multitask systems based on event handling.
E-mail notifications work when smtp.bbms.pl server is not blocked and SMS notifications work when SMS gate server is available at 88.199.145.52.
The above-mentioned blocks may be activated on a computer with running BBMS or some traffic control point (access point).

For this reason, please first contact a relevant IT unit in case of problems.

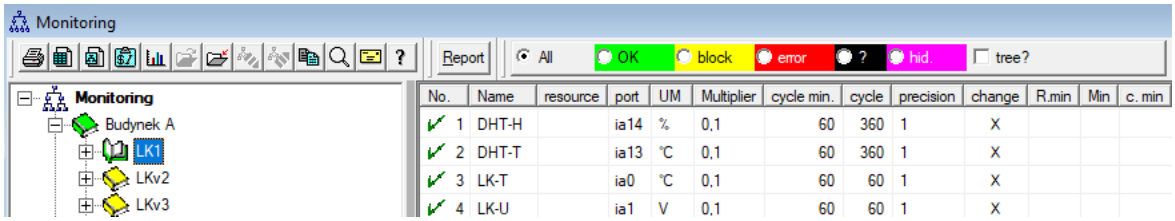
Courier - Edit



Editing Courier parameters depends on the current location in the tree.

In this edit window, you can activate and deactivate fields and each field has a description displayed if you hover over it.
At the “Courier – Subject” tree level, there is the most important part of Courier activity: definition of action after a specific code.

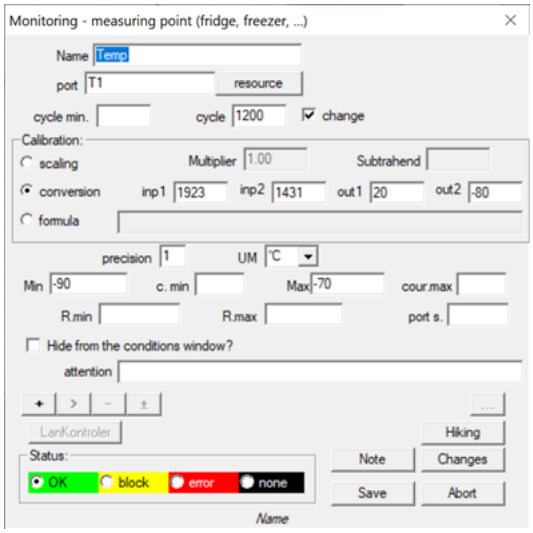
Monitoring



Monitoring of environmental conditions applies to biobank and laboratory elements. Monitored place is strictly defined by indicating a resource, i.e. an element of biobank or laboratory included in the Resources module. The purpose of this module is to work with environmental conditions monitoring devices to acquire all necessary data. Values to be monitored are not predefined. They can be defined by the user. Monitoring can be carried out automatically, using Alerts or manually in this module.

Currently, the software communicates with the LanKontroler (LK) module and Q-MSystem loggers (Q-M). As opposed to other solutions, LK can handle virtually any parameter, not just temperature, depending on sensors used. The following elements are used: temperature sensors, range -200°C to +2200°C; relative humidity; CO2; O2; CO sensors, etc. and actuators such as relays, motors, servos, etc. LK includes a relay to energise a device. It has also digital inputs to connect end switches: freezer door open, laboratory door open, etc.
Q-M is a system for wireless logging of temperature, usually used to monitor ultra low temperature freezers.
In BBMS, data may be acquired manually, automatically, or using the Robot application.

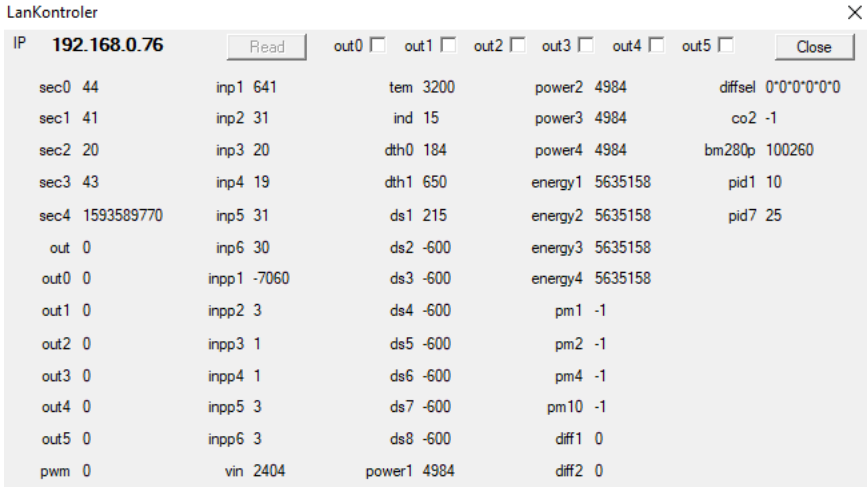
Monitoring - Edit



The most important monitoring data can be found on Monitoring – measuring point (edit window title) tree level.

When you hover your mouse over a form field, its description is displayed.
Electronic documents may be attached to each item.

LanKontroler



The LanKontroler module is an economical solution for monitoring environmental conditions. Can work with up to 6 digital temperature sensors, 1 digital humidity and temperature sensor and several analog sensors plus some digital sensors, e.g. open freezer.
Details:

https://tinycontrol.pl/en/

Permissions

Each user should be identified at software start-up by logging on.

The logon process does not have to be inconvenient (there is a discussion whether or not typing a password is complicated as the software remembers user name).
You can use a scanner and scan a code from an access card.

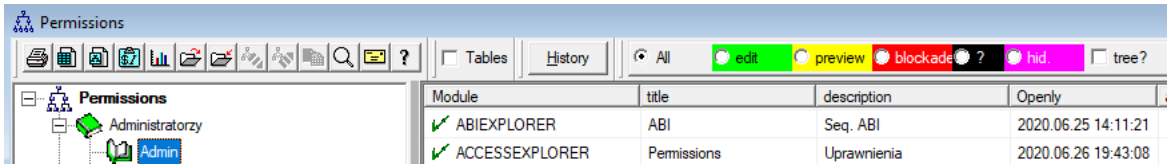
What is important is that a specific (identified) person uses BBMS at any given time.

Then, this person can navigate the software within limitations of their permissions (assigned by the Administrator).

BBMS has a comprehensive permissions system. It can be divided into three groups:
1. permissions in a window/module
2. database permissions: tables and fields
3. context-dependant permissions

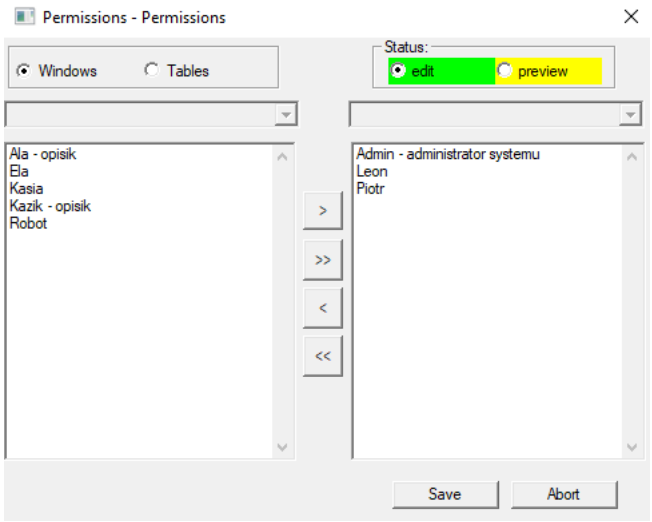
Each BBMS window has a technical name (visible in screen shot in the name column), which is used to verify whether a user has full permissions (preview and edit), preview permissions, or none.

The technical name was introduced due to the multi-lingual interface of BBMS. The technical name is the same in all languages, only window title changes.



Permission to a window/module is decided by item status: green means editing permissions yellow – preview only, and others mean no permissions.

The second group of permissions, permissions to databases, may be assigned in each window by the administrator and the other users can only preview content.
When you click the right mouse button in a window, menu with Permissions is displayed.



Select permissions group by clicking “window” and “table”.
If you select “window”, the permissions are the same as those given in the Permissions module. If you select “table”, database permissions can be edited.

Users in the left field do not have edit or preview permissions. Users in the right field have been granted permissions.

You cannot grant edit permission without granting preview permissions. Editing is a higher-level permission than previewing.

Under the status (edit/preview), there is a table field picklist.
You may disable editing of selected table fields and hide data in selected table fields.

The third group of permissions, context, applies to the current situation or stage of a process.
A number of limitations is applied automatically as this group reduces user permissions.
For example, you cannot change probant in an order if the order was created automatically in the sampling window.

You can reduce editing permissions if you wish by typing TAK value for configuration parameter STABLK.

Activation of this configuration parameter results in disabling of an item with “OK” or “block” status.

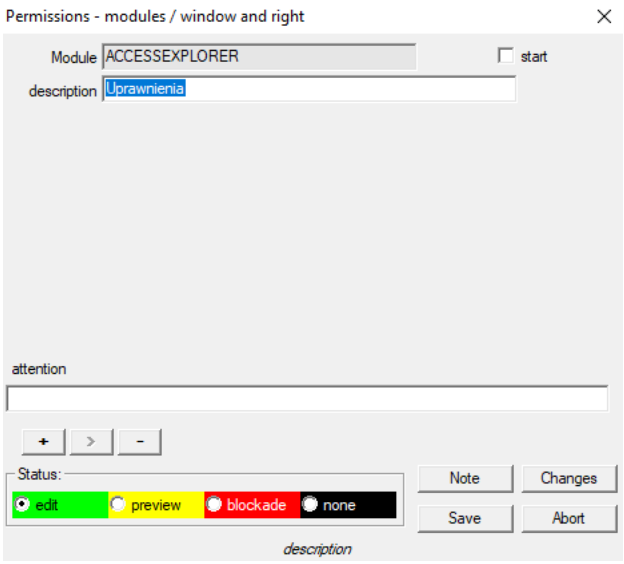
Such reduction of edit permissions may significantly increase protection of data related to completion of a process.

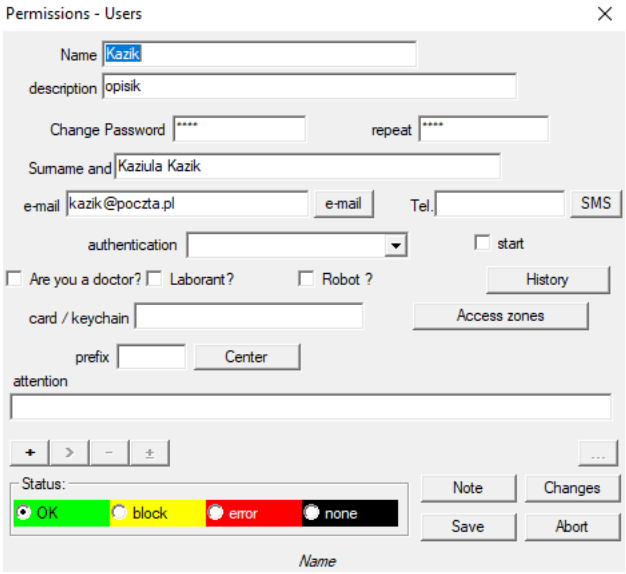
To sum up, comprehensive permissions system offers three groups of permissions: to windows, to database, and context-dependant.
Access to permissions can be gained in the Permissions module or in any window through the context menu.
Context- dependant permissions may be extended by typing TAK in STABLK configuration parameter.

The method and scope of granting permissions depends on you.

Permissions - Edit

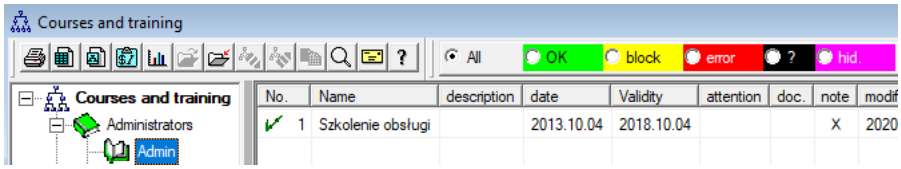
Item status is of particular importance in this module.
Depending on the context, status either gives access or blocks it.





"authentication" - enabling automatic login to BBMS by assigning an operating system or server user to a BBMS user.
"start" - restore the last opened window after BBMS startup.

Training Courses



Training courses, apart from the record keeping aspect, should be strictly related to permissions.

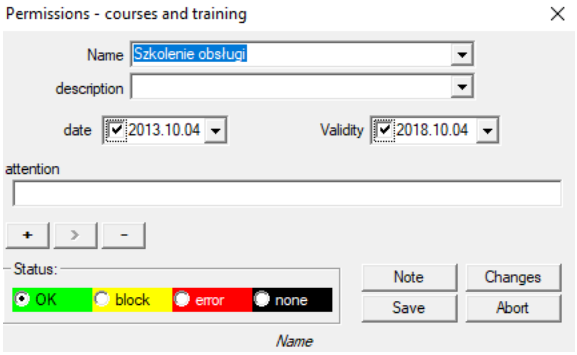
It seems only natural that access to some modules should be granted to users trained in a specific field.

Expiry dates of training certificates can be monitored with reports.

Automatic blockade of access to a specific module after expiry date of a training course is not as necessary to inhibit work.
Training courses may be reported and sent to the person responsible for managing or supervising training.

Such a report may include invalid training certificates and the ones that are close to being invalid; details are easily defined in the report.

