



cbr:works 4

Frequently Asked Questions

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1 General

- *What is “CBR-Works for you“?*

This CBR-Works-Starter remembers the last application which you have worked with and its path, so you can easily restart it.

Alternatively you can start each application with a double-click in your Explorer.

- *What is a Domain?*

By *domain* we denote the subject area of a CBR-Works application.

- *Do I really have to use an object-oriented style to design my domain model?*

or

- *When is flat domain model sufficient?*

Surely not, you can build your model in a flat way, but for advanced modellers it is recommended to use hierarchic concepts, because they can introduce some abstractions into the model, can use inheritance and on each level it restricts the domain to the essential part of the it.

CBR-Works 4 - Frequently Asked Questions

- *Which platforms are supported by CBR-Works?*

Win9x / Win NT, Solaris, HP-UX, IBM-AIX, Apple Macintosh, OS/2

- *I did “save Workspace” with another name. How can I start it?*

or

- *I have moved the CBR-Works-file to another location, Windows cannot start it any more using the START-menu?!*

or

- *I double-clicked the .cbr-file but there is no application connected to it. Which one should I use?*

If Windows cannot start the file or link, go to the new location and double-click on the file with the extension “.cbr”.

- *My computer crashed (my model smashed), have I lost everything?*

When ever you save your work by file-save, CBR-Works stores the file’s old version with the extension ‘.bak’

No, during every saving CBR-Works creates (overwrites) the bak-files. Thus you have the last version of your work still save.

To restore your work:

- (1) Change to the directory named like your model

(2) Remove the bak-extension from *domain-Model.bak* and the version-files in the directory *CaseBases*

(3) restore the old version by ...

- *Will I run into inconsistencies when I change the model while having cases or is this checked by any tool?*

Yes you will get inconsistencies, i.e.

- you change the level of a subconcept to top-level then you loose all inherited attributes.
- You have compiled some cases with the old model!
- There is no maintenance-tool yet to proof the consistence, it's a problem to know something about the semantics of changes - what does the user intent? It is necessary to copy all values from a case or not?

But this problem will be solved with the new version with maintenance support.

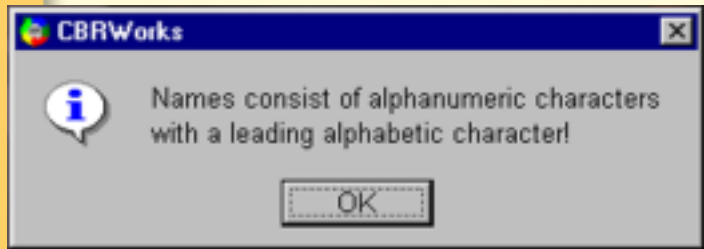
- *What about the support of multiple languages? - What happens, when I change to another language?*

Queries and attribute names will be shown in different languages.

(Generally - this is not supported for Symbol values, yet.)

CBR-Works 4 - Frequently Asked Questions

- *I got the message:*



but I'm using alphabetic characters?

Is it possible, that you use German "Umlaute" like 'ä'? - For example 'Gehäuse' is not a correct Name for CBRWorks.



2 Filetypes

- *What does the filetype “.cbr” mean?*

“cbr” is the filename extension for the executable file of CBR-Works.

After you have installed CBR-Works 3 properly, you can start it via *Start* menu or with a double-click on the filename with “.cbr” or “.exe” extension.

- *What does the filetype “.cdm” mean?*

A CDM-file is an ASCII file which describes your **C**ase-**D**omain-**M**odel, the model of the domain you are working with. This file will be created by choosing the export-CQL-Model menu entry.

- *What does the filetype “.cql” mean?*

There are two possibilities to save your casebase. CBR-Works uses an internal format called BOSS (Binary Object Storage System) to save the cases in a binary format by default. Alternatively you can export your cases by choosing the “File>Export>CQL” menu-entry to store them in an ASCII file format. This file gets the extension “.cql”.

Binary files are smaller and load faster but ASCII files may be exchanged with other applications, can be edited by hand and it is the general exchange format for an update from an older to a newer version of CBR-Works.

- *What does the filetype “.cba” mean?*

“cba” is the extension for a CBR-Works application, that means, when you have finished your model and want to distribute an application, you can create it with “File>Deploy>Application“. An Application is the small kind of CBR-Works, which does not allow any change or your model, it does not include the necessary editors.

