Information Technology

1. *Do you know these things? What do you use them for?*





2. History

'computer' = a person, who, under instructions from a mathematician, performes mechanical calculations. [Wikipedia.com]

A **computer** in the modern definition is a programmable machine that receives input, stores and manipulates data, and provides output in a useful format.

The history of the modern computer begins with two separate technologies—automated calculation and programmability. Examples of early mechanical calculating devices include the abacus, the slide rule and arguably the astrolabe and the Antikythera mechanism (which dates from about 150–100 BC).

The "castle clock", an astronomical clock invented by **AL-JAZARI** in 1206, is considered to be the earliest programmable analog computer. It displayed the zodiac, the solar and lunar orbits, a crescent moon-shaped pointer travelling across a gateway causing automatic doors to open every hour, and five robotic musicians who played music when struck by levers.

The Renaissance saw a re-invigoration of European mathematics and engineering. **Wilhelm SCHICKARD**'s 1623 device was the first of a number of mechanical calculators constructed by European engineers, but none fit the modern definition of a computer, because they could not be programmed.

In 1801, **Joseph Marie JACKUARD** made an improvement to the textile loom by introducing a series of punched paper cards as a template which allowed his loom to weave intricate patterns automatically. The resulting Jacquard loom was an important step in the development of computers because the use of punched cards to define woven patterns can be viewed as an early, though limited, form of programmability.

Charles **BABBAGE** was the first person to design a fully programmable computer as early as 1837. However, he was unable to actually construct his computer due to a variety of reasons.

In the late 1880s, **Herman HOLLERITH** invented the recording of data on a machine readable medium. Prior uses of machine readable media, above, had been for control, not data. After some initial trials with paper tape, he settled on punched cards. To process these **punched cards** he invented the **tabulator,** and the **keypunch** machines. These three inventions were the foundation of the modern information processing industry. Hollerith's company later became the core of IBM.

By the end of the 19th century a number of technologies that would later prove useful in the realization of practical computers had begun to appear: the punched card, Boolean algebra, the vacuum tube (thermionic valve) and the teleprinter.

During the first half of the 20th century, many scientific computing needs were met by increasingly sophisticated analog computers, which used a direct mechanical or electrical model of the problem as

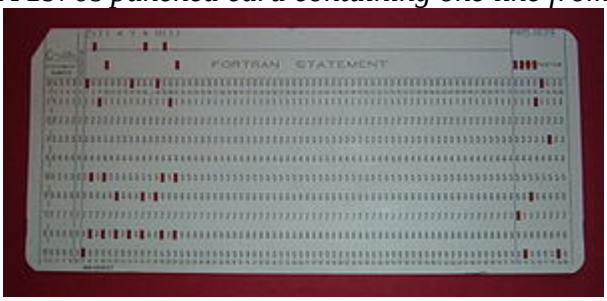
a basis for computation. However, these were not programmable and generally lacked the versatility and accuracy of modern digital computers.

Alan TURING is widely regarded to be the father of modern computer science. In 1936 Turing provided an influential formalisation of the concept of the algorithm and computation with the Turing machine. Of his role in the modern computer, *Time* magazine in naming Turing one of the 100 most influential people of the 20th century.

Throughout the 1950's, computer design was primarily valve driven. This was later replaced by transistor-driven design in the 1960's. Transistor-based computers were smaller, faster and cheaper, and therefore commercially viable. Integrated circuit technology, adopted in the 1970's enabled lower computer production costs, so that even individuals could afford them. That was the birth of the personal computer, as it is known today.

3. Computer Program

A 1970s punched card containing one line from a FORTRAN program.



In practical terms, a **computer program** may run from just a few instructions to many millions of instructions, as in a program for a word processor or a web browser. A typical modern computer can execute billions of instructions per second (gigahertz or GHz) and rarely make a mistake over many years of operation. Large computer programs consisting of several million instructions may take teams of programmers years to write, and due to the complexity of the task almost certainly contain errors.

Errors in computer programs are called **"bugs".** Bugs may be benign and not affect the usefulness of the program, or have only subtle effects. But in some cases they may cause the program to "hang"—become unresponsive to input such as mouse clicks or keystrokes, or to completely fail or **"crash".** Otherwise benign bugs may sometimes may be harnessed for malicious intent by an unscrupulous user writing an "exploit"—code designed to take advantage of a bug and disrupt a program's proper execution. Bugs are usually not the fault of the computer.