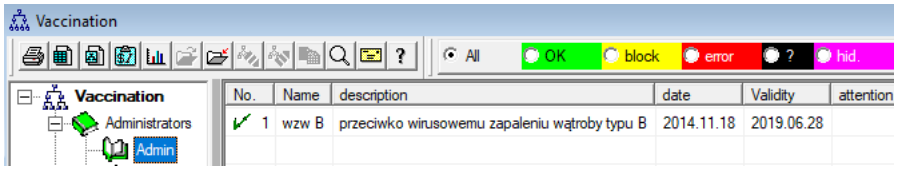
Training Courses - Edit



A training course may be described with a name, date, and expiry date.

In the window, you can clip an electronic document, a training certificate.

Vaccination



Vaccinations, apart from the record keeping aspect, should be strictly related to the ability to perform certain activities, i.e. to permissions.

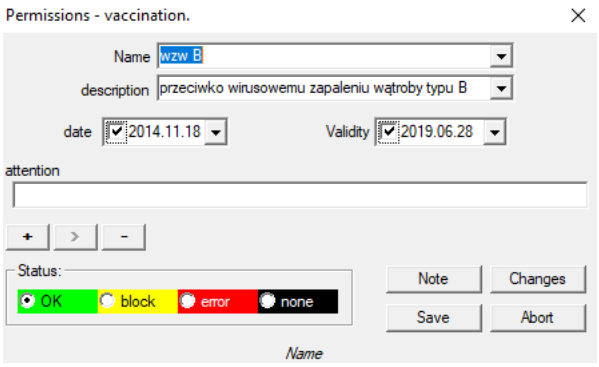
It seems only natural that access to some modules should be granted to vaccinated users.

At first, it may seem over the top but everyone will agree that sampling of biological material should not be done by someone who has not been vaccinated.

Vaccinations may be reported and sent to the person responsible for managing or supervising vaccinations.

Such a report may include overdue vaccinations and the ones that are close to being overdue; details are defined in the report.

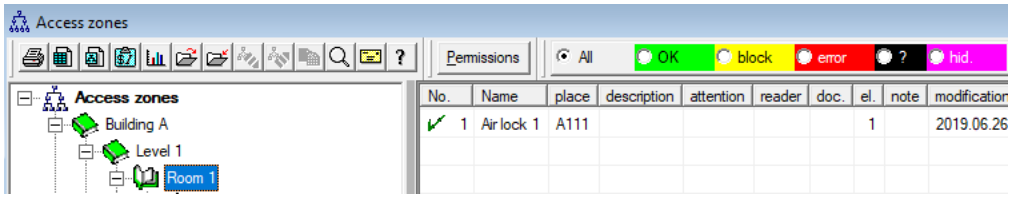
Vaccination - Edit



A vaccination may be described with a name, date, and expiry date.

In this window, you can clip an electronic document, a vaccination certificate.

Access zones



The access zones in the biobank and laboratory can be built in the form of a tree.
If the tree branch corresponds to the access terminal, after selecting it click on [Permissions] and enable access to selected people.

If a person gets access to a zone on some level, he or she automatically gets it to higher levels.

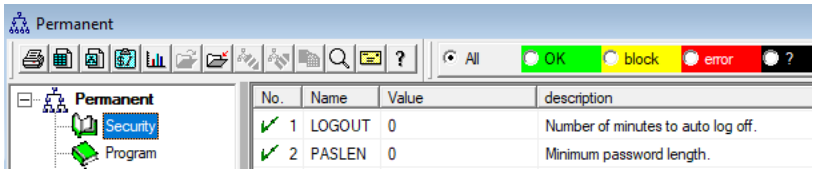
In order to perform full integration with the Access Control System, the access terminal codes should be completed and proximity card codes on the user's pen in the System-> Permissions menu.

The integration consists in sending the prepared data in the BBMS to the Access Control System.

Access zones - edition

Each tree item corresponding to the access terminal (reader) should contain a code compatible with the Access Control System.

Settings



In every software there is a place for some permanent information, some configuration data.

This place has a different name and structure, and the options pane is often used.

The BBMS system includes a list of constants in a dynamic form. Just when a certain constant is needed, the program adds it to the list.

This rule greatly simplified the handling of constants (options), you cannot see hundreds, but only as many as are in use. In addition, you can add new ones and remove unnecessary constants without much problem.

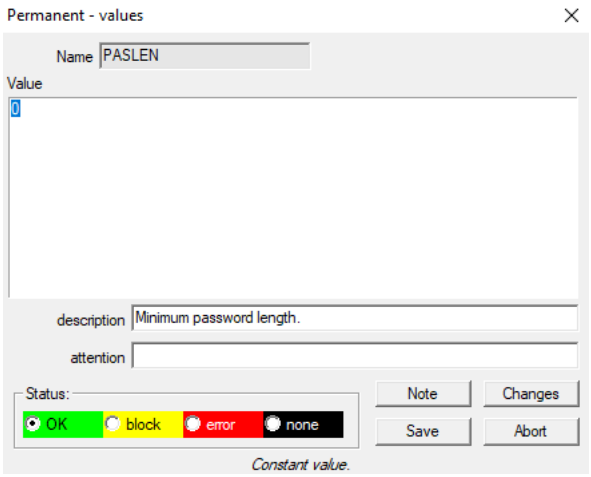
The constants additionally contain definitions of automatic data completions and scripts of barcode printers.
Organizing your scripts requires a few words of description.
Each script has a constant name that corresponds to the printer, eg PZEBRA, PBRADY, PSATO, PGODEX.

You can add a suffix to the name, e.g. 1,2,3 .. a, b, c etc.
and where the script is run, e.g. @ BB6, @ BB5, @OS, etc.

If there are multiple scripts for an installed printer, a selection list will appear.
There will be no scripts on the list which are assigned to other windows with @.

A barcode printer script can contain macro inserts delimited by curly braces {}.
eg for ZEBRA
^ XA
^ FO40.50
^ FD {trim (OS1-> NZ) + "" + OS1-> IM} ^ FS
^ XZ
a macro in a script can genetize a part of the script
^ XA
^ FO40, {iif (OS1-> STA = "1", "50", "60")}
^ FD {trim (OS1-> NZ) + "" + OS1-> IM} ^ FS
^ XZ

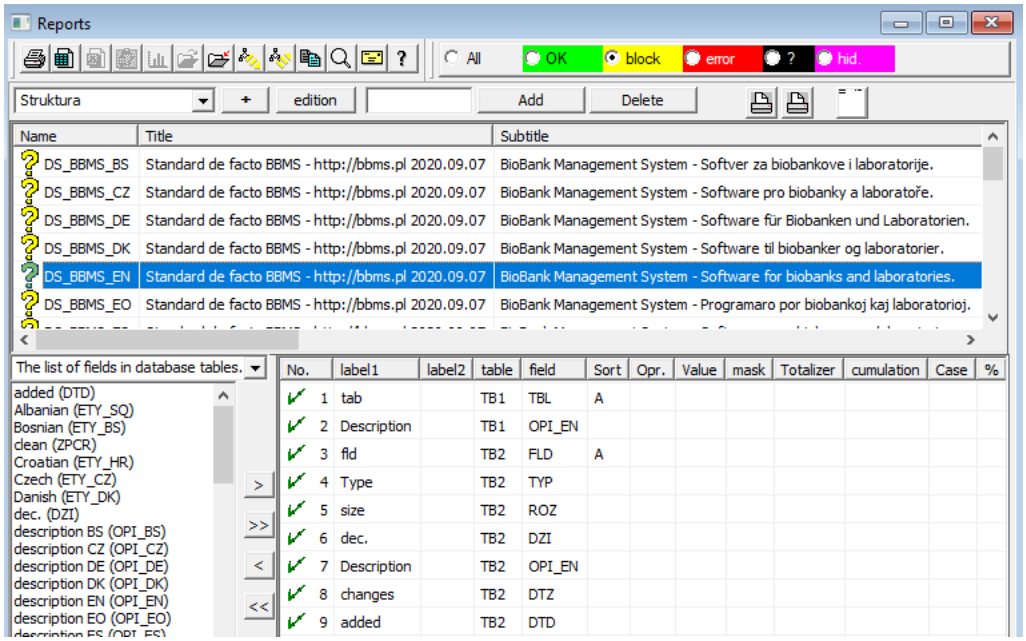
Settings - Edit



Do not modify names of configuration parameters. They are automatically set by the software.

You can modify values of configuration parameters and their descriptions if necessary.

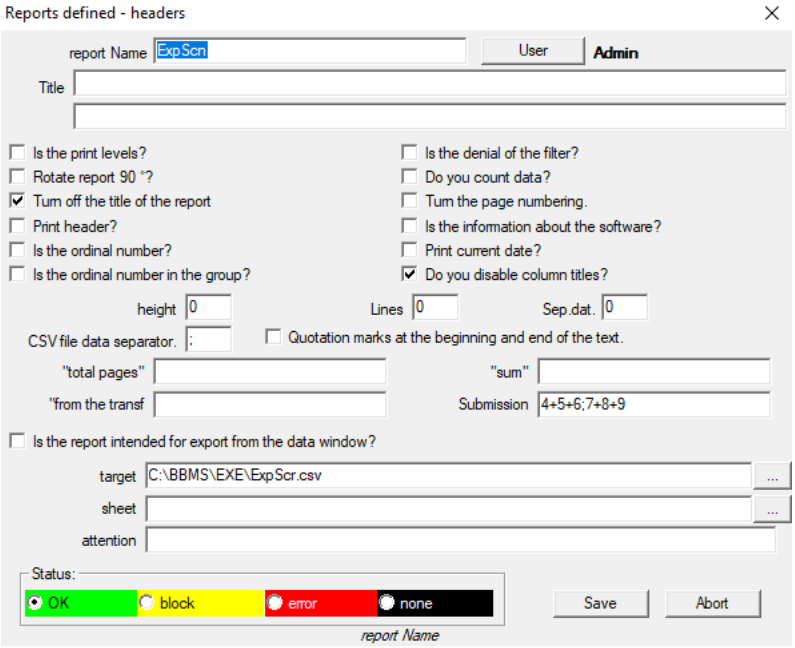
Reports



There is no point in displaying messages as regards expired materials or vaccinations. The number of messages would be so large, it could inhibit any work with the software. The best solution is to generate a report that can be sent to multiple recipients.

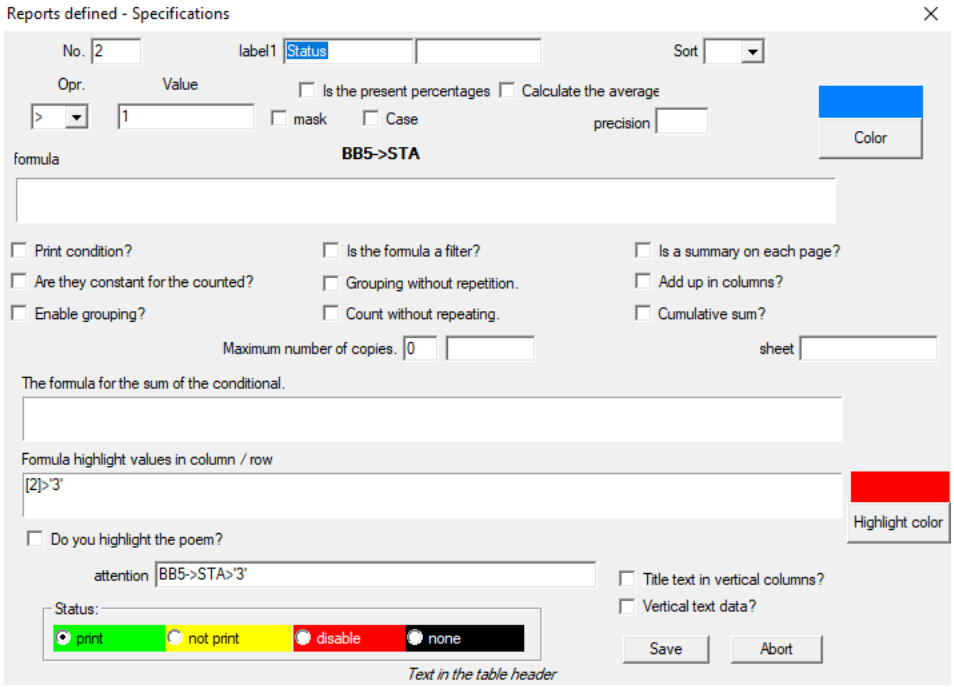
A report is constructed by enabling certain fields and applying filters. The option to send report definitions as an xml file makes the job easier. Biobanks and laboratories may exchange report definitions.

Reports - Edit



Report header parameters – printing, counting, summary mode etc.

Reports - specification



User defined reports are a quick way to extract selected data from software database. Reports are divided into subject areas which are referring to the specific set of database tables. When defining a new report, select the area you are interested in and then typically add a new item and enter report name. The name will be printed next to the subject area. The next stage of defining a new report is to specify the columns from a suggested set displayed in list window. Clicking “>” or “<” includes a field in to the report or excludes it. Report column table facilitates changing header content, blocking print (inserted column may be used only with a filter), defining sorting method, and defining data filtering.