- *What does the filetype “.cbs” mean?*

This extension stands for the CaseBase-Server Program. That means, you have an application without any graphical user interface, you can communicate with this application over a network using CQL - the case query language. To create such an application use “File>Deploy>CQL-Server“.

- *What does the filetype “.err” mean?*

This file will help you, if you have some problems with CBR-Works. It includes the last error message of CBR-Works, so our support can infer, what your problem is.



3 Casebase

- *What is a “binary” casebase?*

There are two possibilities to save your casebase. CBR-Works uses an internal format called BOSS (Binary Object Storage System) to save the cases in a binary format by default. Alternatively you can export your cases by choosing the “File>Export>CQL” menu-entry to store them in an ASCII file format. Binary files are smaller and load faster but ASCII files may be exchanged with other applications and can be edited by hand.

- *How do I unload my casebase or how do I load another one at the same time?*

You can only handle one casebase at a time. You can unload (and save changes to your casebase) by choosing new or load from the File-Menu. The old casebase will be saved and a new or the selected one appears.

To use two casebases at the same time you need to run two images, so start CBR-Works for each casebase you want to use at the same time.

- *Since I have updated CBR-Works to a new version, my model can not be loaded!*

CBR-Works stores your model and Case-Base in a binary format for fast access. But this format could be changed with an update of CBR-Works, therefore you

will get a problem. The cleverest way is to use export and import all with CQL.

A short description to rescue you work from an older version to a newer one:

- Start the older version of CBR-Works and store your domain model and case base using “File>Export>CQL>Model” and “File>Export>CQL>Case Base”.
- Import these files with the new version of CBR-Works using “File>Import>CQL>Model” and “File>Import>CQL>Case Base”.

For some description more detailed read the “*Introduction to CQL*”-document!

- *My Image has been grown very large, can I scale it down?*

You can scale down your image (cbr-file) or any grew binary files in trying to export you model and your casebase using Export-CQL, then close your casebase and begin a new one. Last, just import the CLQ-files. Now the next “Save & Exit” should produce a minor size of your model and casebase. Please pay attention to have a backup of your work, before you try this solution.

(For some description more detailed read the “*Introduction to CQL*”-document.)



4 Concepts

- *Why have Type-names and Concept-names to be different?*

or

- *Why is it forbidden to name a Concept like a Type?*

The separation between the two words concept and type is only for the user, it is only a view. But our system does not distinguish them, Types are atomic Concepts, for that reason all names have to be unique throughout CBR-Works.



5 Types

- *When to use Symbol instead of String?*

Strings and Symbols have a different internal representation.

Strings have three default-similarity-calculations:

- (1) “exact match”,
- (2) “spelling-check” and
- (3) “word-count”

for descriptions on detail see the help-button, please.

Symbols know the identity as similarity-measure only, so if the query-symbol is identical to the case-symbol, the similarity is 1, otherwise 0.

For that reason, the calculation of symbol-similarities is faster than them of strings, but you have more possibilities to use the default-similarities of strings.

With Strings, you can handle any text-input and you could use this for comments or alike. You can search a word in a text for example.

- *When to use OrderedSymbols?*

With this subtype of Symbol you define an implicit similarity by the order you enumerate the symbols. Later you can refine the default-similarity of Ordered-Symbols adding your own similarity-function or -table. By default the nearest neighbour is more similar than the distant one.

- *When to use TaxonomySymbol?*

For a very good example of a taxonomy take a look at your tutorial: “*The Second Application Model*” -> “*The Colour Problem*”.

- *When to use a SymbolSet?*

With this Symbol-Subtype, you specify a set of symbols. The similarity-calculation looks for the same elements in the query-set and the case-set. The more elements there are (related to the whole set), the higher is the similarity.

Note: If you want to use your applications with databases: Databases do not know sets, so you should not use this type.

- *Can I change the supertype of any subtype?*

Yes, you can change your user-defined types by applying the change type wizard!

Select the type which you want to change and choose `convert type` in the context-menu.

- *How to define an URL as an attribute-value?*

You can define an URL as an attribute just utilising the String-type but do not forget the pre-string “`http:/`”/“`/`”. The Online-Wizard will recognise this entry as a link to the specified internet-page.

