**Computer languages**  
  
Page 121, ex. reading the text

Computer languages

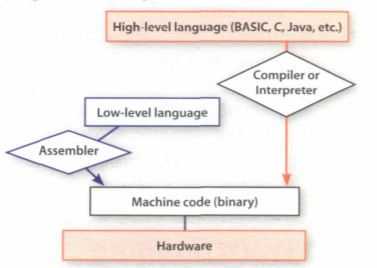
Unfortunately for us, computers can't understand spoken English or any other natural language. The only language they can understand directly is **machine code**, which consists of 1s and 0s (binary code)

Machine code is too difficult to write. For this reason, we use symbolic languages to communicate instructions to the compute For example, **assembly** **languages** use abbreviations such as ADD, SUB, MPY to represent instructions. The program is then translated into machine code by a piece of software called di assembler. Machine code and assembly languages are called **low-level languages** because they are closer to the hardware. They are quite complex and restricted to particular machines lo make the programs easier to write, and to overcome the problem of intercommunication between different types of computer, software developers designed **high-level languages** which are closer to the English language.

Here are some examples

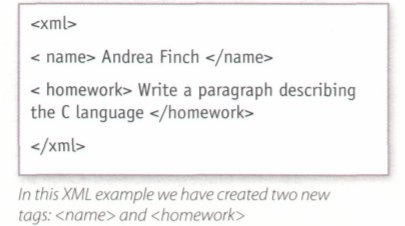
* **FORTRAN** was developed by IEM in 1954 and used for scientific and engineering applications.
* **COBOL** (**C**ommon **B**usiness **O**riented **L**anguage) was developed in 1959 and is mainly used for applications.
* **BASIC** was developed in the 1960s and was used in microcomputer programming because easy to learn. **Visual BASIC** is a modern version old BASIC language used to build graphical elements such as buttons and windows in Windows programs
* **PASCAL** was created in 1971. It is used in universities to teach the fundamentals of programming
* **C** was developed in the 1980s at AT&T. It is used to write system software, graph cs and commercial applications. **C++** is a version of C which incorporates object-oriented programming. the programmer concentrates cn particular things (a piece of text, a graphic or a table, etc) and gives each ob e:t functions which can be altered without changing the entire program. For example, to odd a new g aphis forridl, programmer needs to rework just the graphics object. This makes programs easier tc modify
* **Java** was designed by Sun in 1995 to run on Java applets provide animation and interactive on web pages. (See Unit 25)

Programs written in high-level languages must be translated into machine code by a **compiler** or an interpreter A compiler translates the source code into **object code** -that is, it converts the entire program into machine code in one go. On the other hand, an interpreter translates the source code line by line as the program is running.



It is important not to confuse **programming languages** with **markup languages**, used to create web documents .Markup languages use instructions known as **markup tags**, to format and link text files Some examples include:

* **HTML**, which allows us to describe how information will be displayed on web pages.
* **XML**, which stands for EXtensible Markup Language. While HTML uses pre-defined tags, XML enables us to define our own tags, it is not limited by a fixed set of tags
* **VoiceXML**, which makes Web content accessible via voice and phone. VoiceXML is used to create voice applications that run on the phone, whereas HTML is used to create visual applications( for example, web pages)



Page 122, ex. 3B **Read the text again and answer these questions**.

**1.** Do computers understand human languages? No

Why? / Why not? Why the only language they can understand directly is machine code, which consists of 1s and 0s (binary code)

**2.** What is the function of an assembler? It is a program that translates the machine code by means of a piece of software

**3.** Why did software developers design high level languages?

To be closer to the English language.

**4.** Which language is used to teach programming techniques? PASCAL

**5.** What is the difference between a compiler and an interpreter?

A compiler translates the source code into object code, that is, converts the entire program into machine code at one time. On the other hand, an interpreter translates the source code line by line as the program runs.

**6.** Why are HTML and VoiceXML called markup languages?

Brand languages use instructions known as markup tags, to format and link text files

Page 122, ex. 3C **Complete these sentences with a computer language from the text.**

**1** XML allows us to create our own rags to describe our data better we aren’t constrained by pre-defined set of tags the way we are with HTML.

