


Handout Table Generation

Claudia Frie

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1. Search tool and catalogue



Standard Tables
Select statistical data from ready fixed standard tables:




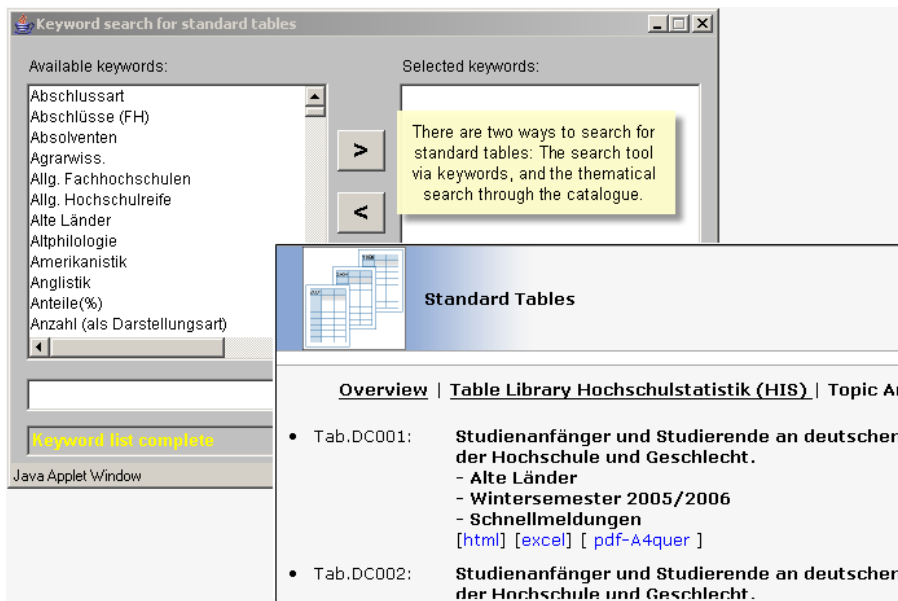
Table Generation
Create new tables out of the existing data stock:

- **Catalogue:** Here you get direct access to all available tables of the various libraries.
- **Search:** This tool enables you to browse through the existing table stock for desired information.
- **Update:** Use this tool to update standard tables with recent data.
- **Table management:** A tool for further management of standard tables.
- **Users and groups:** Here you can change your password. Furthermore administrators use this tool for users and groups management.


- **Data catalogue:** Through this you get an overview of the existing data stock.
- **Keylists:** [[pdf](#)] [[rtf](#)]
- **Single data stock table generation:** This tool enables you to select the desired data out of a single data stock, to create a table, and to save it in various formats.
- **Multi data stock table generation:** This tool enables you to select the desired data out of various data stocks, to create a table, and to save it in various formats.
- **New development** of the multi data stock table generation.

Before starting to work with the ICE-demo-system, you need a [user authentication](#).

Standard tables are a special ICE-format. They are stored on the ICE-database, and so they are accessible via Internet or intranet. They can be browsed with a search tool or through the catalogue that is a hierarchical organized directory structure. The system provides an automatic update function (see Update), and standard tables can be converted to HTML, XML, XLS, Gnumeric and PDF files.



2. Flexible Table Generation: New development – TabGen III



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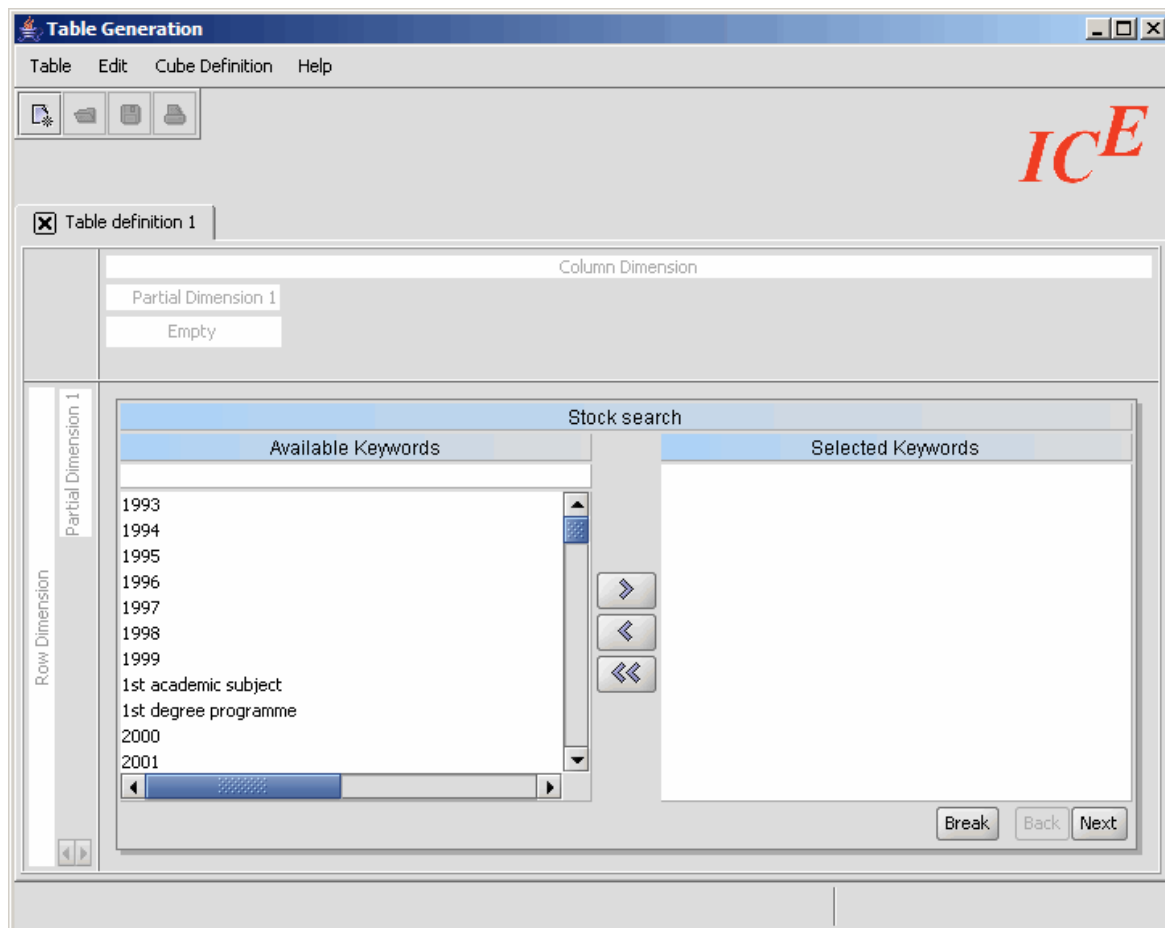


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- **New development of multi data stock table generation**
Generating tables based upon **multiple** data stocks.
Tables can be made by using data of different sources.