In most computers, individual instructions are stored as machine code with each instruction being given a unique number (its operation code or opcode for short). The command to add two numbers together would have one opcode, the command to multiply them would have a different opcode and so on. The simplest computers are able to perform any of a handful of different instructions; the more complex computers have several hundred to choose from—each with a unique numerical code. Since the computer's memory is able to store numbers, it can also store the instruction codes. This leads to the important fact that entire programs (which are just lists of instructions) can be represented as lists of numbers and can themselves be manipulated inside the computer just as if they were numeric data.

Though considerably easier than in machine language, writing long programs in assembly language is often difficult and error prone. Therefore, most complicated programs are written in more abstract high-level programming languages that are able to express the needs of the programmer more conveniently.

The task of developing large software systems presents a significant intellectual challenge. Producing software with an acceptably high reliability within a predictable schedule and budget has historically been difficult; the academic and professional discipline of software engineering concentrates specifically on this challenge.

4. Internet History

The internet is such a common part of our lives that we rarely think about how it works or how it was developed.

The internet is the term for the globally connected computers which use mainly cables to send and receive information. The web was originally developed by **Timothy John BERNERS-LEE** and **Robert CAILIAU**, both scientists working for the European Organization for Nuclear Research in Switzerland. They built a network of computers, connected via the internet, which helped the scientists to share information.

The key component of the web is the **hypertext,** enabling users to **browse** easily between the text on web pages using links. It is necessary to have a **web browser**, such as Internet Explorer or Mozilla Firefox. Another integral part of the web is HyperText Markup Language (**HTML**). It is the predominant language for web pages. Web pages are transmitted over the internet using Hyper Text Transfer Protocol **(HTTP**). The operation of the protocol is simple – when you enter the address of the web page you want to visit, you send a request from your browser to the web server. The web server processes the request and sends back the requested page.

Today, there are an estimated 1.7 billion internet users and the numbers are growing every day thanks to **broadband i**nternet connections, which, in the last decade, became generally available not only at work and school but also in our homes and replaced the old **dial-up** connections. People use the web for different reasons, e.g. to find information, keep in touch,or to **blog**.

punched card	*děrný štítek*
template	*šablona*
weave	*tkát*
pattern	*vzorec*
initial trial	*prvotní pokus*
invent	*vynalézt*
tabulator	*tabulátor*
keypunch machine	*klávesový děrovač*
Boolean algebra	*booleovská algebra*
core	*jádro*
foundation	*základ*
appear	*objevit se*
vacuum tube	*vakuová elektronka*

5. Parts of Computer

Speakers
Used to produce audio output

Monitor
An output device that lets you see your work as you go

CD/DVD Drive Reads and writes CD and DVD disc's

System Unit
The case that contains the CPU, memory, power supply, disk drives and all other hardware – such as modem – that are in an internal format

Printer
Produces printed copies of computer output

Microphone
Used to get spoken input

Floppy Disks
Used for storing small amounts of data for backup or transport to another PC

Hard Drive
Located inside the system unit and used to store programs and most data