- *Time and Timestamp - what is the difference?*

A Timestamp includes the date, time does not.

- *How to define a Taxonomy?*

Is it possible, that you have defined your “taxonomy” with “Add subtype“ ? That’s not the appropriate taxonomy-editor!

Define a subtype of TaxonomySymbol, on the right side of the Tree-View the taxonomy-editor appears and you may define new values as sons of the predefined root symbol. By selecting the root symbol and choosing rename from the context menu, you specify the name of your 'root'-symbol.

- *How many cases can CBR-Works cope with? - What's about the query time?*

The response-time depends on:

- how many attributes you have defined
- the complexity of your similarity-measures
- the power of your computer
- how many cases you store



6 Editors & Menus

- *What does “Save Workspace” mean?*

Save Workspace saves your work and the momentary state of the user interface to the harddisk, i.e., when you restart CBR-Works you can continue working at the point where you saved your workspace or in other words: When you have opened your query-window on the evening and you want to proceed your query tomorrow.... then it is time to save your workspace.

ATTENTION: “Save” or “Save & Exit” will only store your application data but not the state of the user interface you were working with and vice-versa.

- *Exit / Save&Exit - when should I use which one?*

- Do you want to save your state of work - use Save & Exit.
- If you want to save your opened windows too, use Save Workspace just before.
- Do you want to loose some modelling mistakes use Exit (without saving you model and case base)

- *What can I do by “Deploy > Application”?*

or

- *What can I do by “Deploy > CQL-Server”?*

By selecting these menu entries you may generate stand alone versions of your application that do not contain the editors that are provided with the development version of CBR-Works.

The deployed application version allows to utilise the casebase for retrieval and to add and delete cases. This method delivers single-user CBR-Works-Applications.

The deployed CQL-Server is utilised to deliver a multi-user client-server application with CBR-Works. This creates the server software that later can be accessed via CQL.

- *What does the “Compile Menu” do?*

Any changes to the domain model, i.e., types, values, concepts and attributes need to be translated into the underlying internal data structures of CBR-Works. This happens in the background while working with the system. Anyway, if changes made to the model appear not to have an effect in the casebase then manually compiling the model will fix the problem.

- *What does “Isolate concept“ mean?*

This breaks the selected concept out of the hierarchy and sets it to the top-level, it inherited attributes will be removed from it's definition. You can also use drag & drop to reorder the concepts.

- *What is the purpose of the “Dis”-checkbox in the attribute list of the concept editor?*

By checking this box you define, which attribute is enabled in a query. If there is no hook, then you cannot query for this attribute.

- *What is the difference between “Graphics”, “Tree” and the “List View”? - When should I use which one?*

Graphics and *Tree* give you a graphical overview of the concepts and types of your domain model.

At the concepts-view, *Display Graphics* shows you the 'IS-A'-Hierarchy and the respective attributes of the concepts.

The *Display Tree* looks like your explorer and it is foldable. That means you can fold some sub-concepts or -attributes for a better overview, you have to double-click on a concept to view some attributes.

If you are searching for a specific name, then the *List View* is the right one to apply, because all names are alphabetically ordered disregarding any hierarchic structures.



7 Consultation

- *Regular value / undefined value / unknown value - what is the difference?*

If you are building a query, you can choose between this three types of attribute-settings.

Regular value: You specify a value for the query.

Value undefined: You do not want to specify this value for your retrieval, i.e. you will accept any values retrieved

Value unknown: You don't know anything about this value, that means you will not be asked the system during retrieval for this value.

- *How to use a case as a query?*

At the casebase-view you can select a case and then choose "Case as Query" at the "Case"-menu, change the view to "Query".

- *What is the Online-Wizard?*

or

- *How do I use the Online-Wizard?*

The *OnlineWizard* helps you to create a query to the CBR-Works-Server. This Wizard make out a list with these questions which are eligible for a query.

If you have started a HTTP-Server you can attempt to get a answer-catalogue with your internet-browser:

Type `http://localhost:8008/launch/OnlineWizard` at your location-prompt from your browser and answer some questions.

- *How do I start the Query-Wizard?*
When clicking the Query-Wizard-icon (light bulb) nothing happens!