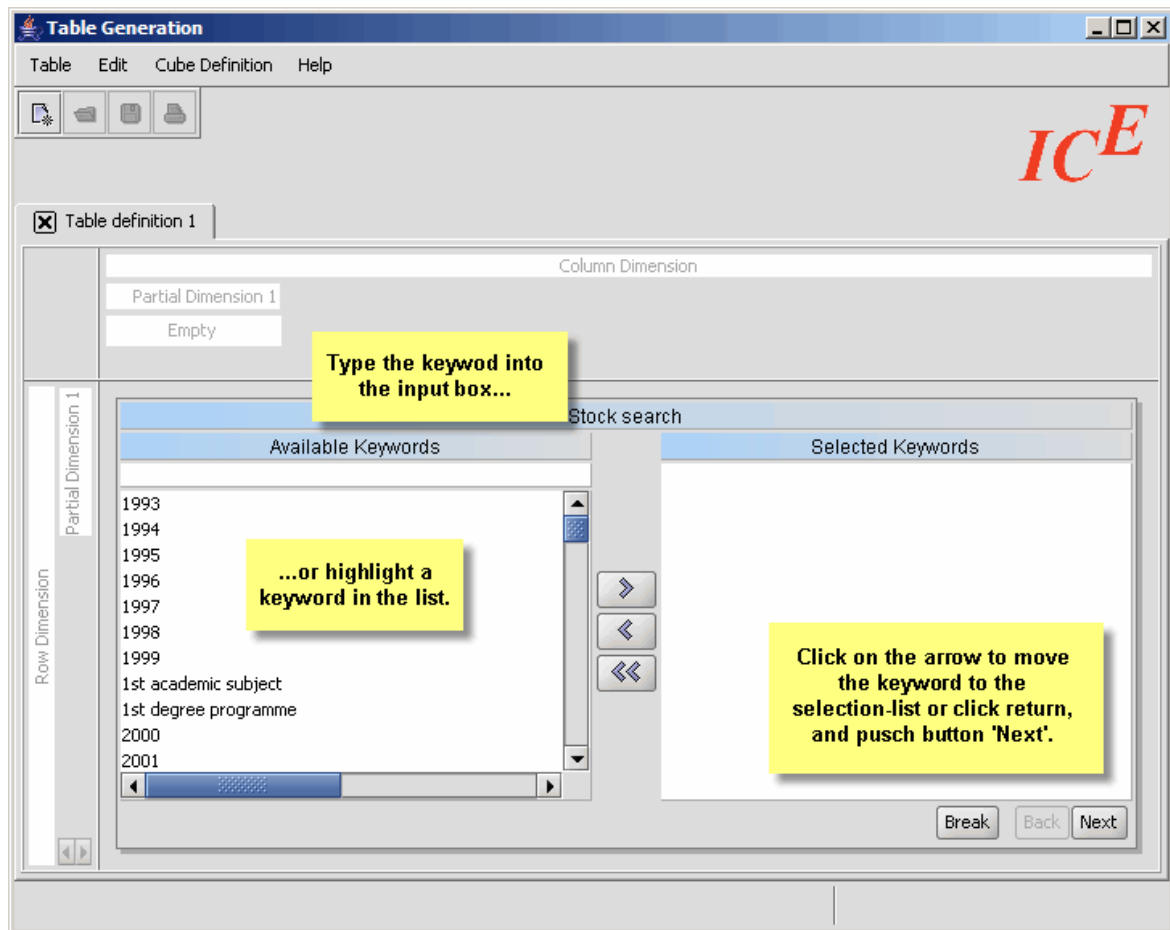
2.1 Table Generation: Procedure

After you have planned the design of your table, the table generation process can be divided into two steps:

1. Stock Search with
Keyword selection and
Data stock selection
2. Table definition with
Layout and
Content

2.2 Stock Search

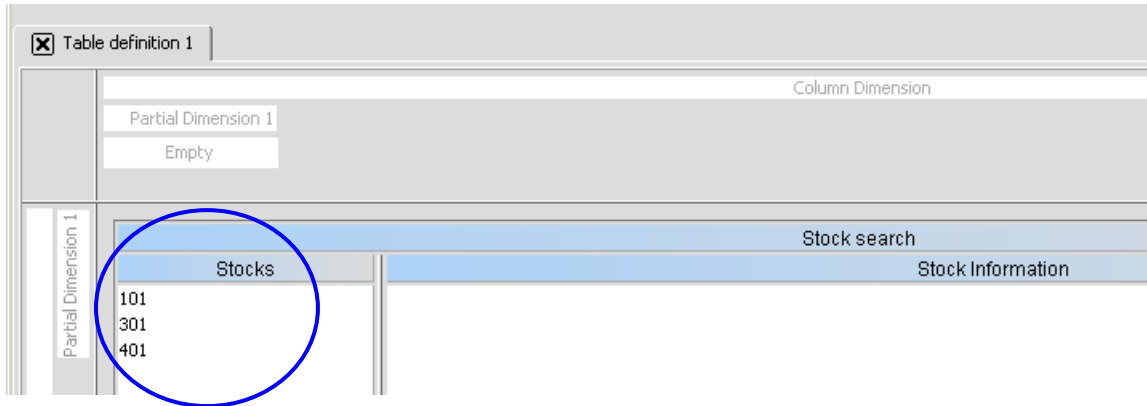
Keyword Selection: Choose one or more keywords from the list of *Available Keywords*, and then start the search with the button: [Next].



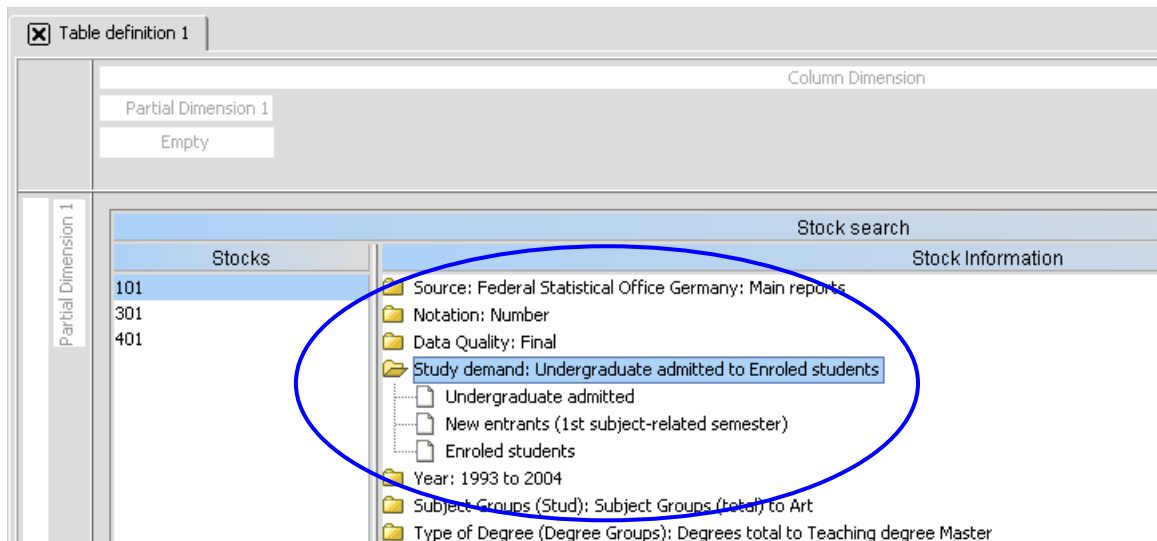
Please note:

- The keywords should characterize the data stock you are looking for as exactly as possible.
- If you select no keyword at all, the next window will provide you a list with *all* available data stocks.

