



SPREADSHEETS

Use of spreadsheets in general


- Basic spreadsheet applications-simple counting rows and columns.
- Financial modeling - especially in sensitivity analysis.
- Scientific and technical computing.
- Presentation graphics - charts, diagrams ...
- Database processing – spreadsheets are sufficient for of smaller database files.
- User Applications.

The most popular spreadsheets

- MS Excel
- SmartSuite - Lotus 1-2-3
- Corel Office – QuatroPro



A comparison of these three spreadsheets

- Excel focuses on the size of the workspace,
 - Lotus 1-2-3 is better in team work,
 - QuatroPro is excellent for technical computing
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What is Excel?

- spreadsheet suitable for numerical analysis based on rows and columns, for example budgets, financial models,
- graphic program - offers great opportunities to develop graphs,
- tool for working with databases

MS Excel

- the new results-oriented user interface,
- the maximum number of sheets is governed by available memory,
- each file can have 16 000 columns and million rows
- work with multiple files
- extensive use of the right mouse button
- definition of own sequences,
- simple work with the database using filters
- possibility of cooperation with other applications

Excel file extensions

- **xlsx - Workbook**
- **xlsm - Macro**
- **xltx – Template**
- **Ods – open document**
- **PDF or XPS files**
- **xls – for older versions**

Basic terms:

Cell:

- basic unit of the table - the intersection of row and column
- cells may include: numerical data, text strings, functions, terms, date, time, logical constants

Worksheet:

- label sheets: Sheet1, Sheet2 ... or may have a different name, eg. Costs, Sales ... according to their content
- Worksheets can be moved, copied, deleted ...

Cell addressing:


- in the active sheet:
column and row coordinates, eg. A1, B15 ...
- when referring to a cell on another sheet workbook:
 - name of the worksheet, exclamation mark and coordinates of column and row, for example. Sheet1! A1 or COSTS! B15
 - if the name of the letter consists of several words must be in apostrophes 'wage costs'! A10
- when referring to a cell in another workbook the address contains also the workbook name:
 - "C: \ Documents \ Nitra [ABC.XLS] Sheet1"! A10



Cell can contain:

- text**
- number**
- formula**
- date, time**

Spreadsheet lists may also include charts, drawings, pictures, buttons and other objects.



Writing text:

- As text is understood everything that can not fit in any other group (eg, incorrectly specified date or number)
- If the text inserted in the cell is longer than the width of the cell and neighboring cells on the right are empty, the text exceeds the cell, and overrides neighboring cells
- If you need to enter text that looks like a number, but for example begins with zero, entry must begin with apostrophes - eg. '01234

Writing numbers:

Allowed characters for the numbers are as follows:

- digits 0 1 2 3 4 5 6 7 8 9
- character E or e
 - to use the "scientific" format
- eg. 1.23 E11 means $1.23 * 10^{11}$ (exponent)
- Character %
- decimal separator: , or .
 - defined by the number format in local settings (Control Panel)
- characters + - (for the registration of positive and negative numbers)

Entry Date and Time:

To separate the parts of date we use the date codes:

- Dot . 17.3.1997
- slash / 17/3/1997
- dash - 17-3-1997
 - In all cases, the date will be displayed in standard format, ie 17.3.1997 (according to settings in Local settings)
- Separator between parts of the time:
 - colon: 15:30
- If you do not enter seconds, they will not be displayed in the cell, but in the editing line will appear (eg 15:30 - 15:30:00)

Formulas and functions

Formulas are mathematical relationships that we create

- 3 types of formulas - numeric, text, logical
- Result of the formula is mostly number, but can be also a text or logical value (TRUE, FALSE)

Functions - built-in features of Excel, makes it easier to work with the data (eg. statistical, financial, mathematical, etc.).

Numeric patterns

The operands are numbers, or addresses of cells

- Arithmetic operators:

^ Exponentiation

* Multiply

/ Division

+ Addition

- Subtraction

Examples of numerical formulas

=1+2

=A1+5

=A1+B1

=(C10-B10)*D10

=A1^2



Every formula begins
With symbol “ = “

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- Result of numerical formulas is number,
 - If the result is too long according to the cell width, it is displayed as “ ##### “

Text formulas

Works only with text items

- Text in a formula must be entered in quotes
"text"

- Text operator - & (ampersand)

Examples of text formulas:

= "Personal" & "Computer"

the result is "personal computer"

= A1 & "Day"

the result is a "nice day" (if cell A1 contains the text string "nice")

Logical Formulas

- Allows to test conditions
- If the condition is satisfied in the cell, the formula result value is TRUE
- If not, the result value is FALSE
- Logical operators: = > <
 >= <= <>

Eg.:

= A1 = 20 - TRUE if A1 value is 20

= A2 <> B2 - FALSE if A2 and B2 have the same content

Function

Excel uses a range of embedded Functions, which can be used by:

1. So called "Function guide" - icon "fx"

- choosing a function from menu
- function argument entry (marking values of the table or typing addresses)

or

2. Insert - Formulas

Absolute and relative cell addresses

Types of addresses:

A₁, B₃ ... - relative address

\$ A \$ 1, \$ B \$ 3 ... - absolute addresses

\$ A₁, B \$ 3 ... - mixed addresses

Switching between an absolute relative or mixed address :

- Mark the cell address in formula (clicking on it), press "F4" so many times to get the necessary addresses type

Use of addresses in the formulas when copying:

Relative addresses - change according to the direction

Copy

= A₁ + B₁ - when copying downwards

= A₂ + B₂

= A₃ + B₃

Absolute address - not be altered

= A₁ * \$ C \$ 10 - when copying downwards

= A₂ * \$ C \$ 10

= A₃ * \$ C \$ 10

Mixed address – changes only the row or column

Principle of automatic sum


Use the icon to calculate the sum: Σ (Automatic total)