Selection of data for a report is the key element and successful limitation determines report usability. The following operators have been introduced:
“ ” – no operator, filter disabled

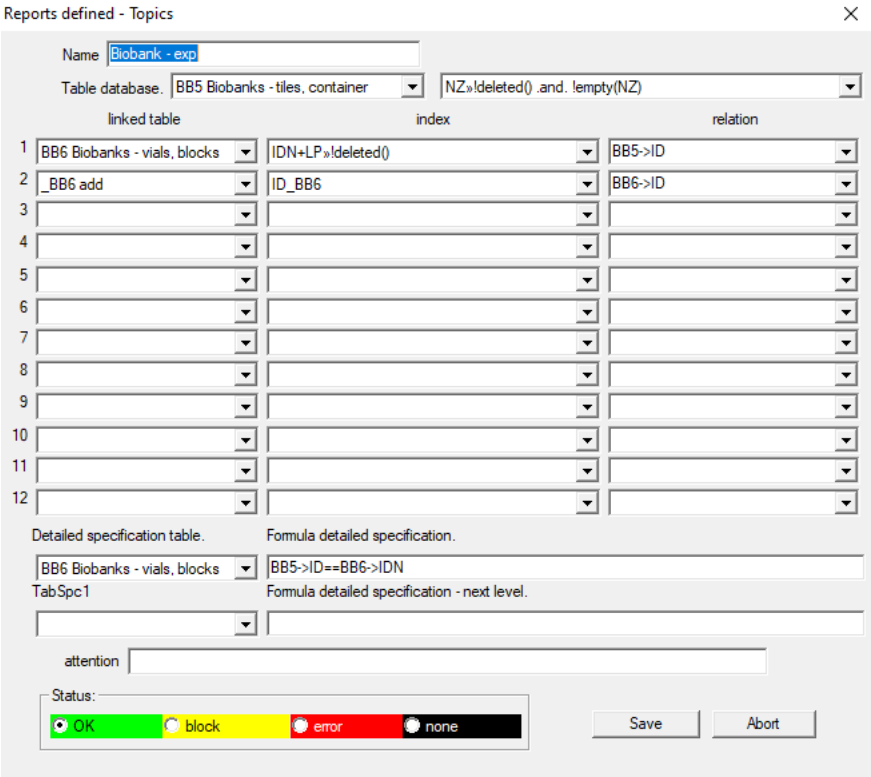
operator	text field	number field	date field
<<	text in the field is included in the value	number over 1000 smaller	date in the field at least a year earlier
<	text is smaller in alphabetical sense	number smaller	date in the field earlier
\	text is smaller or equal in alphabetical sense	number smaller or equal	date in the field earlier or the same
=	texts are equal	both equal	dates equal
#	text different	both different	date different
~	text are similar (mutually inclusive)	values close at 10%	similar dates
/	text is greater or equal in alphabetical sense	number greater or equal	date in the field later or the same
>	text greater in alphabetical sense	number greater	date in the field later
>>	value included in field text	number over 1000 greater	date in the field later over a year

Building a complex filter consists of folding the filter of the conditions for a number of selected fields. We need to know that by default it is assumed that all the conditions, which is used logiczy operator "and". If, however, there is a need to define a filter using the "or" operator, it is sufficient to use the NF field (inverse filter) in the header of the report definition. Checking this box will select the data for the report is defined in the filter is not satisfied.
Next step is to use the known relationship:

! (A and b) = (! A or ! b), where the mark "!" determined negation of the expression.

Formulas may use any basic functions of CLIPPER and VO languages, e.g. the Parameterization function. In the Value column, you can enter the "param" key word to call up a window prompting you to enter parameter value. You can use up to nine different parameters marked with subsequent numbers, e.g. param1, param8, etc.

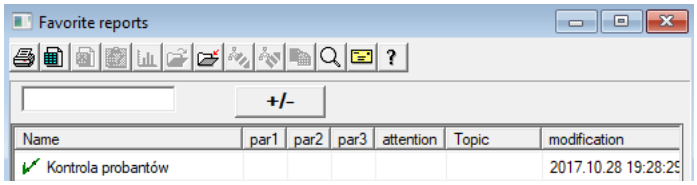
Reports - Subject



In this window, you indicate tables and their relation.

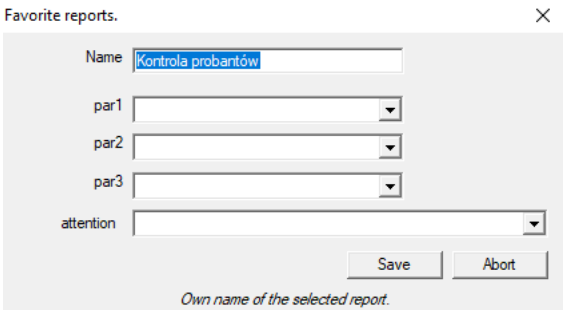
This definition is used when creating a report and executing it.

Favorite reports



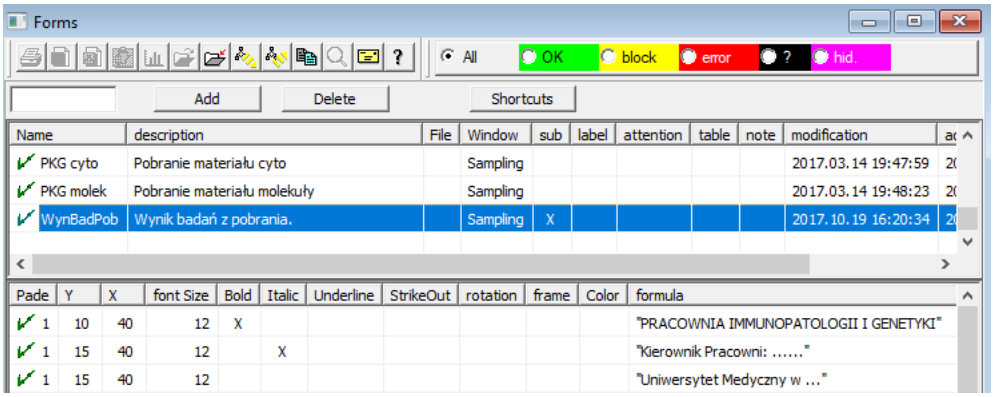
Not everyone needs to know how to prepare a report.
There is a window with favorite reports for everyone :)
The administrator or the report author can change the report properties.

Favorite reports - edition



The fields "par1" to "par3" are used to transfer report parameter values.
They don't have to be filled in, it's just a convenience.
You can insert a question for the parameter value in the report.
Quite simply, if these questions are too tiresome or unnecessary and the report requires a parameter, then enter it here.

Forms

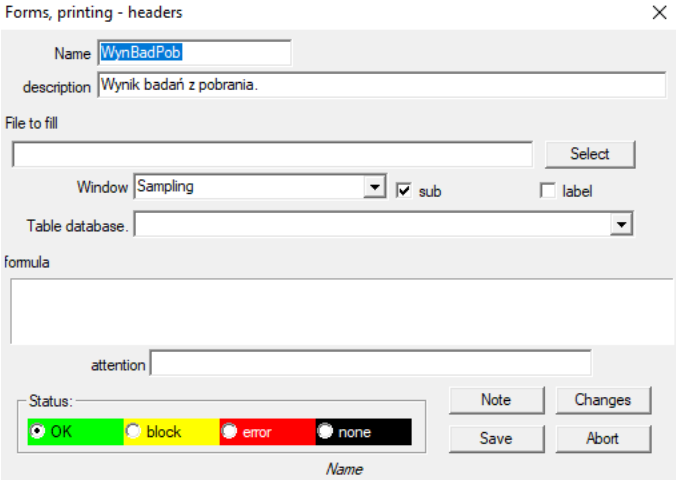


If you need to print a form or questionnaire, you can create a template here.

In addition to selecting location on a print-out and format, you can use a set of functions and operators to gain full access to the database. You can format the data freely.

The list of available functions.

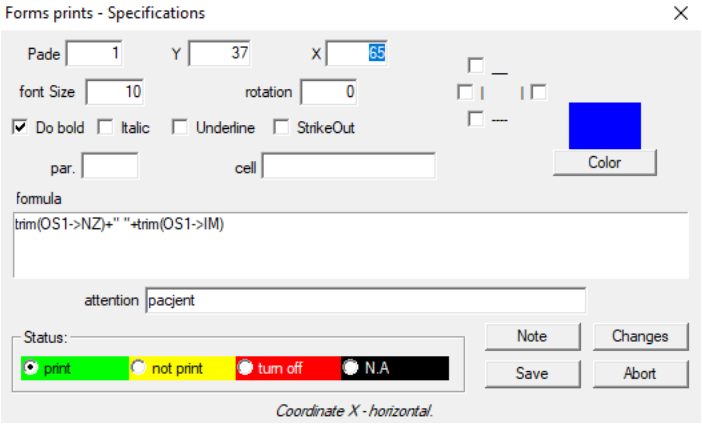
Forms - Edit



Form header data.

Here, you can select the main window of a form.

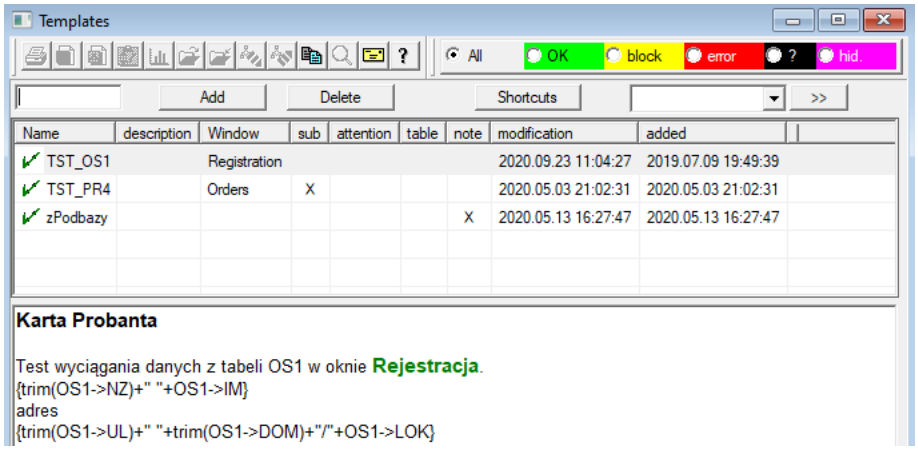
Forms - Specification



In form specification, you can use functions and refer to database fields.
Phrase OS1 ->NZ means read out of data from NZ field of OS 1 table.

Detailed description of database structure can be found in Help -> Tables or DS_BBMS_EN.pdf file.

Templates



Templates allow you to generate documents in RTF format (a standard supported by all rich text editors).
As the document is saved, the software replaces the formula enclosed in curly braces {} with the formula result.
You can use all available functions (e.g. used in forms) and the syntax that allows you to read the database.

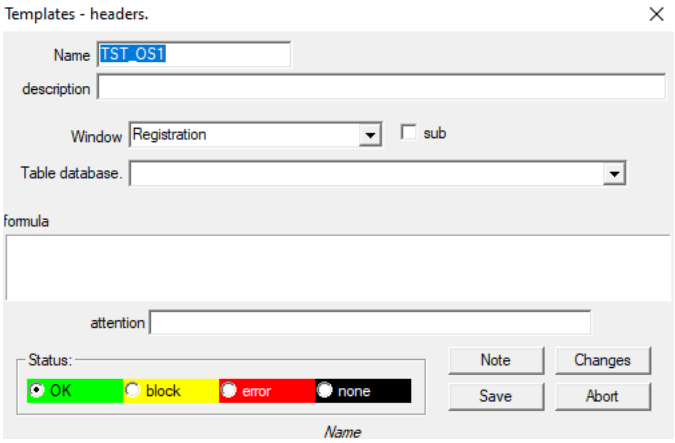
The defined template can be attached to the window, and if there is a tree in the window, the branch table can be pointed to the tree branch.

It is a good practice to prepare the formulas in a notepad and then copy them to the template to avoid hidden RTF encoding inside the formula.

If you have prepared a template in Word or Writer and after loading it has changed the format so that it does not meet your expectations,
then instead of a template, you can enter the path to the template file, e.g. C: \ BBMS \ DBF \ Biobank \ RTF \ Template.rtf

Long formulas can be shortened by using shortcuts.
In the curly brackets enter e.g. {% adr}, and in the window under the [Abbreviations] button, the abbreviation name "adr"
and the text of the formula trim (OS1-> UL) + "" + trim (OS1-> DOM) + "/" + OS1-> LOK
Instead of {trim (OS1-> UL) + "" + trim (OS1-> DOM) + "/" + OS1-> LOK} you can use {% adr},
which significantly improves the legibility of the template.

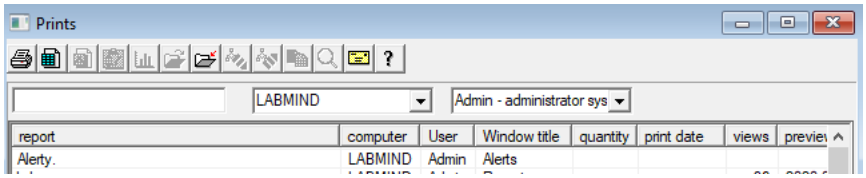
Templates - edition



The data in the "Window" and "Table" fields are used in the template search procedure after clicking on the [Template] button in the window. The defined template can be active only in the selected window and retrieve data from the database tables connected to the window.

"Status" allows you to disable a defined template from use.

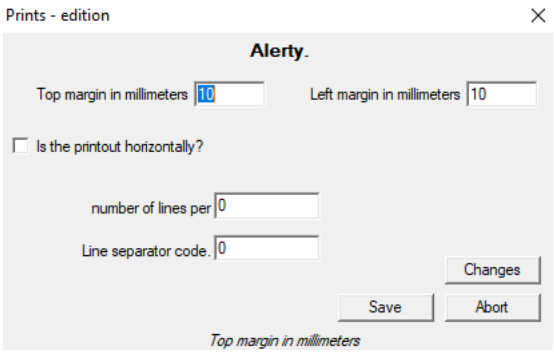
Printouts



This window lists parameters of all printouts.
Some parameters are editable and will be used for next printouts.