Data Stock Selection: On the left box now is a list with the id numbers of the fitting stocks.



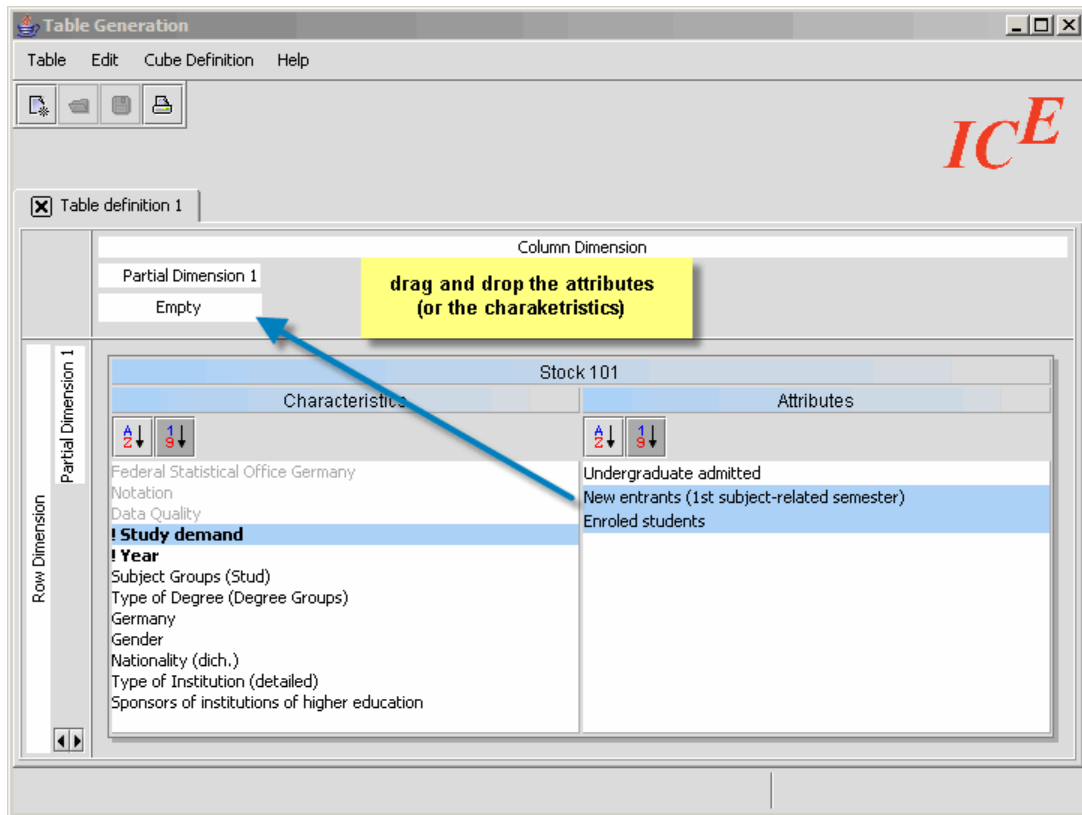
Click on a number to see the Stock Information on the box to the right. There double click on characteristics to learn more about their attached attributes.





If a suiting stock is available, mark its number and select [FINISH] to go to the next step of table definition, if not select [BACK] to return to keyword selection.

2.3 Table Definition

Layout: On the left box is a list of all available characteristics. If you highlight a characteristic, all attached attributes get displayed on the right box. With the mouse you can directly put the listed characteristics and attributes into the graphical table structure displayed on the screen ("drag and drop"). Clearly arranged: the **fields you see are adjustable in size**. Use the drag and drop method to **rearrange characteristics and attributes** that already are included in the table structure, or put them back into the pool, either single or grouped.



Please note:

- **Optional characteristics:** You do not need to select all possible characteristics and attributes, and if you leave out attributes, the system automatically uses "total" (e.g. the total of "male" and "female" for the characteristic "gender").
- **Obligatory (!) characteristics:** Characteristics marked with an exclamation mark must be selected because obligatory characteristics do not have a sensible "total". So the system cannot take a sensible default (e.g. the total of a characteristic like "point in time" – that means the summation of the number of students for various years – is normally senseless).
- Use these buttons  to sort characteristics and attributes either alphabetical or numerical.
- This button  opens further table generation processes that can be run simultaneous.

Content - Show and save table

In the menu: [TABLE]-[SHOW]-["select a format"]. Choose among the following formats: **ICEcalc**, **Excel**, **HTML**, and **PDF**. Depending on its configuration, the browser will ask you to save the file, or it will open the file directly, or it will display it in a browser window. In the latter case you can save the table by selecting "File|Save as..." in the menu of the browser. ICEcalc opens the "ICE-Spread Sheet" (see below).

The screenshot illustrates the process of exporting a table from the ICE system. The 'Table Generation' window shows a table with dimensions 'Year' and 'Study demand'. The 'Show' menu is open, with 'Excel' selected. Below, the 'ICE-Spread Sheet' window displays the table data. To the right, a Microsoft Excel spreadsheet shows the data in a structured format.

Table Data (from ICE-Spread Sheet):

Year	New entrants (1st subject-related semester)	Enroled students
2004	496.792	1963108
2003	530.328	2019465

Excel Spreadsheet Data:

Year	Number	Study demand
2004	496792	1963108
2003	530328	2019465

HTML Output:

Quelle: Federal Statistical Office Germany
 Bestand: 101
 Auswertung aus der HIS- ICE-Datenbank (ICE = Information, Controlling, Entscheidung)
 HIS: Hochschul-Informationssystem GmbH
<http://www.his.de>
 Letzte Änderung: 17. April 2008

Excel Output:

Quelle: Federal Statistical Office Germany; Main reports
 Bestand: 101
 Auswertung aus der HIS-ICE-Datenbank (ICE = Information, Controlling, Entscheidung)
 Hochschul-Informationssystem GmbH, Hannover
<http://www.his.de>
 Letzte Änderung: 17. April 2008

e.g. open the table in ICEcalc, ...