After clicking on the icon (AutoSum) program automatically selects the cells

1. Cells upwards the formula cell
2. Cells to the left from the formula cell
3. Otherwise parentheses in the formula will remain empty: = **SUM** ()

Block operations - Work with the cell block

Marking blocks of continuous cells:

- mouse – click the left mouse button in one corner cell of the table and move to the opposite corner
 - click on a cell in one corner of the area classed, press Shift and click the cell in the opposite corner
 - using the keyboard - choose the corner cell block, press Shift and the arrow to set the cell in the opposite corner (holding Ctrl key may help:)
- The shape of the mouse pointer when marking cell blocks 



Select the entire row:

- click on the number identifying the row

Select the entire column:

- click on the point indicating the column

Labeling discontinuous cell blocks:

- Discontinuous block is defined as a group of different contiguous blocks
- mouse – mark a block, press and hold Ctrl and mark the next block of cells

Deleting cell contents:

Mark the cell block

Hit DELETE key

Moving and copying cell blocks:

Transfer:

- Mark the cell block and move the mouse pointer to the edge of the block - will change the arrow
- Hold the left mouse button and move the block

Copy:

- The same procedure but when moving the block with the mouse, hold Ctrl key

Moving and copying can be performed also using Clipboard

Edit - Copy (Cut) (Ctrl + C / Ctrl + X)

Edit - Paste (Ctrl + V)

Charts

Chart is a good complement to the table of numbers, for a better understanding of the data structure, trends and so on.

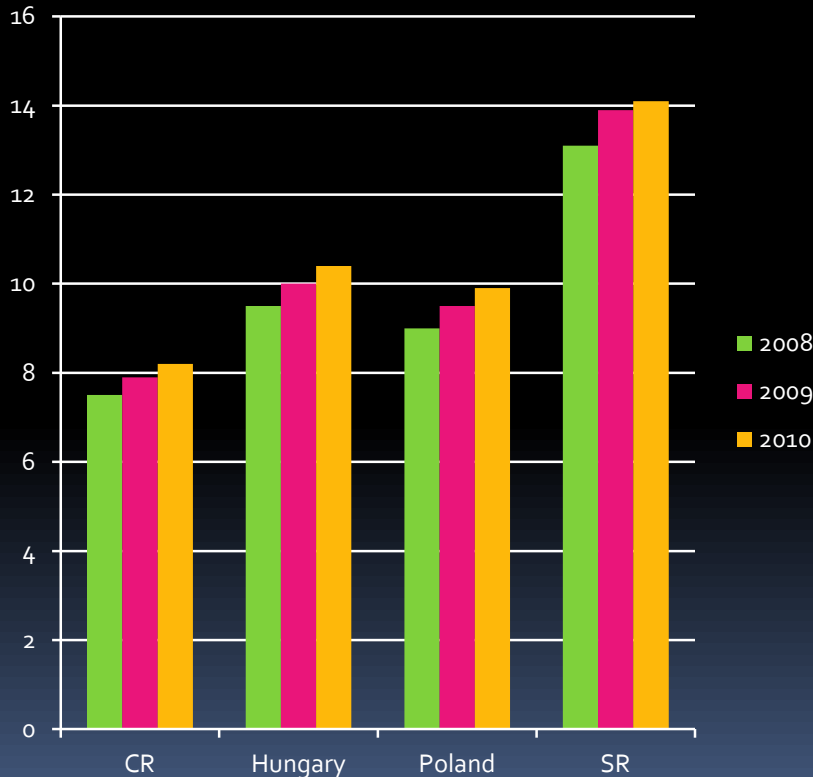
Chart is linked to data in the table, that means that changes in numbers in the table are reflected in the chart.

Chart we can create:

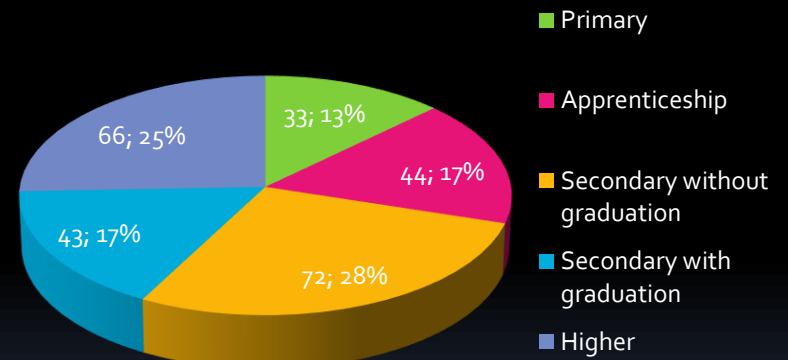
- as part of a worksheet
- on a separate sheet which will contain only the chart

Most common charts

Unemployment in Central Europe



Education



Creating a chart


- from the main menu, choose Insert – Chart
- using F11 (only for a chart on a separate sheet)

Basic chart adjustments

- clicking on different parts of the graph (data series, the texts, the legend ...) appears in a temporary frame with black squares
- to do changes, click the right mouse button
 - We are offered a menu for selected object (called "local menu")
- click of the left mouse button will activate next 3 tabs - Design, Layout, Format – these tabs can be used for other chart formatting.



Chart objects which can be edited:

- Text fields - chart title, description of axes, legend, free text ...
 - Graphical items - background of the chart, a frame around the chart, chart grid ...
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**THANK YOU FOR YOUR
ATTENTION!**