Before you can start the Query-Wizard, you have to generate a new query case, then you can call the query-wizard by selecting the above mentioned icon.



8 Similarity

- *How does CBR-Works calculate the defaultSimilarity-value of SymbolSets ?*

Suppose you have defined a set of symbols T . The similarity between a query q and a case c will be calculated as.

$$\text{sim}(q, c) = \frac{|(q \cup c) - (q \cap c)|}{|T|}$$

That means, the more elements are in both sets related to the whole set, the better the similarity.

Alternatively, you can specify this one:

$$\frac{|q \cap c|}{|q \cup c|}$$

- *Similarity-Editor: There are four Cards to define the Similarity, can I define all four variants?*

No, you must select one option for your similarity-definition or inheritance from the super concept.

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- *Similarity-Editors: What is the difference between linear and logarithmic scale?*

Use the online-help of the similarity-editor.

- *How does CBR-Works calculate the default-Similarity of integers?*

By default the similarity of Integers will be calculated as follows:

```
let q = the query-value
let c = the value of a case
let lb = lower bound of integers (or your sub-
      type)
let ub = upper bound of integers (or your sub-
      type)

if q=c
  then similarity=1,0 // they are identi-
    cally
else (
  similarity = 1,0 -  $\left( \frac{|q - c|}{(ub - lb)} \right)$ 
)
```

So similarity of 1,0 means that Integer1 is equal x (the given number to compare with). Otherwise the similarity is between 0 .. 1,0, a distance of the given numbers is calculated and adjusted to the range of integers (or your subtype).

- *I cannot edit the Similarity - what do I need to do?*

The default Similarity is not editable. You have to add your own similarity before you are able to edit it.

- *How to implement my own similarity measures?*

First you have to define your own (user-)type at the type-view, for example *MyIntegerType*.

In the Range-card you specify the range between your integer-type, the lower and the upper bound.

Add your similarity by choosing the Similarity-card . With “Edit” you have three possibilities to define your similarity (not all three together, only one of them).

- *How can I find/model similar text-passages?*

With CBR-Works you can define simply similarities about strings naturally you can use Strings as extensive text-passages.

To define a similarity for a user-defined String first define such one, i.e., “MyString” as SubString of String. Then choose the Similarity-Card and add the Similarity you want to specify. With a click on “Edit” you can choose one of three possibilities of standard-similarity:

- (1) “exact match”,
- (2) “spelling-check” and
- (3) “word-count”.

There are respectively question marks at the selection points, which explain the background of these variants.

- *Why get new Similarities such strange names?*

The name will be generated with the type-name and your similarity-name, so that the coherency is explicitly shown .

- *What is the difference between symmetric / asymmetric similarity?*

Suppose you are dealing with used cars and you wish to define the similarity between two car-brands: BMW and Opel.

You can define a symmetrical one, perhaps 0,6 if you meant that both are similar to one another. But you can define the similarity asymmetric too, for example:

Similarity (BMW -> Opel) = 0,1 and

Similarity (Opel -> BMW) = 0,7 even if Opel is more similar to BMW as contrariwise.



9 Handling

- *How can I stop a CQL-Server?*

Cause this service is a background-process and does not show any user-interface, you have to shut-down by utilising the taskmanager of your operating-system. The task name is CBRWave.exe

- *I want to select some fields on the lower left side of my Similarity-Array, but the program always selects on the upper right side!*

You have selected the symmetric option for the similarity table, i.e., for two values a and b the condition $\text{sim}(a,b)=\text{sim}(b,a)$ holds. Therefore the editor mirrors the respective similarity from the upper right half to the lower left half of the table. If you wish to put different values for $\text{sim}(a,b)$ and $\text{sim}(b,a)$ select the asymmetric option above the table view.

- *CBR-Works online refused an URL as being invalid?!*

Reason: Is it possible, that you typed “\” instead of “/” ?

Solution: Retype your URL with “/”.

- *After I have installed CBR-Works, I want to run it the first time, it does not work - why?*

There are the commonly known problems with long filenames under Windows 9x/NT!

If you are using spaces inside a path i.e., “program files” or “C:\Programme\CBR Works” you must put quotes -> “C:\Programme\CBR Works” around your complete path.