...in HTML

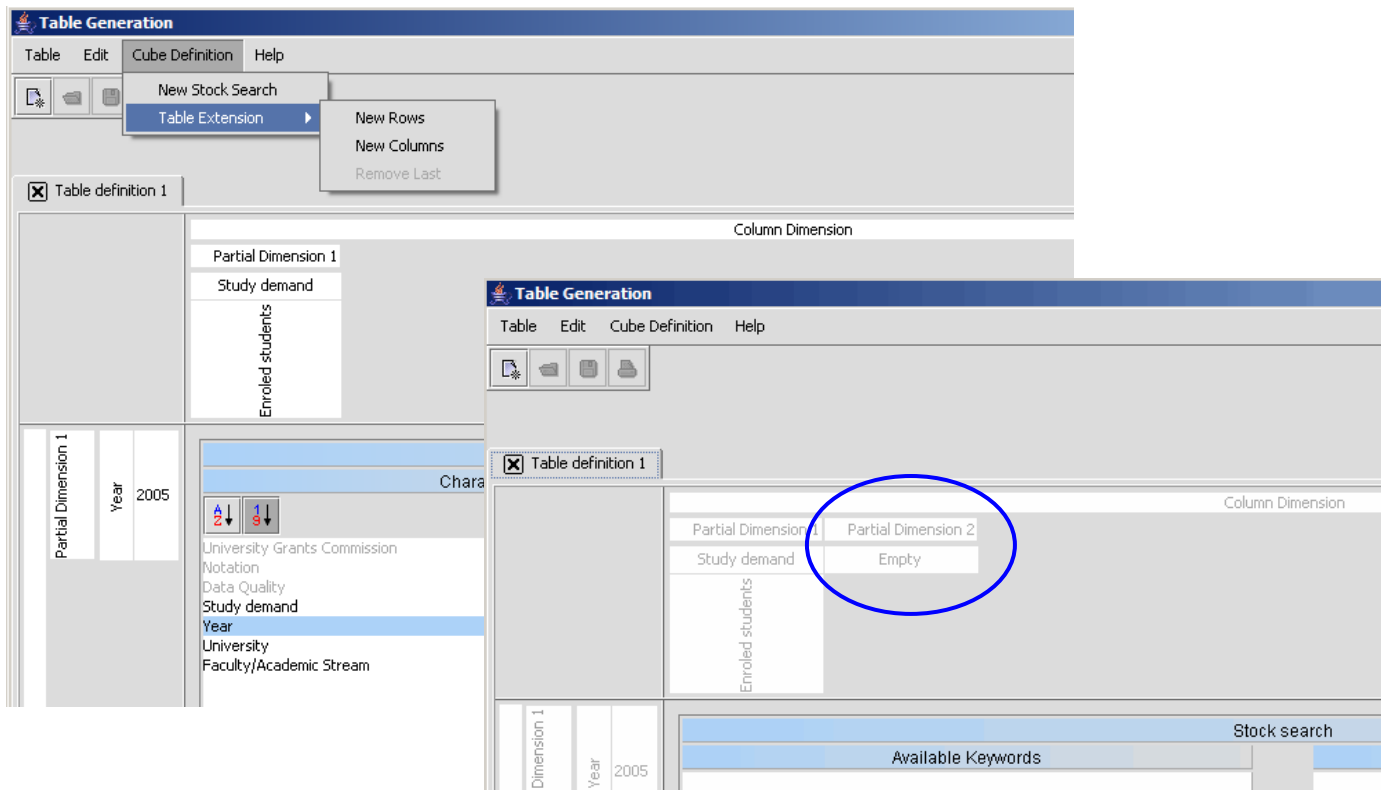
...in EXCEL

2.4 Table extension

Use this function to combine data from various data stocks. Firstly a table gets generated that bases on a single data stock (as mentioned above).

Go to menu and select: [CUBE DEFINITION]-[TABLE EXTENSION]-[NEW ROWS] or [NEW COLUMNS].

The tool provides you all useful data stocks that you can access via a new keyword selection. The definition of further *table units* runs the same way as at the initial table definition.



Concerning the table structure, please note that all characteristics of those rows and columns that will not be extended must be available in all data stocks that are used for the table. If not, there would be no table extension possible.

Example:


If we define study demand (e.g. enroled students) in rows, the columns cannot be extended by data on personnel, because data stocks on personnel never include data on students. In this case it would be more beneficial to include in rows data on *point in time annual*, because characteristic *point in time annual* is available for both, data stocks concerning students and data stocks concerning personnel.

In the figure above, the table could be extended by personnel data in columns, but not in rows. An extension in rows would be possible with another data stock on student data (characteristic "Enroled students" must be available).