Flash Memory Card Reader
Used to read Flash memory cards

Keyboard
The principal input device; used to type instructions into the computer

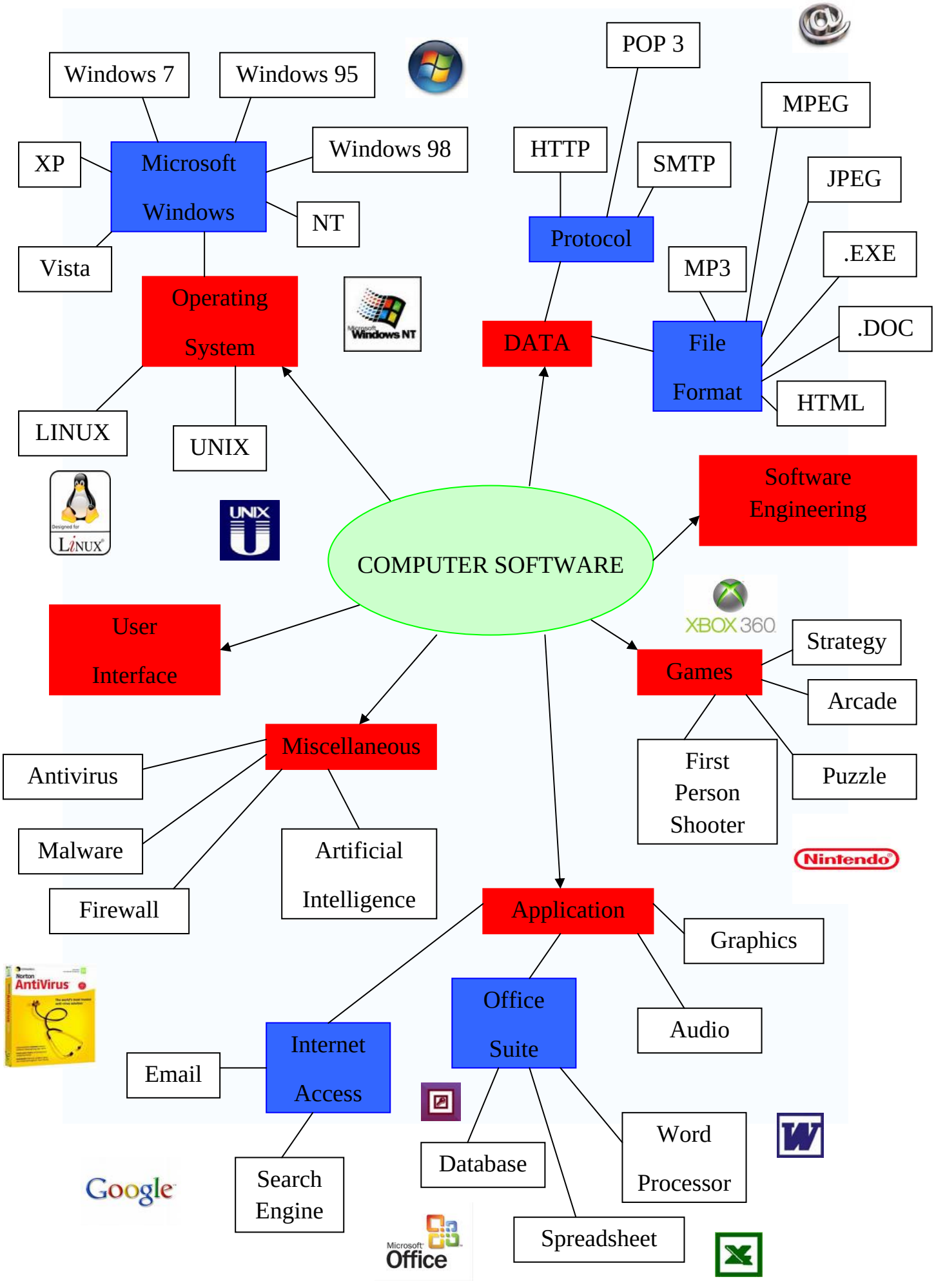
CD/DVD Discs
Commonly used to deliver programs and store large multimedia files