The newest version of install-engine supports this quoting automatically.

- *With File->open I have got an empty filerequest! - What is the matter?*

You have to select a volume from the Volume drop down menu at the top of the file request dialogue. Depending on the operating system, you are working with, the volumes may appear differently.



10 Server

- *How do I use CBR-Online?*

or

- *How to support my Client-Server-Solution on the internet?*

or

- *How to create a HTTP-Server with CBR-Works?*

(4) Select “Server Console” on the “Server”-Menu.

(5) “Create Server” shows you an enlarged window

(6) Server Type: TinyHttpServer

(7) Hostname: localhost (if you try server-functionality on your own PC) or the servername where you installed CBR-Works.

(8) Port: default: 8008, but you can choose your own portnumber

(9) finally “Create and Start” your CBR-Works-Onlineserver.

- *Does the HTTP-Server start automatically?*

Either you have to create & start / start it manually or you can select the option: “start server on system start-up”, then it starts automatically when you start CBR-Works.

- *How to test CBR-Online?*

CBR-Online is a generic web-interface. This means, you can ask CBR-Works over the internet. How to do...

Start a internet-browser and type the following path:
`http://localhost:8008/launch/Online`
if your CBR-Works is running on your PC, you have created a HTTP-Server and you let the port-number as default (8008) otherwise you have to give the name of the machine where CBR-Works is running and the port-number which you gave at creating the server.

- *What to do with CQL-Server and how?*

Read the “*Introduction to CQL*”-document, especially “*Utilising CQL*”.

There is the description how to setup the CQL-Server too.



11 CQL-related

- *What is CQL?*

or

- *How do I correct typing errors, that occurred during the edition of a casebase?*

or

- *How to transfer a model or/and casebase with CBR-Works from an older version to a newer one?*

or

- *The casebase model is always modifiable. When you have included cases already, there is a problem to modify the model with underlying cases.*

CQL is the Case-Query-Language for the CBR-Works system. It is the interface language between all the CBR-Works component systems and it also serves as the interface language between the CBR-Works-Server and the external world (clients), so it is a standard for exchanging information, especially to transfer a model and/or cases from an older CBR-Works version to a newer one.

CQL is an object-oriented language for storing and exchanging descriptive models and cases (libraries) in ASCII files and by transfer-protocol.

See the CQL-Documentation for more information.

- *What is a CDM-File?*

A CDM-file is the file which describes your **Case-Domain-Model**, the model of the domain you are working with. This file will be created by choosing the export-CQL-Model menu entry.

- *What should I do, if I must change my DomainModel and I want to reuse my work just done before?*

or

- *What is the CQL-Interface - what does it do? What are its benefits?*

To only save your model and cases, select "File > Save" or "File > Save as", this stores your model and Case-Base in a binary format for fast access. But this is not the right way to change any version or update CBR-Works because the (binary) format could be changed and therefore you will get a problem. The cleverest but not easiest way is to use export and import all with CQL. For this advantage read the "Introduction to CQL"-document!

- *What to do with CQL-Server and how?*

Read the "Introduction to CQL"-document, especially "Utilising CQL".



12 CQLConnect

- *How to run CQLConnect with Microsoft Internet Information Server?*

or

- *My HTML-Form for CQLConnect does not work and I use the MS Internet Information Server. What can I do about it?*

Using Version 4 of the MS IIS, you have to create a virtual path in the Management Console of the IIS to access the CQLConnect executable via WWW.

Furthermore, in this Version of MS IIS you cannot use the "GET" command for forms but the "POST" command.

- *CQLConnect returns an error page on my browser, when I send my form after entering free text or numbers for values. What is wrong?*

By the current Version of CQLConnect, no check is done on freely entered values whether they fit to the allowed set of values or not. This might be fixed in later releases.

For now, put the valid range aside the input area, so the user will know what values are allowed.



13 Database

- *ODBC - what does it mean?*

ODBC = Open DataBase Connectivity

A standard for accessing different database systems. There are interfaces for Visual Basic, Visual C++, SQL and the ODBC driver pack contains drivers for the Access, Paradox, dBase, Text, Excel and Btrieve databases.

An application can submit statements to ODBC using the ODBC flavor of SQL. ODBC then translates these to whatever flavor the database understands. ODBC 1.0 was released in September 1992.