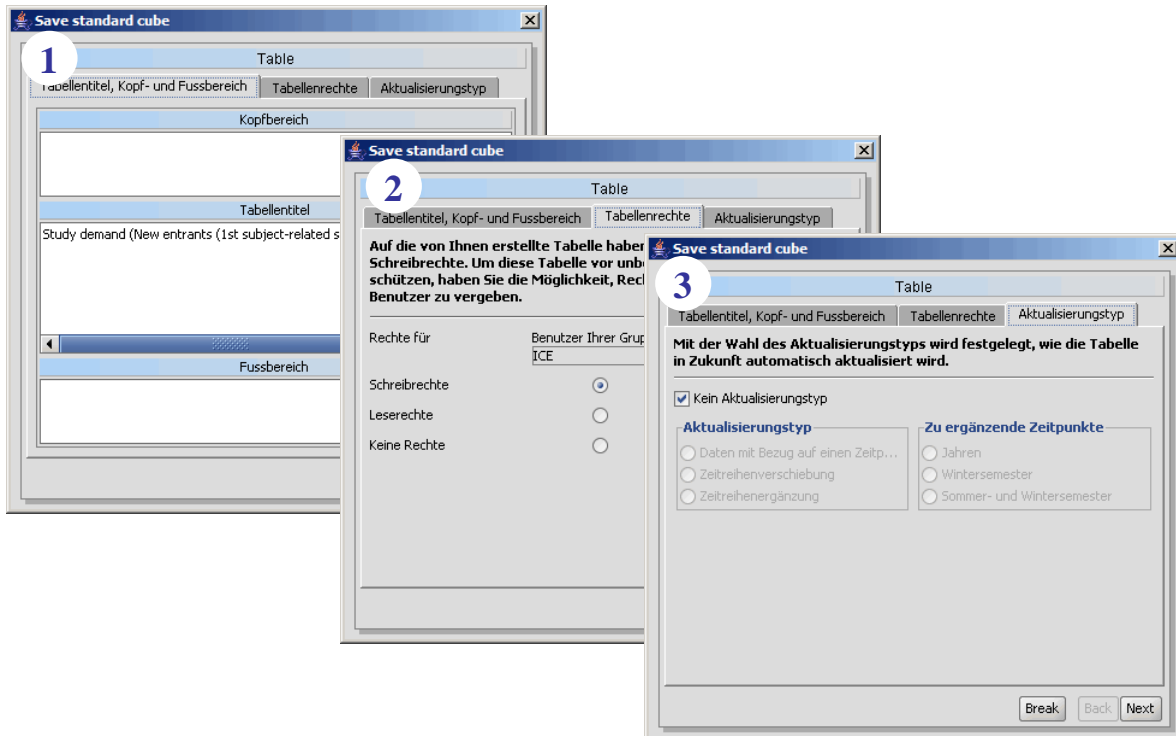
3. Standard Tables

3.1 Generation of Standard Tables

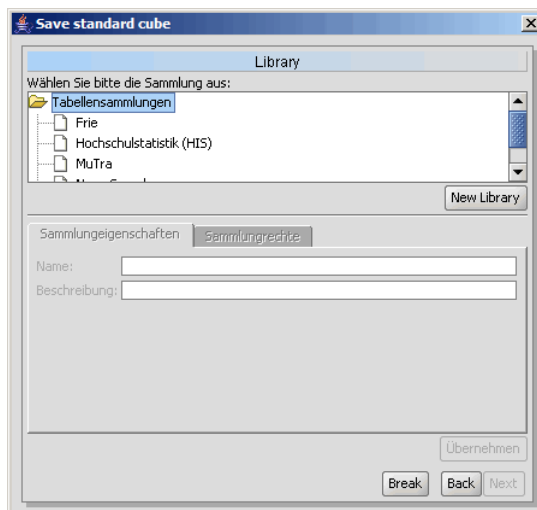
The flexible table generation allows you to save **ICE-standard tables** permanently in libraries on the ICE server. They may be made accessible for other users and for data-recall facility (search with keywords). Anytime, standard tables can be exported to XLS-, PDF- and HTML-files (see search tool and catalogue). ICE-standard tables have a special advantage: The **automatical updating** (see below).

Before you can save a table as standard table, it must have been exported to another format (XLS, HTML, PDF). Then you can click on the floppy-disc icon  to save the table as standard table. The following dialogue "save standard cube" has three tabs.

1. Firstly you might **edit the table title** and include a **header** and **footer**.
2. On the next tab you can **define reading and writing permission**,
3. and on the last tab you can **define a type of update** (see below). Select [NEXT]



Now decide to which library you want to save your standard table on the data base; either to an existing one, or create a [NEW LIBRARY]. Select [NEXT] to go to the **Summary**. Here you can check all chosen settings and [SAVE] the table.



3.2 Updating of Standard Tables

If there is new data available for a table, you can run an update by selecting "**Update**" on the start window:

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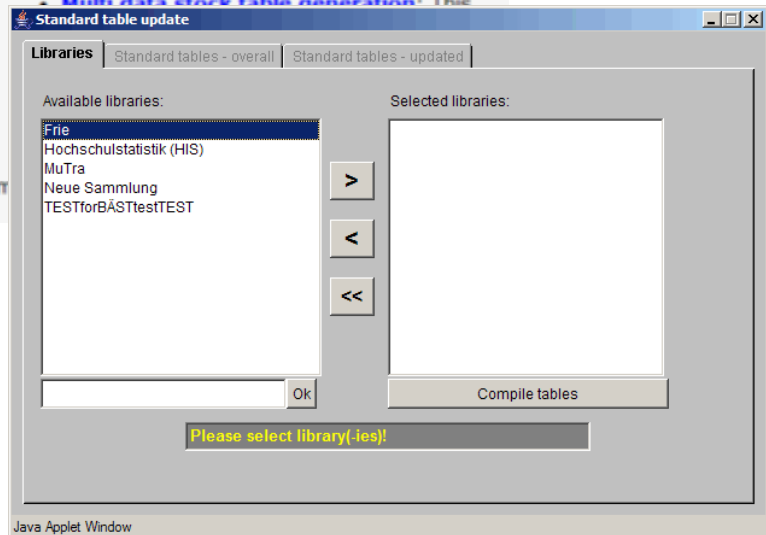
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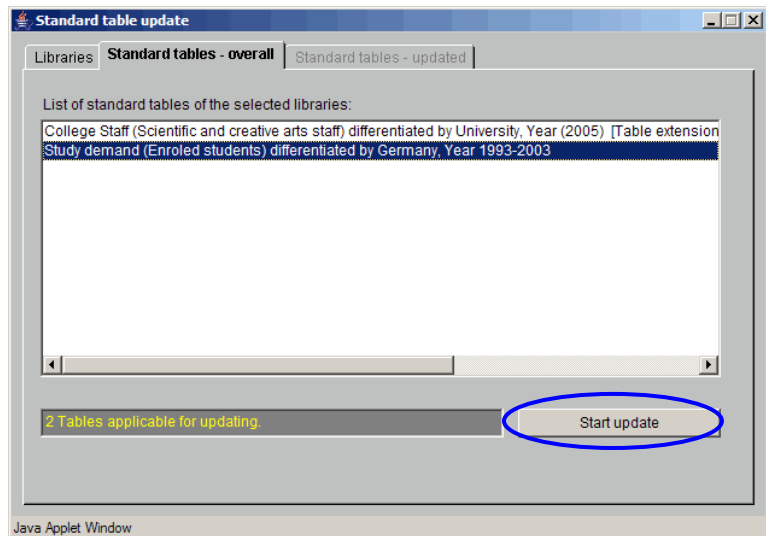
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Before starting to work with the ICE-demo-system

- **Highlight a library**, and select [>] to move it to the right window of the update-tool (or move several libraries at once).



- **Select a table** and click on [Start update] to run the update (Table titles do not change during update process).
- You can highlight **several tables** to update them all at once. If there is no new data available, it will be indicated.



3.3 Standard Tables: Types of Updating

Currently the system provides three general types of updating:

1. Update referring to "**one point in time**"
This type replaces all data of the table (e.g. the table was generated for the year 2005) by the newest available data of the system (e.g. for the year 2006).
2. **Supplementation of a time series**
According to the table structure the data in rows and columns gets supplemented by more current data. By using this type of updating, the table grows in size.
3. **Displacement of a time series**
According to the table structure new data gets implemented in rows and columns, while old data gets removed (to a corresponding number). The table size does not change.

For all three general types you have to decide, whether you want to use annual data, or data for semesters. The type of update gets defined during the save-as-standard-table procedure. The type can be changed later on with the *standard table management* (button „Structural info“ on tab „Tables“).

4. ICE-Spread Sheet (=ICEcalc): Data Evaluation

Use this tool to run calculations on your table. ICEcalc has a very special advantage: Calculations can be saved in the standard table and run well with the update function (except for quota calculation).

The system offers:

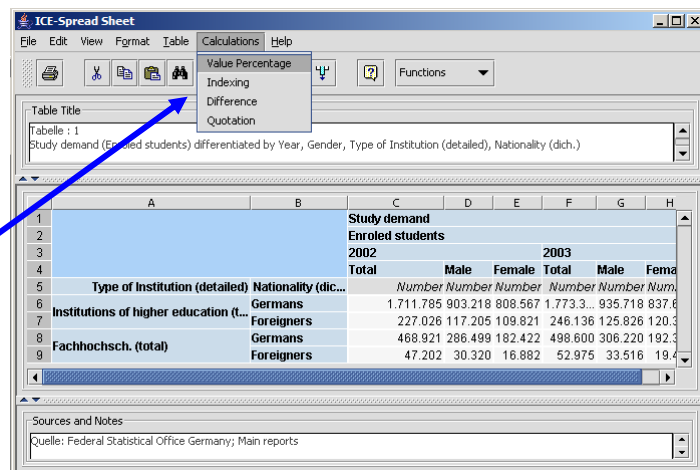
1. **Percentage calculations** (base value = 100)
2. **Indexing** (fixable base value)
3. **Difference calculations** (absolute value or percentage value)
4. **Quota calculation** (fixable base value)

Example:

We want to calculate the gender ratio in percent in a table that contains the number of students in "total", "male", and "female".

