# Working with Microsoft Excel

Microsoft Excel is a software application that allows entry of numeric data in rows and columns to facilitate analysis and manipulation with mathematical formulas, and presentation as charts and graphs. It features calculation, graphing tools, pivot tables, and a macro programming language called Visual Basic for Applications. It has been a very widely applied spreadsheet for these platforms, especially since version 5 in 1993, and it has replaced Lotus 1-2-3 as the industry standard for spreadsheets. Excel forms part of Microsoft Office.

## Basic Operation

## Microsoft Excel has the basic features of all spreadsheets, using a grid of cells arranged in numbered rows and letter-named columns to organize data manipulations like arithmetic operations. It has a battery of supplied functions to answer statistical, engineering and financial needs. In addition, it can display data as line graphs, histograms and charts, and with a very limited three-dimensional graphical display. It allows sectioning of data to view its dependencies on various factors for different perspectives (using pivot tables and the scenario manager). It has a programming aspect, Visual Basic for Applications, allowing the user to employ a wide variety of numerical methods, for example, for solving differential equations of mathematical physics, and then reporting the results back to the spreadsheet. It also has a variety of interactive features allowing user interfaces that can completely hide the spreadsheet from the user, so the spreadsheet presents itself as a so-called application, or decision support system (DSS), via a custom-designed user interface, for example, a stock analyzer, or in general, as a design tool that asks the user questions and provides answers and reports. In a more elaborate realization, an Excel application can automatically poll external databases and measuring instruments using an update schedule, analyze the results, make a Word report or PowerPoint slide show, and e-mail these presentations on a regular basis to a list of participants.

## History

From its first version Excel supported end user programming of macros (automation of repetitive tasks) and user defined functions (extension of Excel's built-in function library). In early versions of Excel these programs were written in a macro language whose statements had formula syntax and resided in the cells of special purpose macro sheets (stored with file extension .XLM in Windows.) XLM was the default macro language for Excel through Excel 4.0. Beginning with version 5.0 Excel recorded macros in VBA by default but with version 5.0 XLM recording was still allowed as an option. After version 5.0 that option was discontinued. All versions of Excel, including Excel 2010 are capable of running an XLM macro, though Microsoft discourages their use.

## Charts

## Excel supports charts, graphs, or histograms generated from specified groups of cells. The generated graphic component can either be embedded within the current sheet, or added as a separate object.

## These displays are dynamically updated if the content of cells change. For example, suppose that the important design requirements are displayed visually; then, in response to a user's change in trial values for parameters, the curves describing the design change shape, and their points of intersection shift, assisting the selection of the best design.

## File Formats

## Microsoft Excel up until 2007 version used a proprietary binary file format called Excel Binary File Format (.XLS) as its primary format.[23] Excel 2007 uses Office Open XML as its primary file format, an XML-based format that followed after a previous XML-based format called "XML Spreadsheet" ("XMLSS"), first introduced in Excel 2002.[24]

Although supporting and encouraging the use of new XML-based formats as replacements, Excel 2007 remained backwards-compatible with the traditional, binary formats. In addition, most versions of Microsoft Excel can read CSV, DBF, SYLK, DIF, and other legacy formats. Support for some older file formats was removed in Excel 2007.[25] The file formats were mainly from DOS-based programs