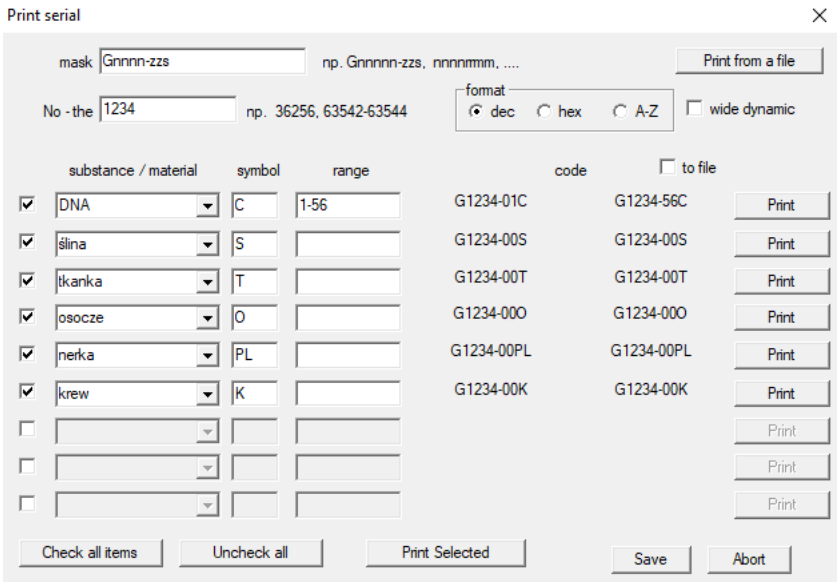
In addition to parameters, the window shows statistical data, number of print and preview operations, and dates.

Printouts - Edit



The window offers basic printing parameters and will be developed.

Print serial



Batch print was introduced to facilitate printing multiple 1D/2D code labels using a mask.

Sample print scripts: (saved in System -> Configuration -> Code printers)

SATO

<ESC>A
<ESC>A104001440
<ESC>H0900<ESC>V0050<ESC>B103100####
<ESC>L0202
<ESC>H0250<ESC>V0050<ESC>WB0####
<ESC>Q1
<ESC>Z

ZEBRA
1D
^XA
^FO40,50
^BY2,2
^B3N,N,90,Y,N
^FD####^FS
^XZ

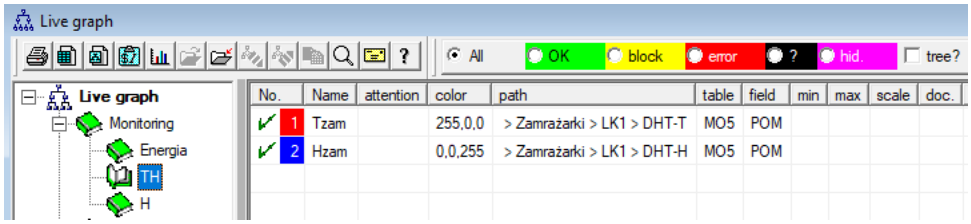
2D printing readable code in two lines near DataMatrix.
^XA
^FO20,40
^BXN,3,200
^FD####^FS
^FO80,40,0
^ADN,24,10
^FD....^FS
^FO80,70,0
^ADN,24,10
^FD....^FS
^XZ

BRADY 2D
m m
J
S l1;0,0,9,13
B 5,5,0,DATAMATRIX,1;####
A 1

where “####” is replaced with a code and “...” is replaced with a part of a code, the other part in the next “...” The use of string “...” lets you print a code in two lines. The condition is that the code must contain a full stop “.” at the breaking point

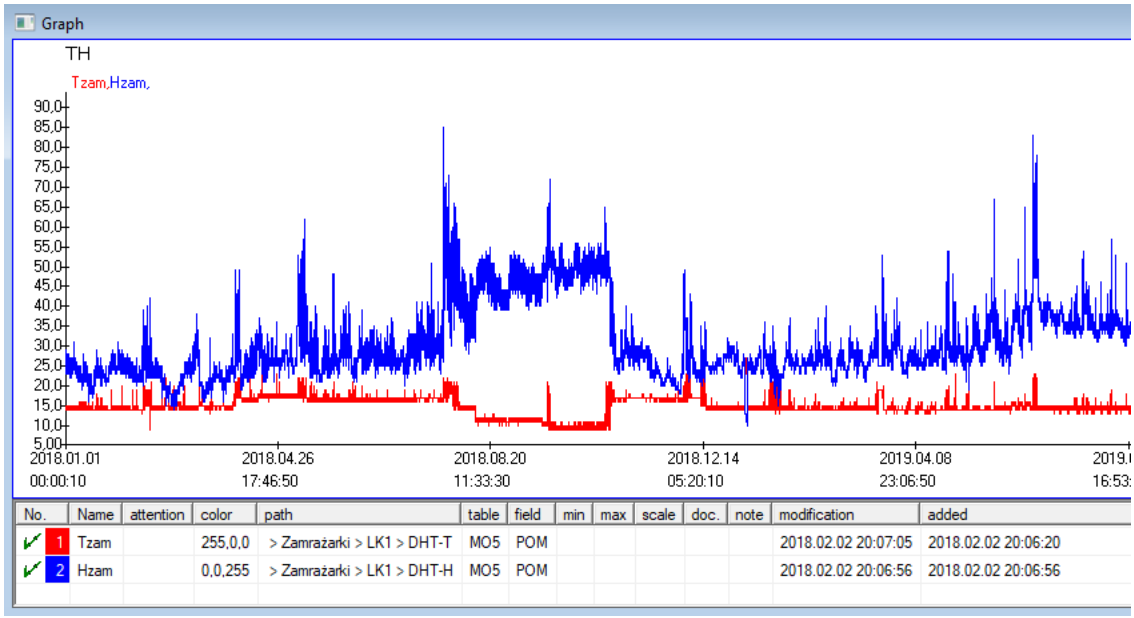
e.g. ABCDEF.CODE123 will be printed in two lines: ABCDEF in one and CODE123 in the other.

Live graph

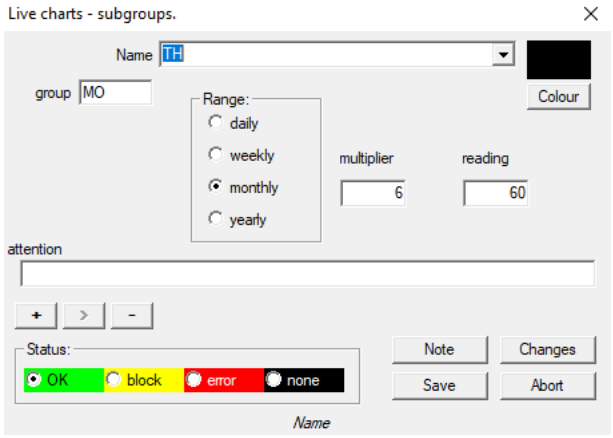


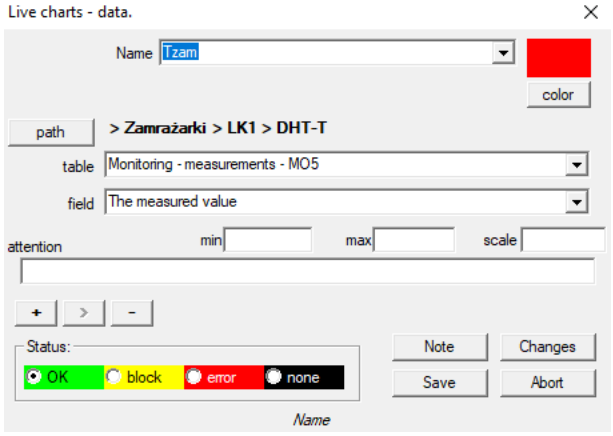
The chart from the window is limited to the data visible in the window.
This limitation turned out to be important for many, and therefore the "Live Chart" solution was created.
The data range is limited only by the chart parameters, and not by the organization of data recording in the tree.

In addition to removing the range limitation, the graph has been periodically refreshed.

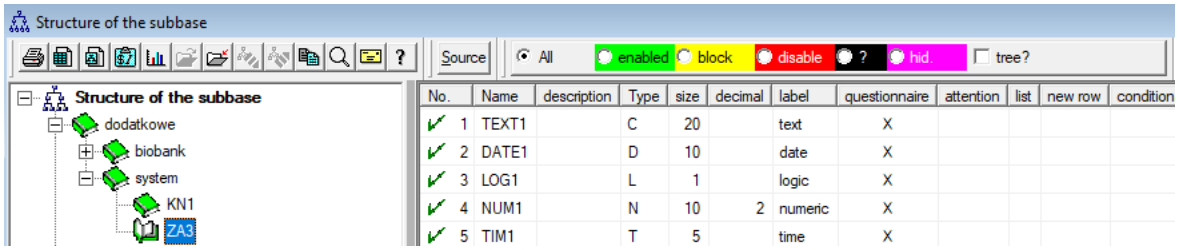


Live graph - edition





Structure of the subbase



Subbase structure definition module includes three levels: domain, group, and tables. You can set domain and group freely.

There are some limitations as regards the other levels, tables and table details:

- table name must be unique in the whole base;

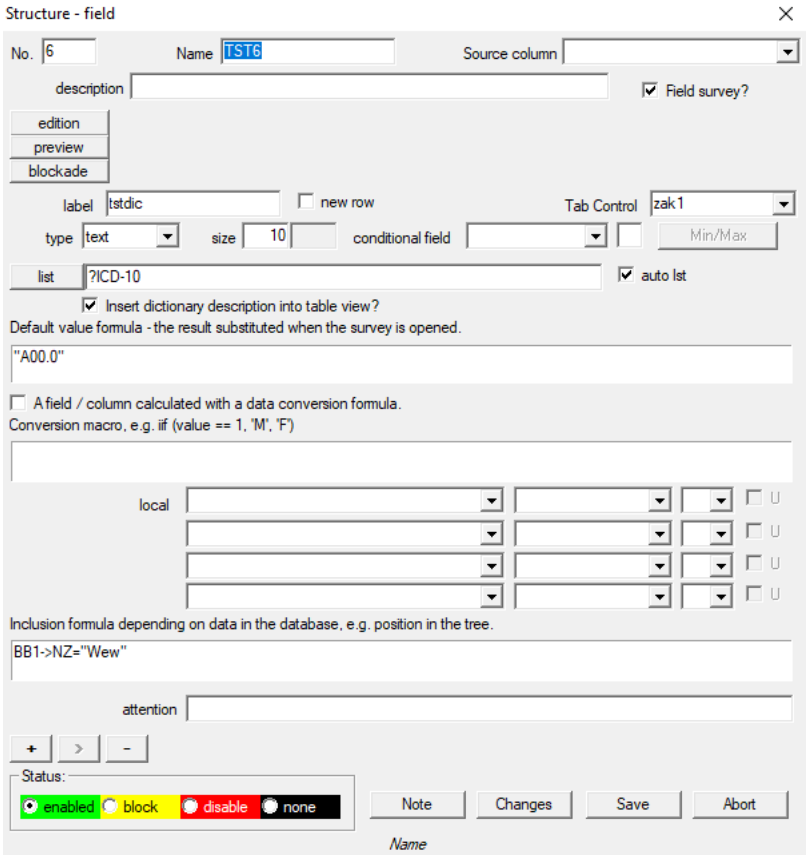
- the name should be short and cannot contain special characters (including space);

- table must include fields (columns);

- each field should have a short name without special characters (including space)

If table structure should represent a source base, click [Source] where you can run a wizard.

Subbase structure - Edit



In order to ensure data storage in a database with any database engine, several rules must be followed:

1. The field name should not be longer than 10 characters, it cannot contain special and diacritical characters and it cannot be a reserved word in the SQL database.
2. The maximum size of the text field is 254 characters, and the maximum size of the numeric field is 12 characters, including the sign separating integers from fractions.
3. The number of fields in the table cannot exceed 254-14 (reserved for BBMS) = 240.

Information from the "Description" field will appear in the Subbases module during editing.
"Label" will be displayed wherever the defined field is used, including windows and reports.
The "List" is used to indicate the values that the text field may contain, while editing, a selection list will be visible.

"Status" allows you to enable the field to be visible in the Subbases module.

Local database fields are used to indicate the save location during import, e.g. from Excel, Calc, ODBC.
It is possible to save the same data to several tables.
You can also save data to different records of the same table by applying an additional indicator (third column).
The "?" means to use the notation in any variant, and eg "1" only in one variant.
eg the import of several 2D codes from one sheet row must be defined so that a data set is necessary for each indicator
in the sheet: code1d, code2d, code1d, code2d, code1d, code2, no_ident
in the definition
code1d: BB5-> NZ
code2d: BB6-> NZ
code1d: BB5-> NZ, 1
code2d: BB6-> NZ, 2
code1d: BB5-> NZ, 3
code2d: BB6-> NZ, 3
nr_ident: BB6-> NR_DNA ,?

The conversion formula in the field properties and the formula after import in the table properties allow you to perform additional tasks.