ODBC is based on Call-Level Interface and was defined by the SQL Access Group. Microsoft was one member of the group and was the first company to release a commercial product based on its work (under Microsoft Windows) but ODBC is not a Microsoft standard (as many people believe).

ODBC drivers and development tools are available now for Microsoft Windows, Unix, OS/2, and Macintosh.

- *How to import data from a (ODBC-) database or Microsoft Access, MS-Excel or alike?*

You have to configure an ODBC-Stream, then you have to type the right "Database Options" at the CBR-Works > "File"-menu.

With “File > Settings > Database” (in newer Versions “File > Preferences > Database“) you can specify your database connection, supposing that a database is available.

Enter username, password and data-source (the name of your database).

Then - if no error occurred - you may create your concepts from the database: “Edit > Create Concepts from Database”. A concept-wizard appears so you can select the scheme(s), you want to import.

For each table choose a primary key.

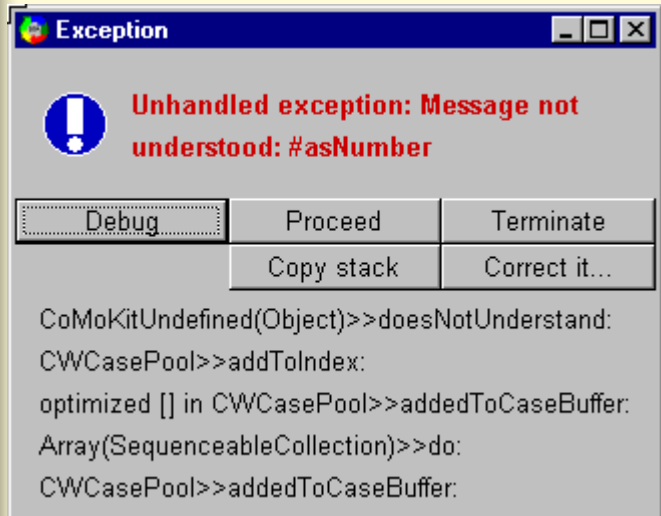
“Create Concept” determines the selection process for each table.

“Done” quits the wizard and generates the chosen concepts.

If you have a complex scheme with some tables in relationship together, you have to define the first or top-table as case (context-menu: “Define as Case”). Now introduce CBR-Works to the relations between your tables.

At the concepts-view select the attributes-card and click on the type of a key that should refer to another table. The popup-button shows you a menu with all concepts and types, select the concept which is associated with the appropriate table. CBR-Works knows that this name is related to another concept, but it does not guess, that it is a table of a database. Click on the database-card and select the foreign-key - at this point it is shown under “Attribute” - which is according to the corresponding table. The window extends. At the popup-menu button of “Foreign Key” select the (primary-) key of the corresponding table. When all relationships are defined, you can load the cases: “Edit > Add cases from Database”.

- *While importing concepts from a database this exception occurred:*



What is the matter?

It seems that you tried to import a concept whose attributes are named with an identifier, that is used in the CBRWorks-System as unique symbol. For example, id is often used as unique row-id, but id is a reserved word!

Solution:

First close this requester with 'Terminate'. Sorry, but you have to delete the concerned concept. Now restart "Edit > Create Concepts from Database". Then change "id" into "product_id" for example.

- *I have problems importing data with ODBC from MS-Excel!*

You have to define a symbolic "Name" within MS-Excel for the table you want to import.

(1) Select the area which you want to use with ODBC.

(2) Select

"Einfügen > Namen > Festlegen"

in the german version of Excel or

"Insert > Name > Define"

in the english version.

(3) Type a name and press OK.

Now you are able to import your data via ODBC.



14 Model-Design-Tips

- *I have designed a concept with 20 attributes of type Boolean, but I'm unhappy to answer all of them if I want to set only a few of them to true.*

You wish to model a subset of this attribute-set which are true. So why do you do not use the SymbolSet. You can specify a set of symbols - your 20 attributes and at the query you only have to select these attributes that you want to point out. This manner of modelling is recommended when you mostly want to select a few of all.

Note: If you want to save your data into a relational database. This will not work, since they do not support sets as a datatype.