The procedure is always very similar:

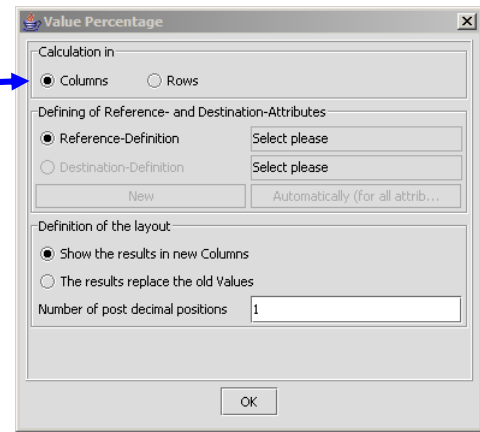
1. Open **Calculations|Value percentage** in the menu bar.



		2002		2003		
		Male	Female	Male	Female	
Type of Institution (detailed)	Nationality (detailed)	Number	Number	Number	Number	
	Germans	1.711.795	903.218	808.567	1.773.300	935.718
Institutions of higher education (total)	Germans	227.026	117.205	109.821	246.136	125.026
	Foreigners	468.921	286.499	182.422	498.600	306.220
Fachhochsch. (total)		47.202	30.320	16.882	52.975	33.516

2. Define the required parameters:

- Calculations in columns (see example) or rows
- Define reference (base value = 100%) by directly clicking on a column or row in the table (click on attributes) (example: attribute "total"). Meanwhile the window "value percentage" remains open.



		Study demand Enrolled students					
		2002			2003		
	Total	Male	Female	Total	Male	Female	
Type of Institution (detailed)	Nationality (dich.)	Number	Number	Number	Number	Number	
Institutions of higher education (total)	Germans	1.711.785	903.218	808.567	1.773.300	935.718	
	Foreigners	227.026	117.205	109.821	246.136	125.826	
Fachhochsch. (total)	Germans	468.921	286.499	182.422	498.600	306.220	
	Foreigners	47.202	30.320	16.882	52.975	33.516	

Option a): Select [Automatically adopt attributes of one table section] -> percentage data in the table (for both "male" and "female")

Option b): Highlight the attribute you want to run calculations on in the table (e.g. "female" in the example table below).

- Define table layout (see example: [Show results in new columns]).

3. Select [OK] to run the calculations in the table.

		Study demand Enrolled students					
		2002			2003		
	Total	Male	Female	Total	Male	Female	
Type of Institution (detailed)	Nationality (dich.)	Number (Basis = 100)	Number	Number Prozent (%)	Number (Basis = 100)	Number	Number Prozent (%)
Institutions of higher education (total)	Germans	1.711.785	903.218	52,4	1.773.300	935.718	52,8
	Foreigners	227.026	117.205	13,3	246.136	125.826	13,3
Fachhochsch. (total)	Germans	468.921	286.499	27,4	498.600	306.220	27,4
	Foreigners	47.202	30.320	2,7	52.975	33.516	2,7

All calculations are executed in one table unit, except for quota formation. This function always calculates with two table units.

After finishing the calculations, you have to close ICEcalc, to save the table (including the calculations) as XLS-, HTML-, or PDF-file, or as standard table.

Perform more calculations:

If you want to run several calculations: Go to the menu bar. Select "Edit|Initial state". That means that calculations you have done so far are lost. But they can be saved previously, e.g. as XLS-file or as standard table.

Additional options to edit the table:

- Change labels of rows and columns
- Connect and separate cells
- Change the fon- and background color
- Insert and delete rows
- Change font

This is a special advantage for all tables: Rows and columns that contain no data can selectively be blanked. (Menu bar "View|Blank|Empty rows and columns")

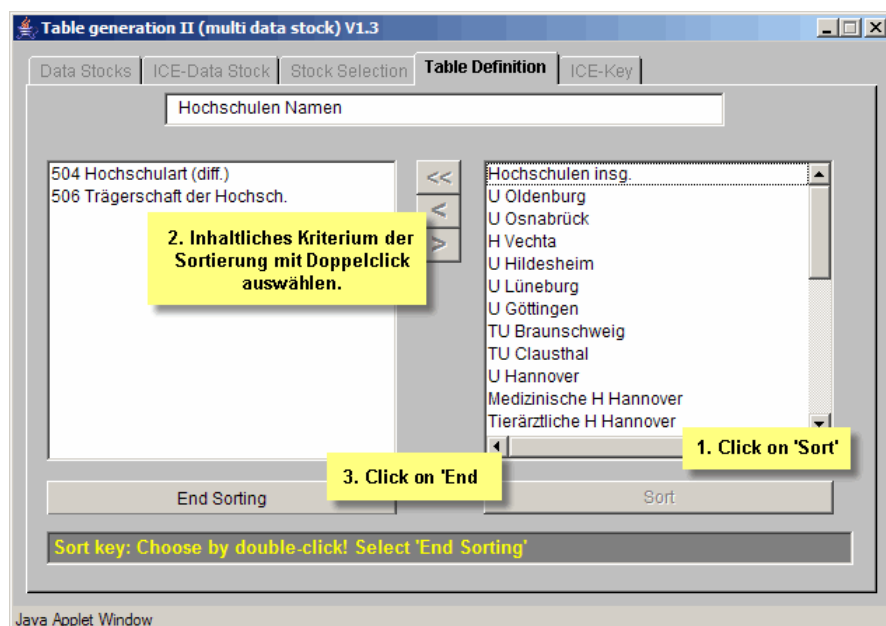
5. Further functions

Some features of TabGen I and II have not been included in TabGen III yet. This includes the sorting of attributes during table generation, and the interactive access to definitions of keywords and keys.