Sample formula content after importing the record:

! empty (vp ("Sc", trim (_TBL-> DIRECTORY) + "\" + trim (_TBL-> PRNUMBER))) .and. Template ("Slide", vg ("Sc") + "\ slide.yml") .and. mrxs2lnk (vg ("Sc"). "mrxs; \ Data0002.dat; \ Data0003.dat", "BB6" _ TBL-> ID_BB6)

Interpretation:

! Empty (vp ("Sc" trim (_TBL-> PRODUCT) + "\" + trim (_TBL-> NUMER_PRE)))

Save to the "Sc" variable the subdirectory, the name of which is in the TBL table, in the DIRECTORY field and in the PRNUMBER field of the same table

Functions:

empty () - checks if empty
trim () - cuts off the last spaces

Template ("Slide" vg ("Sc") + "\ slide.yml ')

Make a template called "Slide" and save it to the file "slide.yml"

The last command executed after importing the record is

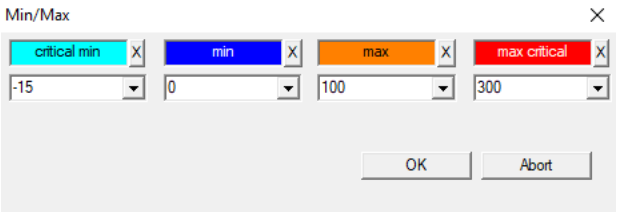
mrxs2lnk (vg ("Sc"). "mrxs; \ Data0002.dat; \ Data0003.dat", "BB6" _ TBL-> ID_BB6)

The function performs two tasks: converting a binary image to jpg and attaching jpg to a sample in the database.

vg ("Sc") - gets the path to the files to be converted
".mrxs; \ Data0002.dat; \ Data0003.dat" - list of files to convert to jpg
"BB6" - the main database table to which the jpg is to be attached

_TBL-> ID_BB6 - identifier of the BB6 table to which the jpg is attached.

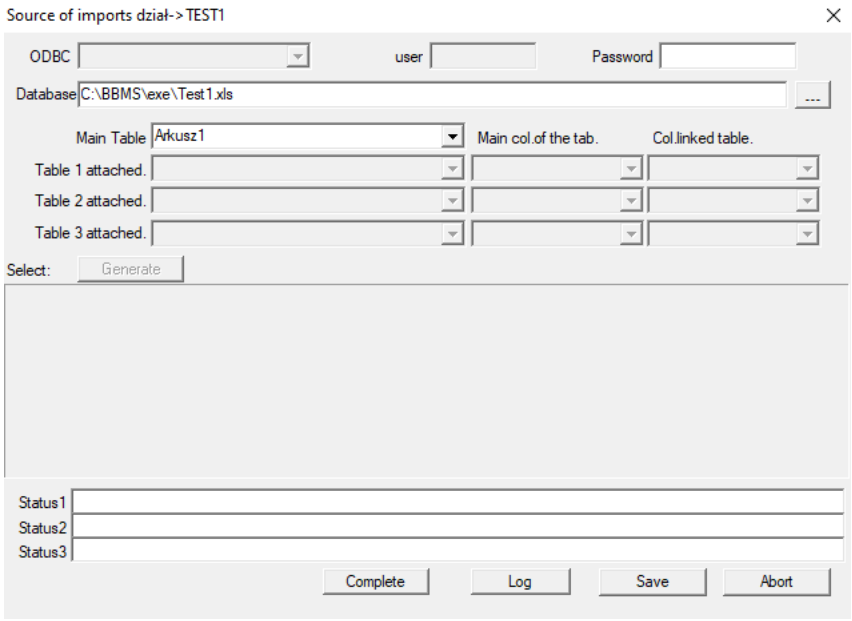
Min/Max



Coloring of labels depending on the size in the data field.

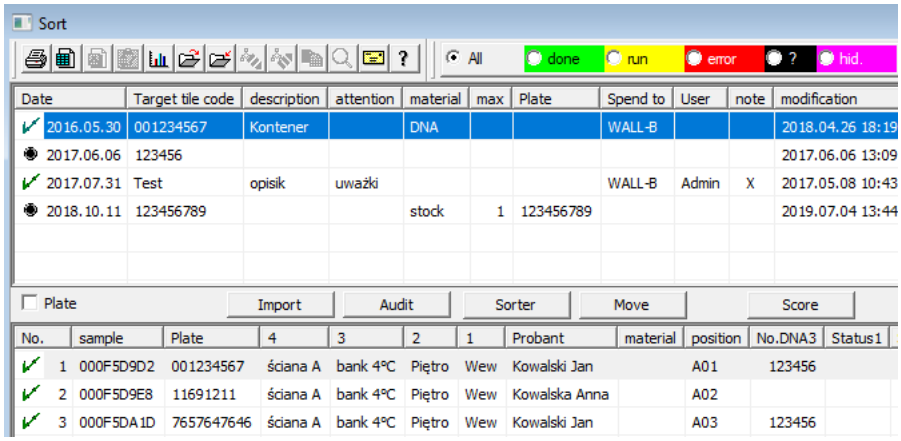
Color change - click with the right mouse button.
Remove a color - click on the [X] button
Change text - click with the left mouse button.

Source of imports



This window is used to define import method for data from an external database to BBMA subbase.

Sort



Extraction of a few vials from multiple plates in the whole biobank.
This is one of the basic activities performed routinely prior to testing a specimen.

Specimens in biobank are stored in a random fashion. Even if someone purposefully orders vials according to some criterion, during preparation phase, the criterion is bound to change. Therefore, it should be assumed that vials are placed randomly in the biobank.

Using definable reports or any other mechanism, e.g. Excel, compose a list of codes to be sorted.

This list of codes in a text file is imported and the software searches vials by codes and generates a list of plates.

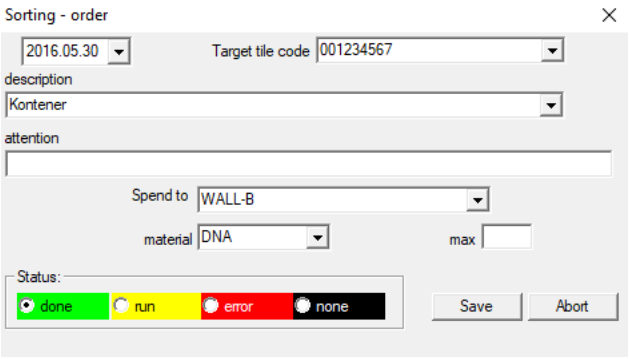
The list of plates may be provided to biobank personnel or transferred to biobank handling robot (e.g. Yeti, Wall-B :))
Then, vials are extracted from plates using specified addresses (optional control using a 2D scanner).
Vial extraction from plates and transfer to other working plates may be done manually or automatically.

After sorting, it is vitally important to scan the plate using Start -> Biobanks -> Plate.

During operation of your biobank (or repository) the issue of where the material is will come up. Beyond any doubt, you should assume that material is “scattered” in multiple plates/boxes.
The window searches all plates/boxes based on test vial list. In practice, the following procedure applies:
Step 1: using reports or any other mechanism create a list of vials, list of 2D codes of vials
Step 2: add new item in the upper table (right mouse button “Add” or the [Ins] key)
Step 3: import the list of 2D codes defined earlier
Step 4: click [Sorter] and find specimen manually or let biobank automated system do it for you.

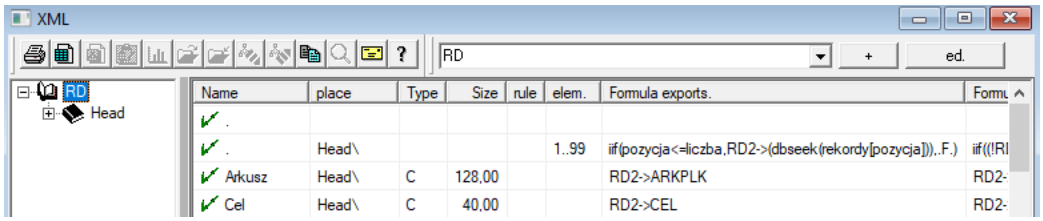
Notes
It may happen that the specimen is already in test facility or just used by another user and you have to wait or contact that user.

Sort - Edit



Enter basic data on sorting.

XML/YML/JSON



XML files let you save data from any database. Some even say that XML is a database.
The whole IT world has finally reached an agreement on data exchange format, we will strive to make this software follow this modern trend. It is a strategy of many developers (and authors) that try to include XML export in their application to use a fixed structure of the XML file. This software lets you freely define XML structure.

Some technical details:
- xml is made of elements and attributes
- elements are defined as a path, e.g. \raport\element
- attributes are defined as a path with indication at the end, e.g. \raport\element\@attribute

This window shows examples with a list of xml file elements and attributes.Data import and export must be preceded with definition of where to put what, so you have to
indicate the table and field the data for the attribute comes from and to which table and field the data from the attribute is to be loaded.
Both processes are different in terms of data flow direction and so some auxiliary variables were required:
Export: item, records, number
Import: value

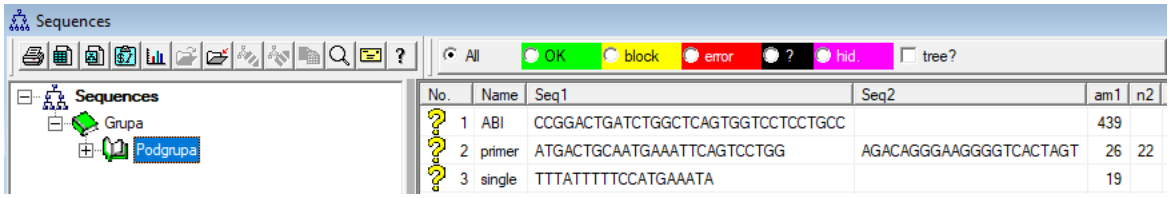
The “item” auxiliary variable contains the item that is being exported. It mas assume values as per XML definition field number, 0–999.
Variables “records” and “number” is a one dimensional table with numbers of multiselected records (in window table,
after pressing [Shift] and clicking on a distant record). The number is the size of the table. An example of use of all the auxiliary variables:

ii f(item<=number,UZ->(dbgoto(records[item])),.F.)

This expression verifies whether the current item can be reached or in other words, whether there is a record that can be accessed with dbgoto(). If so, it moves there, else returns FALSE, which is indicative of completed data export. Functions saved as element formula should return a logical value that means permission to continue he process or no permission.

The “value” variable stores attribute value to be loaded to database table field.

Sequences



FASTA database sequence search tool.

Before activating the search tool, prepare distributed computing environment:

1. Assign as many computers in the local network as possible:

- with 40 GB of free space on hard drive.

- with Windows system.

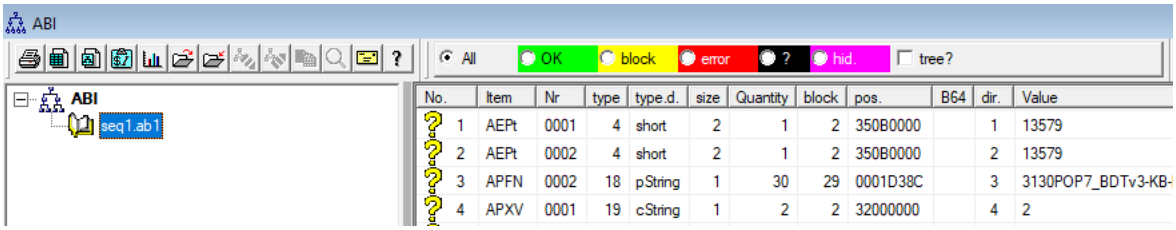
2. Download and unzip http:\\bbms\FASTA.zip on a hard drive (you may switch compression on).

3. Add application shortcut to C:\BBMS\EXE\Agent.exe to Autostart and run it.

Distributed computing is now enabled, including FASTA database search tool.

Sequences - Edit

ABI



Import of sequencer results by *.abi files.
(Applied Biosystems Genetic Analysis Data File Format, ABIF File Format Specification and Sample File Schema)

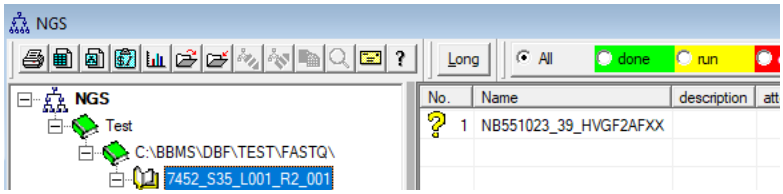
The files store data that can be previewed with special software.
We attempt to change this by enabling you to import this data to the database.

After the data is imported, you can see sequences in a search tool or generate special reports.

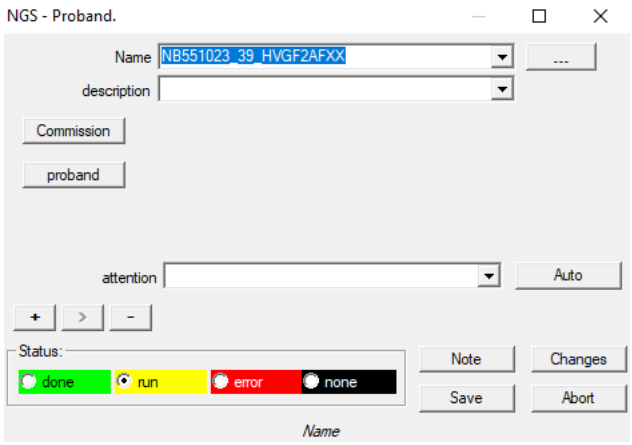
ABI - Edit

Import of sequencer results by *.abi files.