- *I want to use a cyclic Type like weekdays for example, but there is no default type or appropriate default-similarity?*

Right, you have to define your own similarity-table like this one:

	Friday	Monday	Saturday	Sunday	Thursday	Tuesday	Wednesday
Friday	1.0	0.0	0.8	0.6	0.8	0.0	0.6
Monday	0.0	1.0	0.6	0.8	0.0	0.8	0.6
Saturday	0.8	0.6	1.0	0.8	0.6	0.0	0.0
Sunday	0.6	0.8	0.8	1.0	0.0	0.6	0.0
Thursday	0.8	0.0	0.6	0.0	1.0	0.6	0.8
Tuesday	0.0	0.8	0.0	0.6	0.6	1.0	0.8
Wednesday	0.6	0.6	0.0	0.0	0.8	0.8	1.0

That means, the direct neighbour of a weekday has a similarity-value of 0.8, the next only 0.6, the days which have the greatest distance to it, are not similar (similarity=0.0).



15 Rules

- *What is the difference between completion and adaptation rules?*

Completion rules are used to complete a query or a case. Suppose you want to let rooms. Your rooms have a base price and you require an additional mark-on of 30% for each person who rest in this room. You have designed your room-model with this base price and a variable number of persons. You can specify a completion rule, which calculate the full rental price.

```
basePrice * person * 1,3 = rental-Price
```

You give the basePrice and the number of Persons, then the full rentalPrice will automatically added to the case.

Or another scenario: Suppose you configure a PC for consumers. You ask for the use of the PC and if the user says “for internet” you want to offer a modem. A completion rule can realize this fact.

Adaptation Rules can be used to derive a new result case from the query and retrieved cases. You can economize a lot of work with this rule. Ever you have to do the same work, if the query has especially values and the retrieved cases fulfil some conditions, this work of creating new (adapted) cases will done of a adaptation rule.

Take a look at the Reference Manual for a more detailed description of rules.

- *When does a rule get started?*

Completion rules are executed while entering the values of a case and, in case of retrieval, after all possible adaptation rules have fired. Some actions (i.e., weights, filter and similarity) are executed only for the current query and not for the cases in the case base. After each input of the user the rule system checks its rules.

The adaptation rules are executed during a consultation session after the retrieval of cases. A result case is created by copying the retrieved case. All actions of the adaptation rules now refer to this result case rather than acting on the retrieved case or the query.

- *What is the intension using rules?*

Using rules you are able to catch some domain knowledge in mind and transfer it into the application. Your application 'learn' to react on defined conditions of the query and case values. And you could economize the number of cases. Suppose you want different attribute values of a case depending on the actual time, e.g. . different wages for the usual working hours and a higher for working beyond this time. Normally these are two cases, but with a completion rule you are able to specify the rule to set the right wage for the appropriate time.

- *How to assign a calculated value to an attribute?*

First save your calculation result in a temporary variable using a condition rule then assign this value to the attribute in the rule's action.

CBR-Works 4 - Frequently Asked Questions

- *How to extend the build-in functions of rules?*

You are not allowed to change or extend the build-in functions. In such a case, please send a request to cbrworks@tecinnno.com.

- *Is there any problem if a variable is named like an attribute of a concept?*

No, there is no possibility for conflicts of attribute and variable names.

- *After defining a rule, CBR-Works never stops?!*

Perhaps you created an infinite loop?! This behaviour is typically for a rule like...

```
condition: a greater 100  
action: a := a + 5
```

This rule will usually cause an infinite execution of itself, once a is greater than 100, because a is increased with 5 and the rule fires again and again. But you can influence this behaviour by the rule's preferences. Set the number of iterations greater than 0 (the zero means infinite iterations).

- *When does an action of a rule fire, even if one or all conditions are true?*

All conditions must be evaluated to true, then the rule will execute the defined action.

- *What to do if rules overwrite some values of other rules or user given values?*

The preferences for rules allow detailed specification of how the rule mechanism will act on errors. See section 3.9.4. Rules Preferences Dialog Box of the Reference-Manual getting more details.

- *I cannot assign the result of a calculation rule to an attribute?!*

The type of the variable must be the same as the type of the attribute. You must ensure this by adding a condition which patches the type of your variable to the user defined type after the calculation, e.g.

```
?x be_of_type <your>Type
```