5.1 Sorting of Attributes

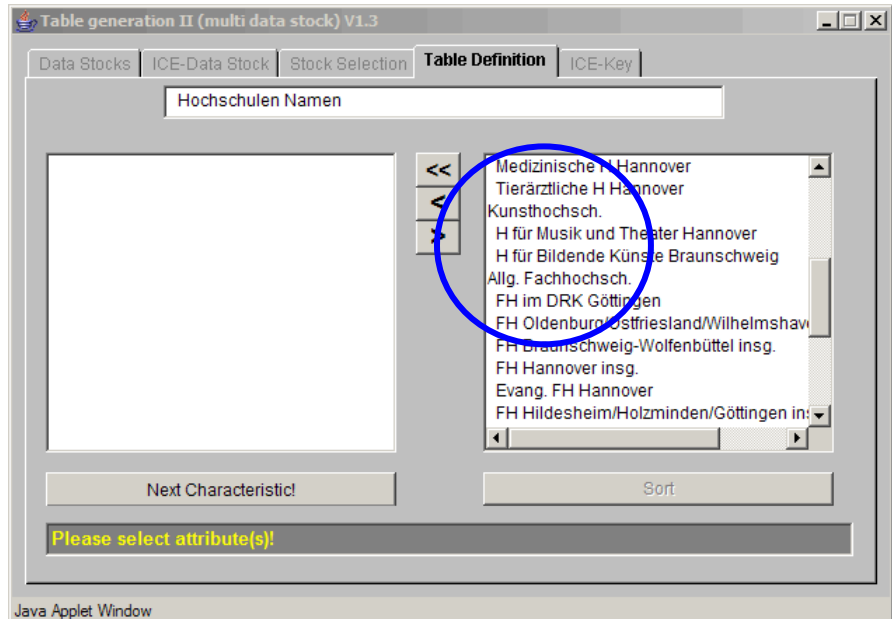
You can use this function with TabGen I and II when selecting attributes. Besides alphabetical sortation, this function allows to **sort attributes in a way concerning contents**. This can be a great advantage when facing long lists of attributes.

- You can sort attributes in *alphabetical order*: **select [Sorting]** and following **click on [End of sorting selection]**.
- Or **sort attributes in a way concerning contents**: some characteristics are organised hierarchically. So every college and university in Germany belongs to a federal state, just as to a type of institution (e.g. college of art). The system knows such inter-relations, and it provides multistage sorting functions:



At the selection of attributes: Select **[Sort]** underneath the right window. Predefined sorting premisis show up in the left window (for the characteristic "place of university" ("Hochschulstandort") e.g. "Germany" ("Deutschland") and "type of institution" ("Hochschulart").

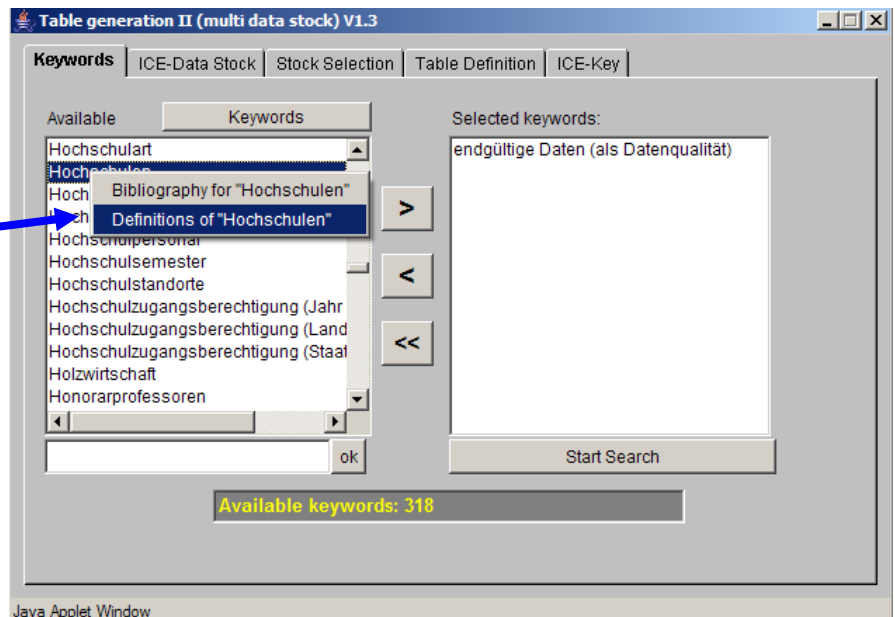
1. **Double click** on one or more of the displayed **sorting functions**.
2. Select **[End of sorting selection]** to start the sorting process.



5.2 Definitions

The function **definitions** enables you to read descriptions of characteristics and attributes, while using TabGen I and II. You can access the definitions through the **keyword list** or the **tab "ICE-Key"**. In both cases the procedure is the same:

- **Highlight the keyword**, whose definition you want to read
- **Right click** on the keyword
- Select **"definition of..."**
- The description gets displayed



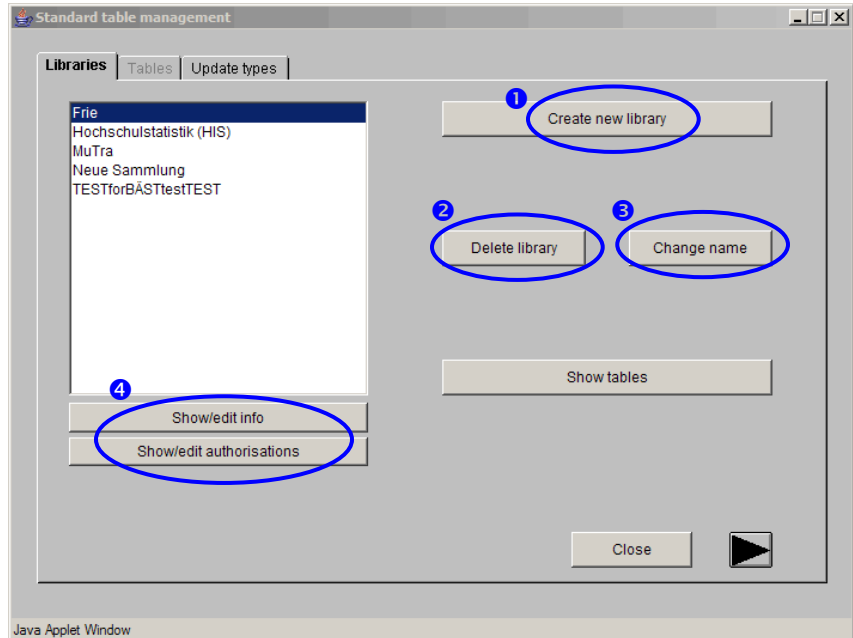
6. Standard Table Management

Select 'Table management' on the start window to open the management-tool of the standard tables.