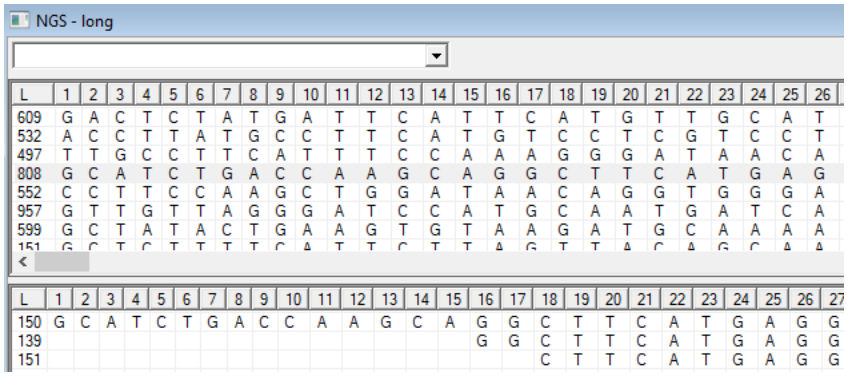
NGS


NGS
Long
All
done
run
NGS
Test
C:\BBMS\DBF\TEST\FASTQ\
7452_S35_L001_R2_001
No.
Name
description
att
1
NB551023_39_HVGF2AFXX

NGS - edition


NGS - Proband.
Name
NB551023_39_HVGF2AFXX
...
description
Commission
proband
attention
Auto
+
>
-
Status:
done
run
error
none
Note
Changes
Save
Abort
Name

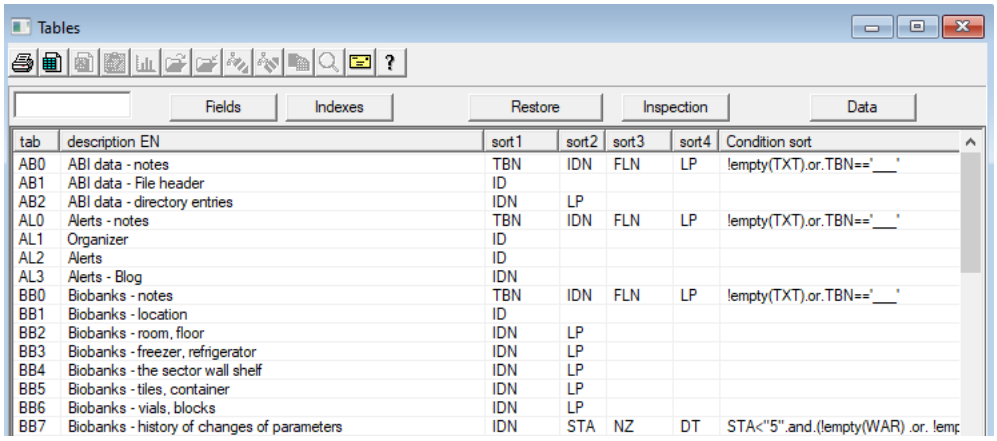
NGS - long



L	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
609	G	A	C	T	C	T	A	T	G	A	T	T	C	A	T	T	C	A	T	G	T	T	G	C	A	T
532	A	C	C	T	T	A	T	G	C	C	T	T	C	A	T	G	T	C	C	T	C	G	T	C	C	T
497	T	T	G	C	C	T	T	C	A	T	T	T	C	C	A	A	A	G	G	G	A	T	A	A	C	A
808	G	C	A	T	C	T	G	A	C	C	A	A	G	C	A	G	G	C	T	T	C	A	T	G	A	G
552	C	C	T	T	C	C	A	A	G	C	T	G	G	A	T	A	A	C	A	G	G	T	G	G	G	A
957	G	T	T	G	T	T	A	G	G	G	A	T	C	C	A	T	G	C	A	A	T	G	A	T	C	A
599	G	C	T	A	T	A	C	T	G	A	A	G	T	G	T	A	A	G	A	T	G	C	A	A	A	A
151	G	C	T	C	T	T	T	T	C	A	T	T	C	T	T	A	G	T	T	A	C	A	G	C	A	A

L	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
150	G	C	A	T	C	T	G	A	C	C	A	A	G	C	A	G	G	C	T	T	C	A	T	G	A	G	G
139																G	G	C	T	T	C	A	T	G	A	G	G
151																		C	T	T	C	A	T	G	A	G	G

Tables



tab	description EN	sort1	sort2	sort3	sort4	Condition sort
AB0	ABI data - notes	TBN	IDN	FLN	LP	!empty(TXT).or.TBN=='___'
AB1	ABI data - File header	ID				
AB2	ABI data - directory entries	IDN	LP			
AL0	Alerts - notes	TBN	IDN	FLN	LP	!empty(TXT).or.TBN=='___'
AL1	Organizer	ID				
AL2	Alerts	ID				
AL3	Alerts - Blog	IDN				
BB0	Biobanks - notes	TBN	IDN	FLN	LP	!empty(TXT).or.TBN=='___'
BB1	Biobanks - location	ID				
BB2	Biobanks - room, floor	IDN	LP			
BB3	Biobanks - freezer, refrigerator	IDN	LP			
BB4	Biobanks - the sector wall shelf	IDN	LP			
BB5	Biobanks - tiles, container	IDN	LP			
BB6	Biobanks - vials, blocks	IDN	LP			
BB7	Biobanks - history of changes of parameters	IDN	STA	NZ	DT	STA<"5".and.(!empty(WAR) .or. !emp

Tables of the primary system database have been defined by BBMS provider and published in a de facto standard.

You can preview the structure so that you can use this information when defining reports, forms, and XML templates.

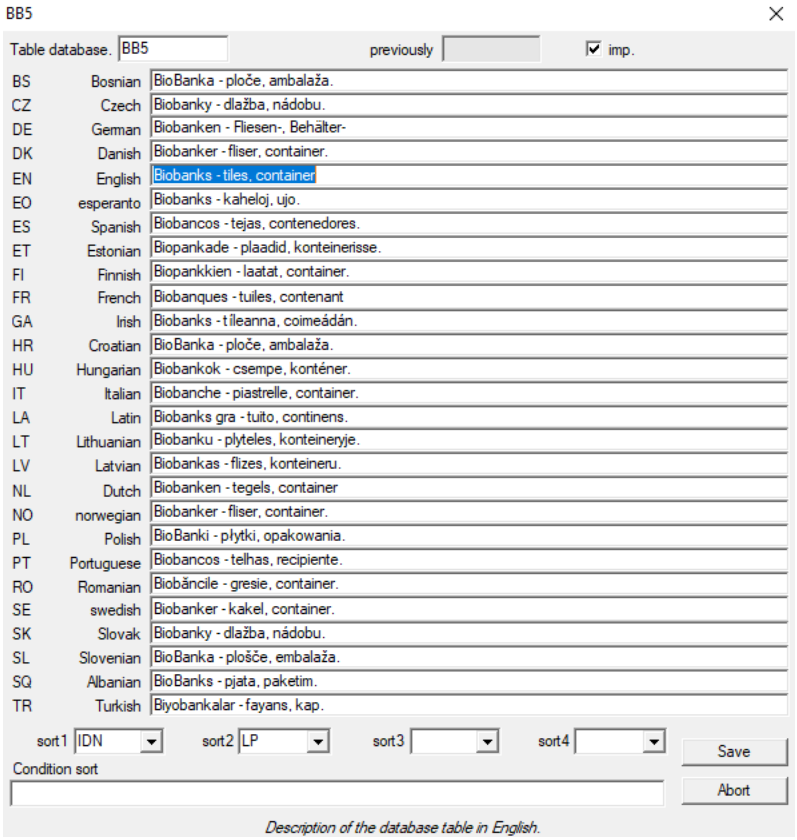
The user may safely change descriptions of tables that are often used in windows.

Any need to expand database structure has to be reported on biobank forum or directly to the system developer.

The window shows [Fields] and [Indexes] buttons to preview and edit details of the selected table.

The [Restore] button restores removed records in the selected table.

Tables - Edit

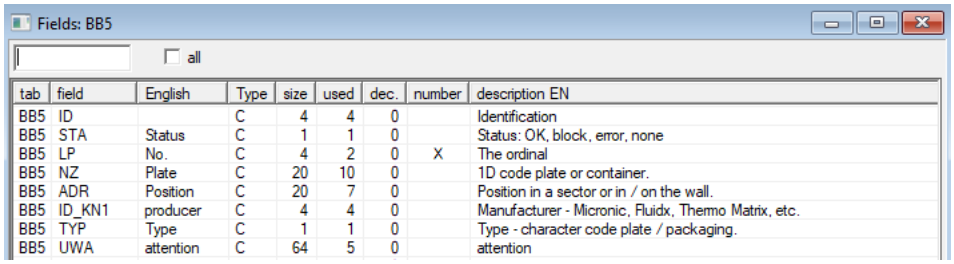


You may change table description.

Description text will be safely stored in the database and will not be changed upon update or installation.
To restore the standard description, remove the custom one.

Descriptions are often displayed in BBMS windows so they should reflect table content.

Fields



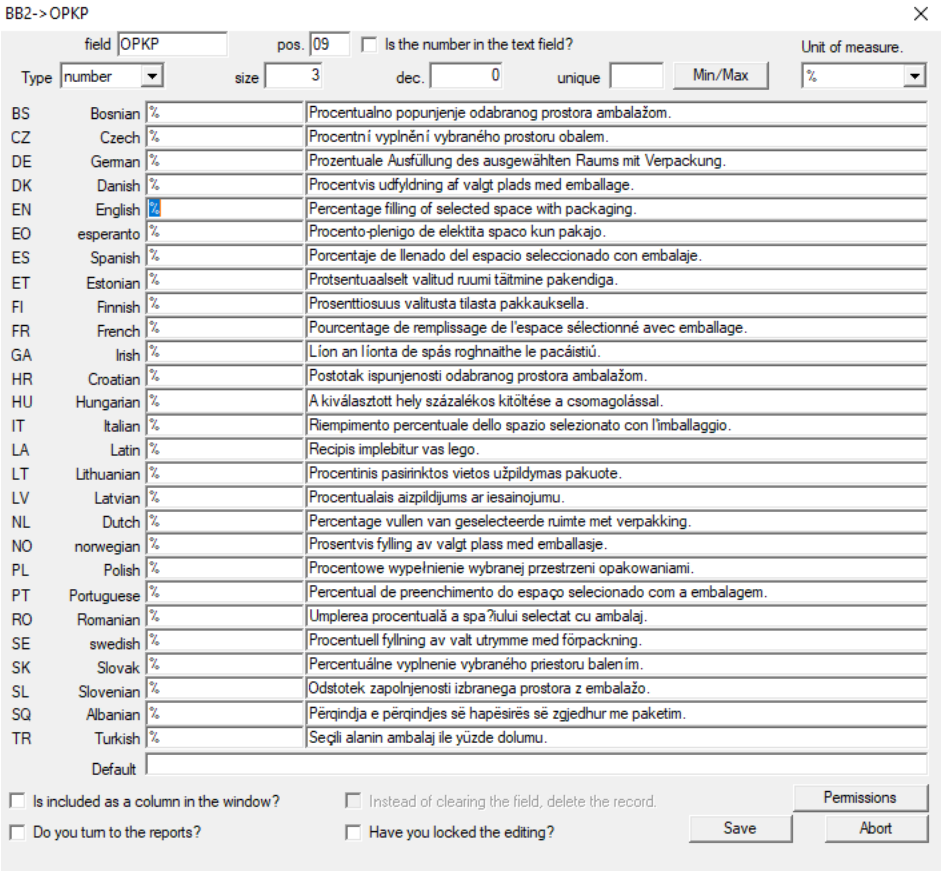
tab	field	English	Type	size	used	dec.	number	description EN
BB5	ID		C	4	4	0		Identification
BB5	STA	Status	C	1	1	0		Status: OK, block, error, none
BB5	LP	No.	C	4	2	0	X	The ordinal
BB5	NZ	Plate	C	20	10	0		1D code plate or container.
BB5	ADR	Position	C	20	7	0		Position in a sector or in / on the wall.
BB5	ID_KN1	producer	C	4	4	0		Manufacturer - Micronic, Fluidx, Thermo Matrix, etc.
BB5	TYP	Type	C	1	1	0		Type - character code plate / packaging.
BB5	UWA	attention	C	64	5	0		attention

Fields or table columns are the basic component of database structure. Each field has properties that can be checked here.

The user may change field labels and descriptions. This data is displayed in all windows.

Changes in the other parameters are made by the developer and distributed to all BBMS users.
This makes the database follow the standard.

Fields - Edit

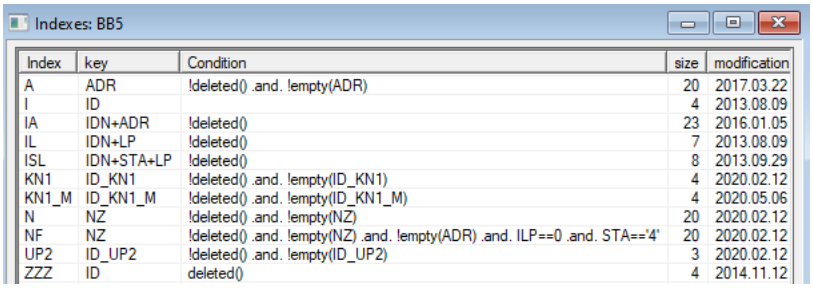


Here, you can change labels and descriptions of fields (columns) of database tables.
Labels are displayed in every window as column titles, labels for editable fields, or titles of other controls.

Field description is displayed in a tooltip or on the status bar when hovering or editing a control.

For fields, where you select an option, as in STA, description is interpreted as a label for individual options.

Indexes


Indexes: BB5

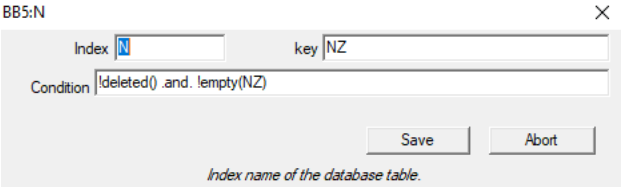
Index	key	Condition	size	modification
A	ADR	!deleted() .and. !empty(ADR)	20	2017.03.22
I	ID		4	2013.08.09
IA	IDN+ADR	!deleted()	23	2016.01.05
IL	IDN+LP	!deleted()	7	2013.08.09
ISL	IDN+STA+LP	!deleted()	8	2013.09.29
KN1	ID_KN1	!deleted() .and. !empty(ID_KN1)	4	2020.02.12
KN1_M	ID_KN1_M	!deleted() .and. !empty(ID_KN1_M)	4	2020.05.06
N	NZ	!deleted() .and. !empty(NZ)	20	2020.02.12
NF	NZ	!deleted() .and. !empty(NZ) .and. !empty(ADR) .and. ILP==0 .and. STA=='4'	20	2020.02.12
UP2	ID_UP2	!deleted() .and. !empty(ID_UP2)	3	2020.02.12
ZZZ	ID	deleted()	4	2014.11.12

Indexes provide information on sorting in accordance with a defined principle.