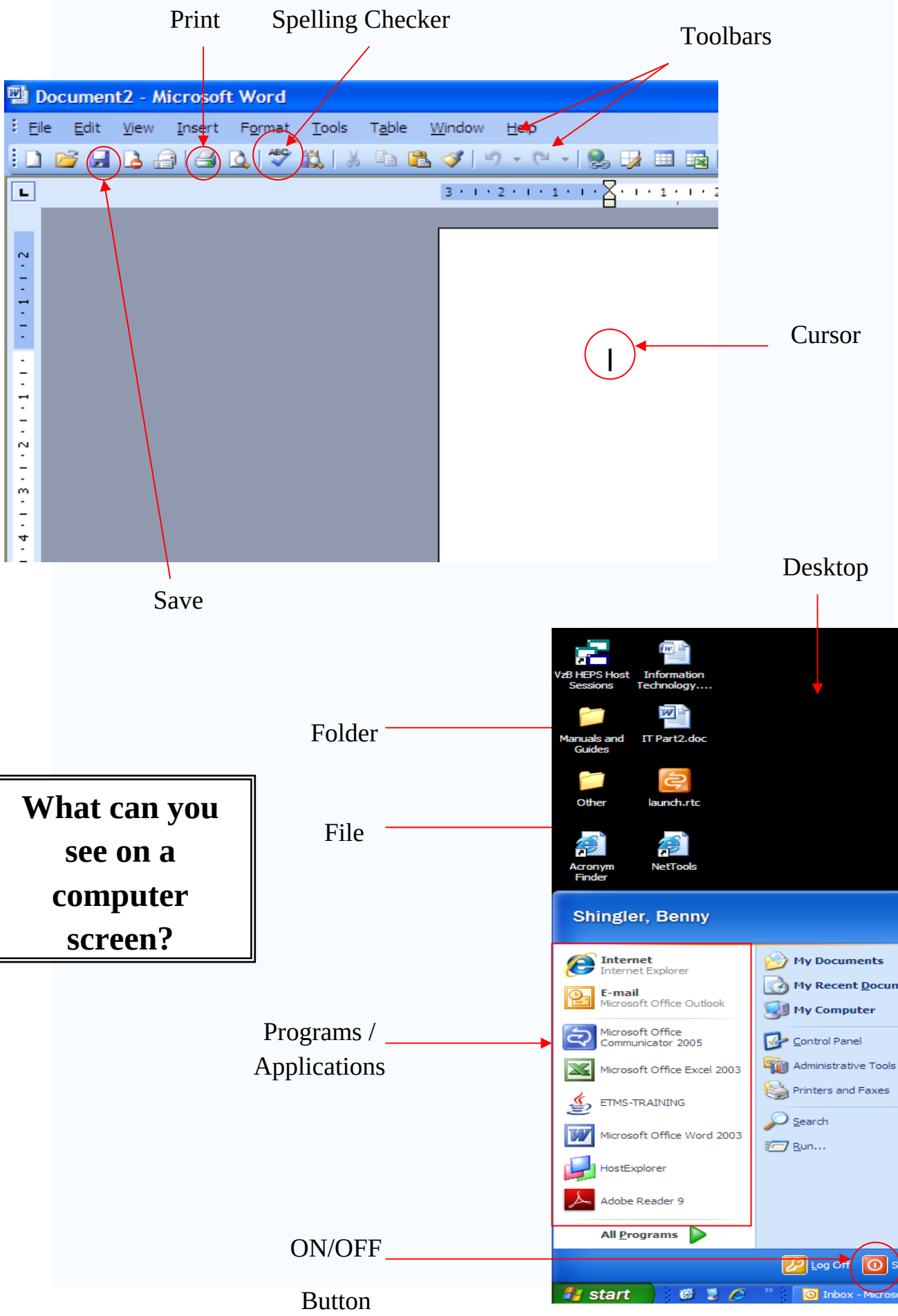
Mouse
A pointing device used to make on-screen selections

Floppy Disk Drive
Reads from and writes to floppy disks

floppy	*disketa*	***receive***	*přijímat*
keyboard	*klávesnice*	***calculation***	*výpočet*
device	*přístroj*	***abacus***	*počitadlo*
error prone	*náchylný k chybám*	***slide rule***	*logaritm.pravítko*
bug	*virus,chyba v programu*	***astrolabe***	*astroláb*
benign	*neškodný*	***zodiac***	*zvěrokruh*
assembly	*montáž,montážní*	***crescent***	*srpkovitý*
valve driven	*poháněný elektronkami*	***lever***	*páka*
viable	*dostupný*	***reinvigoration***	*oživení*
versatility	*všestranný*	***loom***	*tkalcovský stav*

6. Computer Software




Print
Spelling Checker
Toolbars
Document2 - Microsoft Word
File Edit View Insert Format Tools Table Window Help
Cursor
Save
Desktop
Folder
File
What can you see on a computer screen?
VzB HEPS Host Sessions
Information Technology....
Manuals and Guides
IT Part2.doc
Other
launch.rtc
Acronym Finder
NetTools
Shingler, Benny
Internet
Internet Explorer
E-mail
Microsoft Office Outlook
Microsoft Office Communicator 2005
Microsoft Office Excel 2003
ETMS-TRAINING
Microsoft Office Word 2003
HostExplorer
Adobe Reader 9
All Programs
My Documents
My Recent Documents
My Computer
Control Panel
Administrative Tools
Printers and Faxes
Search
Run...
Programs / Applications
ON/OFF
Button
Log Off
Shut Down
start
Inbox - Microsoft Out...

7. Name the Parts of the Computer:

…….

……. …….

……. …….

……. …….

……. …….

……. ……. …….