You have various options

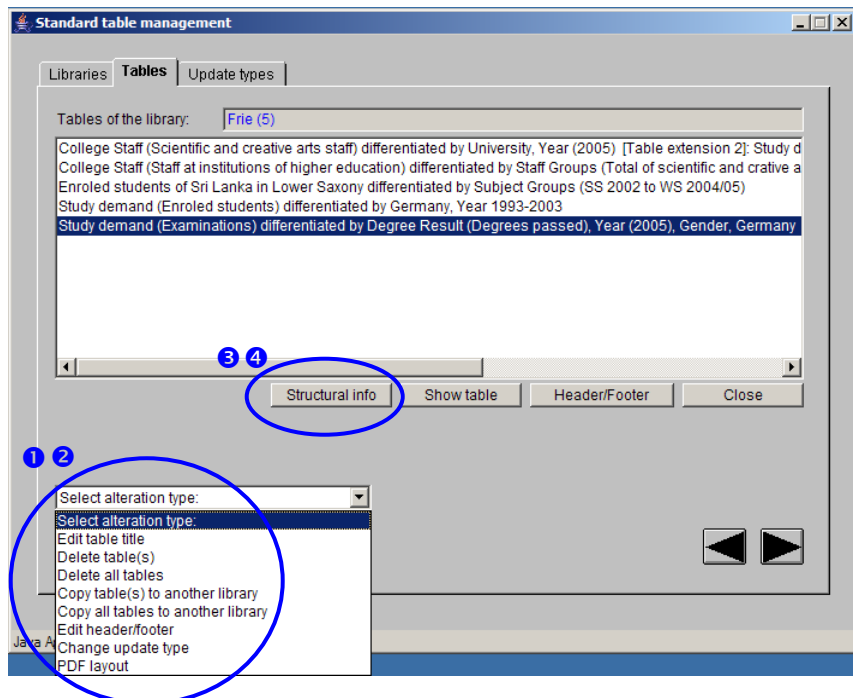
for libraries:

1. create or delete libraries
2. delete libraries
3. change label and description of libraries
4. define reading and writing permission



for tables e. g.:

1. change title
2. copy and delete tables
3. change type of update
4. define reading and writing permission



7. ICE-Key

7.1 What is the ICE key?

A data value can be clearly defined by a key. For this purpose key properties are used. They describe certain characteristics of a data stock (e.g. *gender*, *nationality* etc.). Characteristics are available as attributes: The characteristic *gender* may have the attribute *male*, *female*, or *unknown*. The characteristic *nationality* may have the attribute *German*, *foreign* etc. Every characteristic is linked to a number (code), and every characteristic has a set of assigned attributes that again are numbered.

To get an overview on the used keys, you can call up a key list as PDF or RTF.

7.2 What is a data stock?

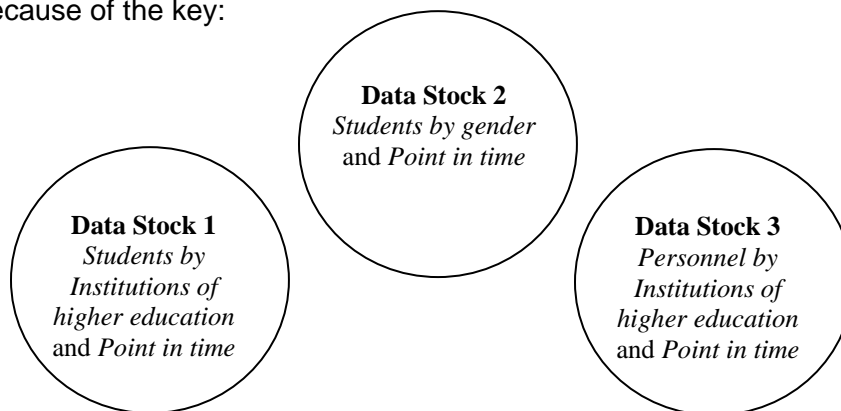
A data stock summarizes data that are related by topic (e.g. students at institutions of higher education, structured by *subject groups* and *länder* as well as by *gender* and *nationality*. By characteristics and attributes these data are described in the *ICE key*. Each data stock can be identified by

- a clear relation to a *topic area* (e.g. study demand, or personnel at universities),
- the data source (e.g. Federal Statistical Office),
- the data quality (e.g. final or preliminary data)
- and notation (e.g. number).
- In addition each stock has a different set of characteristics, like *gender*, *nationality*, *subject groups* etc. with varying attributes.

These properties of data stocks have a special meaning at TabGen, mainly at *keyword selection* and at *multi data stock table generation*.

For **keyword selection**, this means the following: Keywords are connected to characteristics and attributes that again are connected to data stocks (data stocks are encoded by characteristics and attributes = the key). So at keyword selection the system delivers all data stocks that are connected to a keyword by the key.

The following exemplary figure displays, which keywords can be used to find different data stocks because of the key:



Stock 1 can be found with the keywords: Students, Institutions of higher education, Point in time

Stock 2 can be found with the keywords: Students, Gender, Point in time

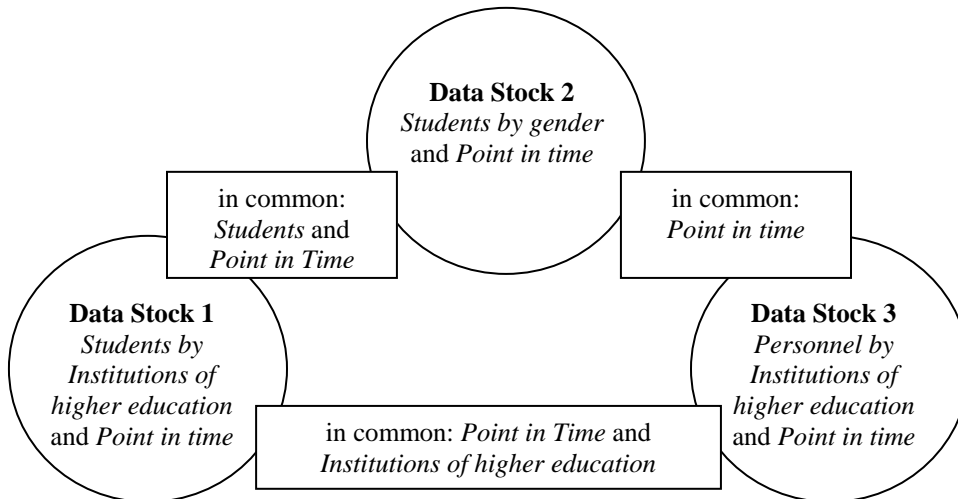
Stock 3 can be found with the keywords: Personnel, Institutions of higher education, Point in time

(These are only some examples. In addition each data stock has further related keywords.)

For **table extensions**, this means the following:

You only can combine data stocks that have at least one characteristic in common. These characteristics must be used for the titles of those rows and columns that cover several table units from different data stocks.

Example: This figure displays characteristics (in boxes) that are common to different data stocks.



A table designed to contrast students and personnel could look like this:

Study demand (Enroled students) nach Year (2005)
[TabTeil 2]: College Staff (Scientific and creative arts staff) nach Year (2005)

table extension in columns: students and staff

Study demand		College Staff
Enroled students		Scientific and creative arts staff
Year	Number	Number
2005	63.355	4.768

common characteristic in rows: : time point

Quelle: University Grants Commission; Sri Lanka
 Bestände: 401,202
 Auswertung aus der HIS- ICE-Datenbank (ICE = Information, Controlling, Entscheidung)

HIS: Hochschul-Informationssystem GmbH, Hannover, <http://www.his.de>

For this structure you could combine data stock 3 (personnel) either with data stock 1 or with data stock 2 (both data on students), because all they all have characteristic "Point in time" in common.