Indexes significantly enhance database performance.

System list includes the primary key, filtering, and handling items selected to be removed.

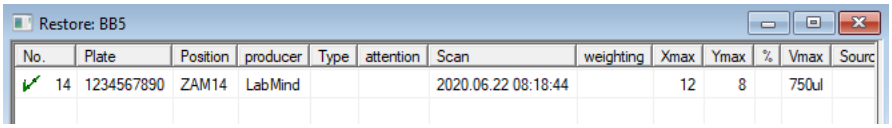
Indexes - Edit



Sorry, you can not change anything here.

If for some reason you need an index, for example to create reports quicker, report it on the forum or directly to software developer.

Restore



Data is deleted in stages.

The first stage involves assigning the item to be removed the “hidden” status. Using status filter, you can display all hidden items. Changing the status, “bringing item back” from hidden is simple and requires editing permissions only.

If a hidden item is removed, the situation is more serious as it is marked for physical removal. Such an item is not visible, cannot be found in any module or report.

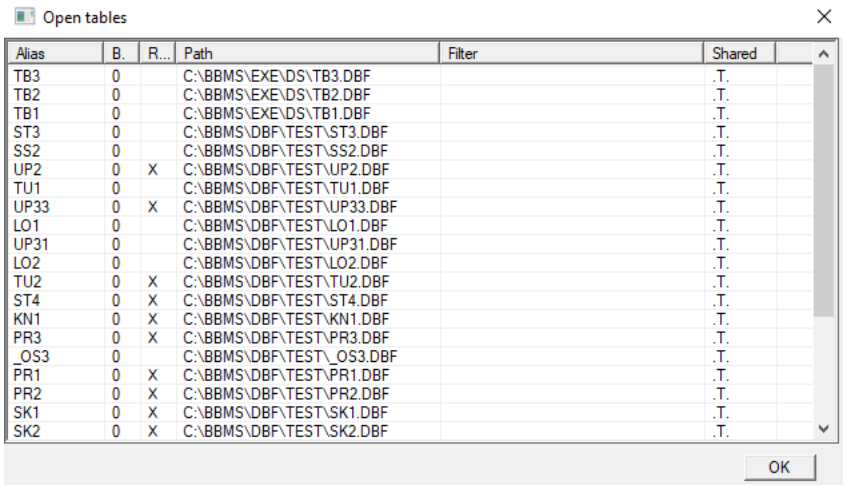
It may happen that an item is removed by accident so we implemented an option for the “admin” user to restore it.

The window opened with the [Restore] button (Help -> Tables) displays the data that can be restored. Just double click the item with the left mouse button.

Note!

Restoration data will not be stored forever, only until the table is packed, which happens during database reindexing.

Open tables



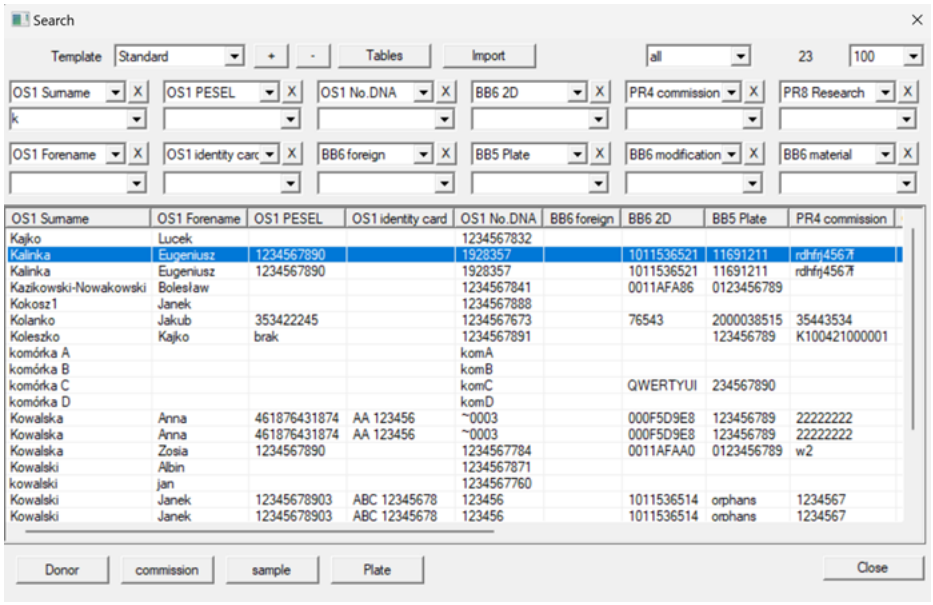
The list of open tables is useful for administrators.

Each computer or server has a limit of open files
(open table means opening a minimum of 2 files, data and index).

For this reason, BBMS limits the number of open windows or "tries" to open files in read-only mode.

If you occasionally receive an error message,
then you need to check the number of files opened on the server and take specific steps to increase the limit.

Search



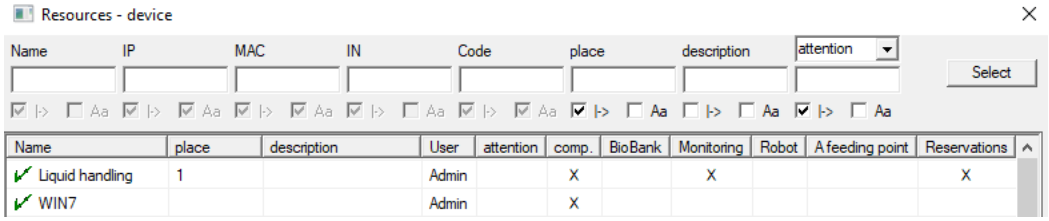
The universal search engine is available in many BBMS system modules (magnifying glass) and menu->Help.

Data is collected in the form of a list based on texts entered into the search fields.
The user has search templates at his disposal, which means he can create any scenarios.
The search field can be any field in the database that has an index.
The program suggests a list of possible fields based on the defined list of tables under the [Tables] button.
There are no longer any restrictions regarding columns and the user can freely build a list of columns using the "Columns" option in the context menu.

From the window you can print and export to a spreadsheet (context menu - right-click on the table).

Attention !
Each user and each window has its own set of templates.
Templates can be imported from another user or from the BBMS distribution by selecting from the list of users themselves.

Contextual search engine

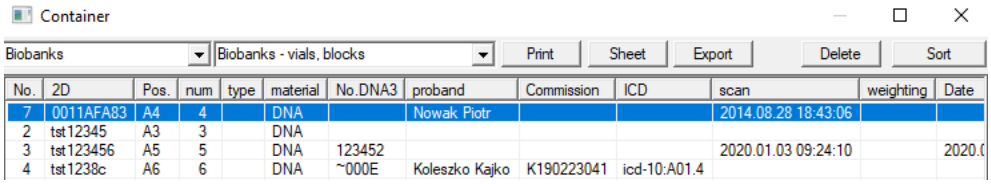


The contextual search engine works in windows not related to samples and orders, and when choosing the code from the dictionary.
Search fields are created automatically based on the list of indexed table fields and the list of columns in the window.
Indexed fields can be searched by matching from the beginning of the text ("| ->"), and others according to your needs.
Often, the index is case-sensitive, which forces you to block the selection of this match ("Aa").

Therefore:
"| ->" - means matching from the beginning of the text
"Aa" - means distinguishing between uppercase and lowercase letters

If the number of search fields is too small, the last field with a selection list will be used. The software automatically builds a list of fields with appropriate matching options.

Container

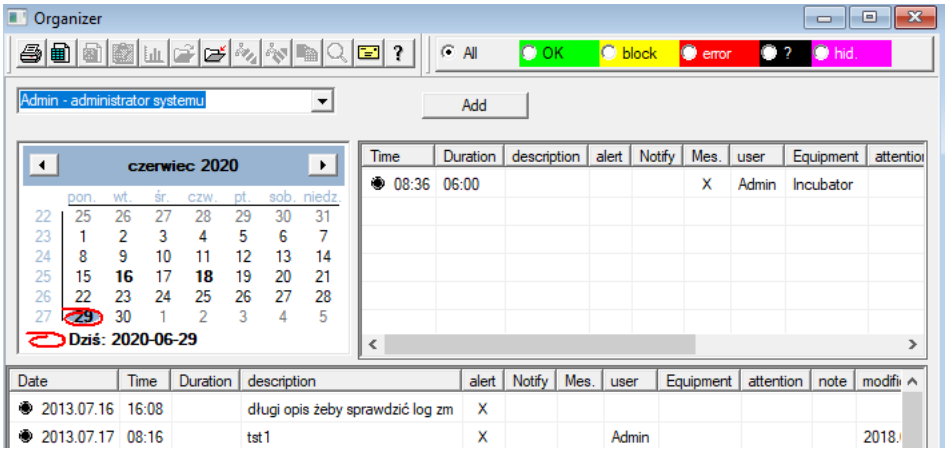


The Container is used to store data from windows, e.g. when performing a search.

Just hover the cursor over an item on any list and press [Space] to save the data to the Container.

In the same window, when you press [Ctrl] + [Space], the Container window is opened and it displays selected data from this window with data from the selected tree if any.
When moving data to the Container, the counter on the right hand side of the status bar is updated.

Organiser

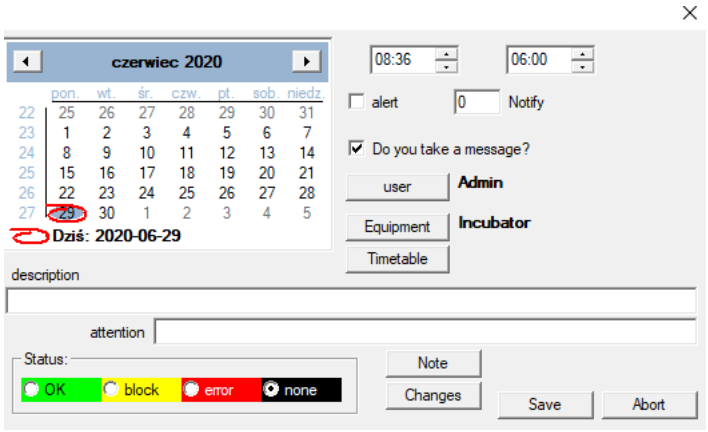


Organiser is a simple Personal Information Manager (PIM) for BBMS users.

The purpose of the Organiser is to order chronologically tasks to be performed and notify others.

Organiser's tasks: note to remember and notify others. Today, we seem to have to note many things on sticky notes.
The Organiser replaces these notes. Just enter one event and it will multiply and alert you when the time to act comes.

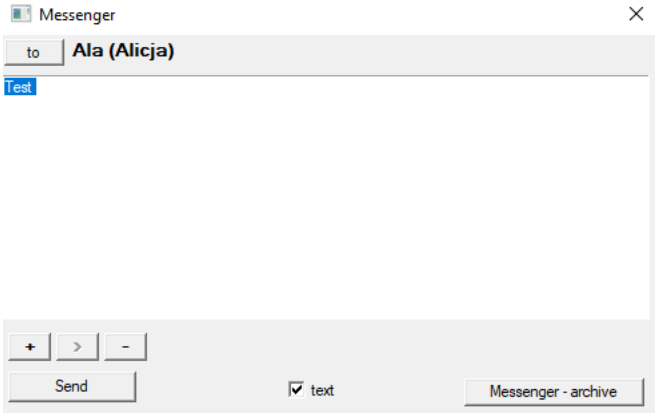
Organizer - Edit



The most important Organiser item parameters are: date, time, description, and status.

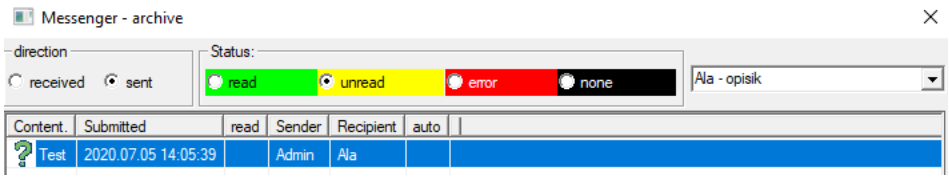
Status specifies whether the item has been done or waits to be completed.

Messenger



Messenger allows communication between users within the application BBMS.
After a message is sent, it is stored in the database and when the recipient is available, the message is displayed.

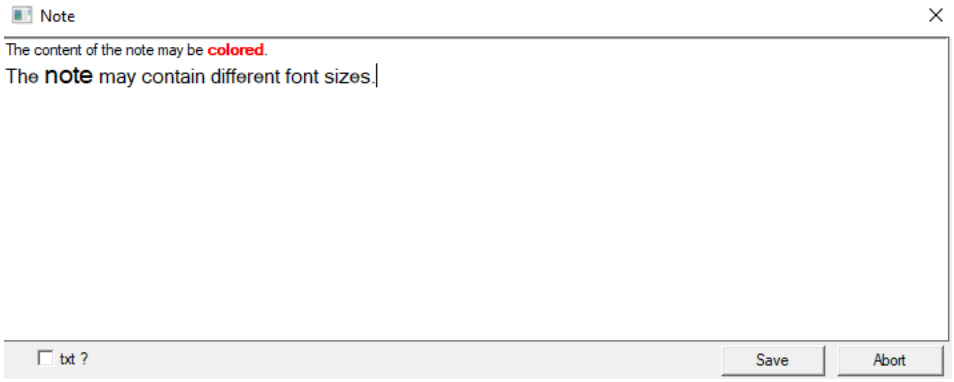
Messenger - Archive



Sometimes it is necessary to preview communication history, which can be done here.

Thanks to sender, recipient, and status filters, browsing should be easy.

Note



The note can contain any textual information.
The content of the note can be formatted by changing the font and its properties.

All commands are available in the context menu opened with the right mouse button.

Checking the "txt?" will save the text as unformatted (plain TXT document),
and unchecking this box as "RTF", that is, with all formatting information (as an RTF document).

Functions

Examples of application functions are defined in the final reports, forms and formulas XML.
The functions can be used wherever possible to build a formula, which in addition to the above processes primarily :)

The list of available functions:
and (value, arg1, arg2, ... arg10) - perform operations with the operator ".and." value = arg1.and.warto¶ć = arg2.and. .and.warto¶ć = arg10 at (<Searchmode> <text>) - returns the position <Searchmode> in <text> Occurs (<Searchmode> <text>) - returns the number of appearances <Searchmode> in <text> Date2Text (<data>, <space>) - similarly as above only the separators are removed, e.g.. Date2Text ("2007.06.28", 2) -> 2007 06 28

dtoc (<date>) - converts the date to text

FileSeek (cFile, cCol, cSearch) - returns the truth if the searched text appears in the column indicated.

iif (<condition>, <true>, <false>) - it returns <true> or <false> depending on the fulfillment of <condition>

Instr (<Searchmode> <text>) - if <text> is <Searchmode> it returns true

int (<number>) - rounded to an integer by cutting

number (<nieznany_typ>) - returns the number of

ltrim (<text>) - cut spaces from the left side of the text

lower (<text>) - returns all the letters as small

Month (<date> | <data_tekstowa> | <nr_miesiaca>) - returns the month in words

or (value, arg1, arg2, ... arg10) - perform operations with the operator ".or." value = arg1.or.warto¶ć = arg2.or. .or.warto¶ć = arg10
for example. or (LSTSKL-> TYPE, 'E', 'R', 'W'), which is identical to LSTSKL-> TYPE == 'E'.or.LSTSKL-> TYPE ==' R'.or.LSTSKL -> TYPE == 'W'

OstatniDzien (<period>) - returns the last day of the month

Pic (<command>) - insert a print image, for example. 1D barcode
Example: Pic ('Zint.exe o' + trim (OS4-> CODE) + '. jpeg d' + trim (OS4-> CODE))
and such. for the next code: iif (OS4 -> (dbskip (1)), Pic ('Zint.exe o' + trim (OS4-> CODE) + '. jpeg d' + trim (OS4-> CODE)), "")

Ask (<tre¶ć_pytania>, <domy¶lna_warto¶ć>) - a query about the value of

round (<number>, <tenth>) - rounded mathematically to <tenth> decimal places (dot)

rtrim (<text>) - cut space on the right side of the text

p (<number>, <length>, <after the dot>) - returns the text

StrTran (<text> <searched> [<zamien_na>] [<nr_znaku_poczatku>] [<nr_znaku_konca>]) - returns <text> with exchanged with <searched> on <zamien_na>, you can not use other parameters

text (<whatever>) - replaces <anything> on the text without leading and trailing spaces

Text2Text (<something>, <space>) - treats returns <something> as text with characters separated by spaces in the amount of <ODST>, for example. Text2Text (100.5) -> 1 0 0

upper (<text>) - returns all the letters as large

val (<text>) - returns the number of

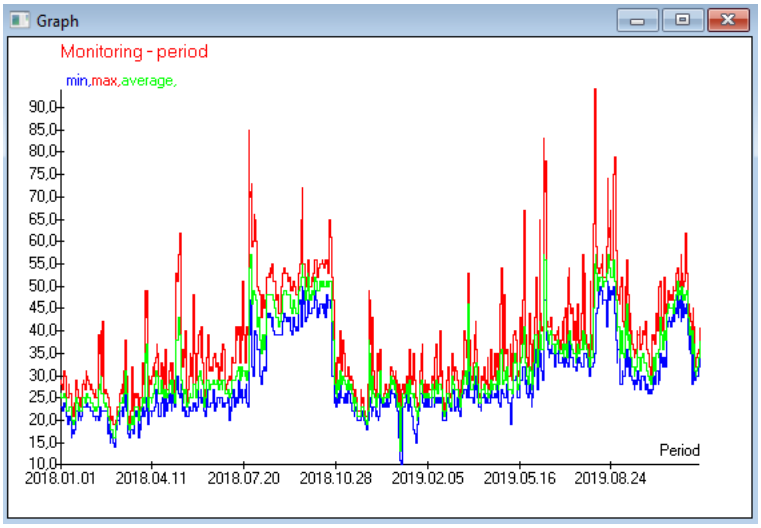
State (<kod_pocztowy>) - returns the name of the province

VG (<variable>) - read variable

VP (<variable>, <value>) - write to the variable

VS (<variable>, <value>) - write to the variable sum of the variable and the value of

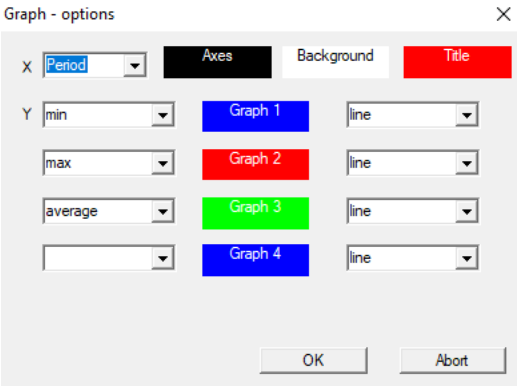
Graph



On the substitution of the indicated data and appearance options, BBMS creates a graph automatically, selecting the X and Y ranges, respectively. If the ranges of the indicated data differ significantly, the graph will not be legible.

Choose the colors so that the indicated data do not coincide :)

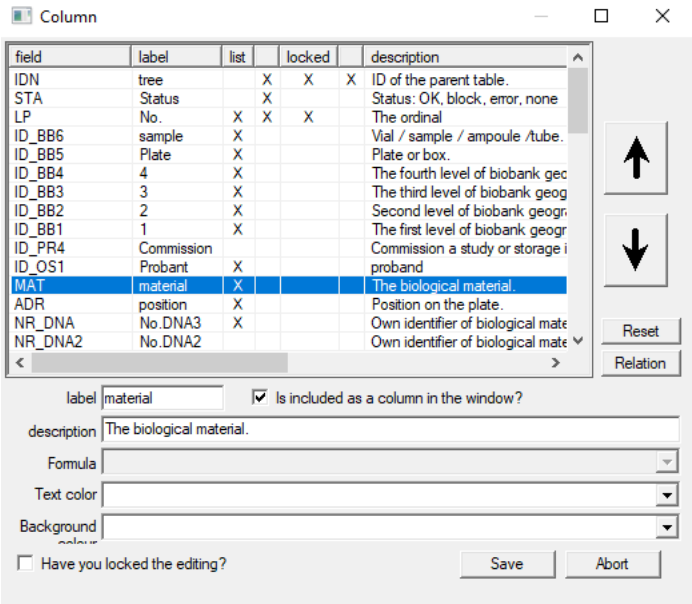
Graph - options



In order to generate a chart, you need to provide the necessary parameters, the X and Y data source and the appearance.

Not every window contains data that can be plotted.

Column

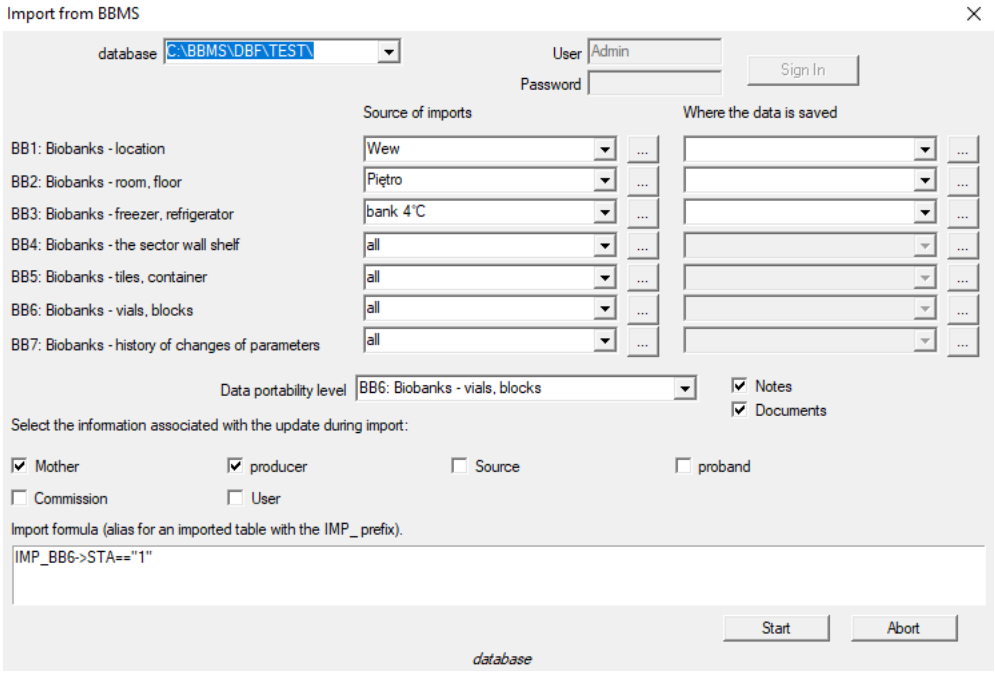


In this window you can change: label, description and order of columns in the table.
For columns whose name starts with "ID_", you can define a formula for retrieving data from the database.

For example:
For ID_OS1 you can type a formula:
OS1-> IM
Then the names of the probate are listed in the table

or
trim(OS1-> NZ) + " " + OS1-> PES
This will be your name and PESEL

Import from BBMS



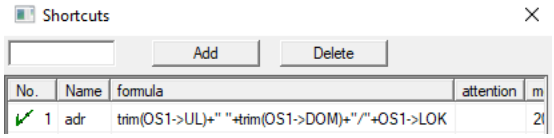
Import from BBMS means import from another structure database published as BBMS :)
The import mechanism covers almost all software modules.

The import will likely be expanded by adding more options.

The procedure consists of:
- database selection and logging
- selecting the source tree
- optional - select the target tree
- selecting the import table / level - this data will be 100% imported
- marking additional information for import, i.e. linked data

Using the import formula you can filter the data, e.g. only with the status "OK"
IMP_BB6-> STA == '1'

Shortcuts



It's easy to make a mistake when building complex formulas.
Thanks to the use of abbreviations, the formulas are clear and make unnecessary haos :)

In order to transfer the formula to shortcuts, simply copy it to the Shortcuts window giving the appropriate name.

e.g. instead of

trim (OS1-> UL) + "" + trim (OS1-> DOM) + "/" + OS-> LOK

type

%adr

or

#adr

Objects

You can open the object presentation window with the button on the toolbar.
Practical use can be checked in the following modules: Biobanks, Warehouse and Reagents.

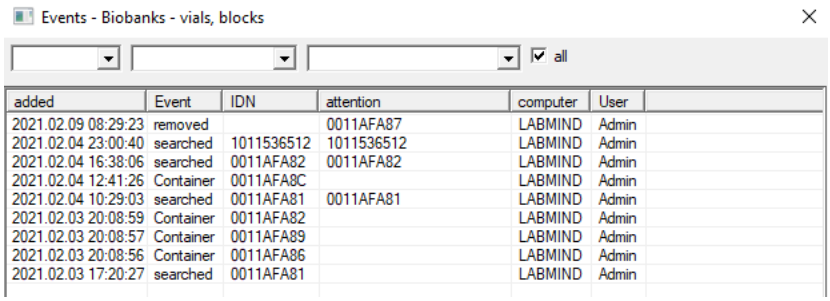
The size and arrangement of the objects depends on the data, in particular Xmax, Ymax and the number of secondary elements.
Coloring will be obtained after choosing a color while editing an element.

If you click with the right mouse button in the window, you will be able to change the formulas of additional information.

Below is an example:
substr(BB4-> NZ, 7.2) + " " + text (BB4-> FIOP) + "%"
or
right(trim (BB4-> NZ), 2) + " " + text(BB4-> FIOP) + "%"

where: substr() or right() - cut the text string

Events



added	Event	IDN	attention	computer	User
2021.02.09 08:29:23	removed		0011AFA87	LABMIND	Admin
2021.02.04 23:00:40	searched	1011536512	1011536512	LABMIND	Admin
2021.02.04 16:38:06	searched	0011AFA82	0011AFA82	LABMIND	Admin
2021.02.04 12:41:26	Container	0011AFA8C		LABMIND	Admin
2021.02.04 10:29:03	searched	0011AFA81	0011AFA81	LABMIND	Admin
2021.02.03 20:08:59	Container	0011AFA82		LABMIND	Admin
2021.02.03 20:08:57	Container	0011AFA89		LABMIND	Admin
2021.02.03 20:08:56	Container	0011AFA86		LABMIND	Admin
2021.02.03 17:20:27	searched	0011AFA81		LABMIND	Admin

Not everything that happens to the database can be recorded from the history of data changes. A good example is a database record deletion event or an action of the type found or inserted into a container. Therefore, a register of these events was created in the BBMS.

The data in the event log is kept for a certain period in order not to cause too much database growth. If necessary, you can restore the archive and check historical events.

The catalog of events will be gradually expanded with the emerging needs of users.