**2** IBM developed FORTRAN in the 1950s. It was the first high-level language ir data.

**3** JAVA applets are small programs that run automatically on web pages and let you

watch animated characters,play games. etc

**4**  VoiceXML is the HTML of the voice web, Instead of using a wet browser and a keyboard, you interact with a voice browser by listening to pre-recorded audio output and sending audio input through a telephone.

**5.** This language is widely used in the business community For example, the statement ADD VAT NET-PRICE could be used in a COBOL program.

**Word building**

**Page 122, ex. 4. Look at the words in the boxes. Are they nouns, verbs or adjectives? Write n, vor adj next to each word. There may be more than one possible answer. Complete sentences with words from the boxes**

|  |  |  |  |
| --- | --- | --- | --- |
| program \_\_\_\_ | programmers \_\_\_\_ | programming \_\_\_\_\_ | programmable\_\_\_ |

**1** Programming is the process of writing a program using a computer language

**2** A computer program is a set of instructions that tells the computer how to do a specific task

**3**  Most computer programmers make plan of the program before they write it.

**4** A programmable keyboard allows the user to configure the layout and meaning of the keys.

|  |  |  |
| --- | --- | --- |
| compile\_\_\_ | compiler\_\_\_\_\_ | compilation\_\_\_\_\_\_ |

**5** Programs wilten in a high-level language require compilation -that is, translation into machine code the language understood by the processor

**6** A source program is converted into machine code by software called a compiler

**7** Programmers usually compile their programs to generate an object program and diagnose possible errors

|  |  |  |  |
| --- | --- | --- | --- |
| bug\_\_\_ | debug\_\_\_ | debugger\_\_\_\_ | debugging\_\_\_\_ |

**8** Any error or malfunction of a computer program is known as a bug

**9** A debugger is a program used to test and debug other programs.

**10** The process of going through the code to identify the cause of errors and fixing them is called debugging.

**Page 123, ex. 5A Look at the HELP box and then make sentences using these prompts**.

**1** not easy write instructions in COBOL Its not easy to write instructions in COBOL

**2** expensive/sct up a data processing area

**3** advisable/test the programs under different conditions

**4** unusual/write a program that works correctly the first tire it's tested

**5** important / use a good debugger to fix errors

**6** easy earn Visual BASIC

**Page 123, ex. 5B Choose the correct words (a-c) to complete these sentences.**

**1** We use high-level languages because machine code is too difficult to read , understand and debug.

**a** read **b** reading **c** to read

**2** I went on the course to learn how to be a better programmer.

**a** learn **b** to learn **c** for to learn

**3** I'm not interested in learning that computer language.

**a** learn **b** learning **c** to learn

**4** He refuses to do the project with me

**a** do **b** doing **c**  to do

**5** The engineers warned the employees not to touch the cables.

**a** touch **b** touching **c** to touch

**6** They may not come to the conference

**a** come **b** coming **c** to come

**7** Spyware can make your PCperform more slowly.

**a** perform **b** performing **c** to perform

**8** This program is too slow to do the simulation.

**a** do **b** to do **c** for doing

**THE HELP box**

The infinitive with to is used in the following ways:

* To express purpose

We use symbolic languages **to communicate** instructions to the computer (e in order to communicate.)

**Not:... for** to communicate

* After adjectives

BASIC was widely used in the past because was easy to learn

Machine code is too difficult to write not easy enough to write)

After certain verbs (eg. **afford, demand plan, agree, expect promise, appear, hope, refuse, arrange, learn, try, decide, manage**)

A lot of companies are now **trying to develop** voice applications for web access

* After the object of certain verbs (eg. **advise encourage, allow, expect, tell, ask, invite want, enable, order, warn**).

HTML **allows us to describe** how information will be displayed on web pages

The bare infinitive (without to) is used in the following ways:

* After modal verbs (e.g **can, could, may, might will, would, must, should**)

Unfortunately, computers **can't understand** spoken English

High-level languages **must be** translated into machine code

* After the object with the verbs **make** and **let**

Programs **make computers perform** specific tasks

**Visual BASIC and VoiceXML**

**Page 124, ex. 6A Work in pairs. Student A reads about Visual BASIC, Student B reads about VoiceXML. Try not to look at your partner's text. Complete your part of the table.**

Student A

Visual BASIC was developed by Microsoft in 1990. The name BASIC stands for Beginner's All-purpose Symbolic instruction Code The adjective Visual refers to the technique used to create a graphical user interface. Instead of writing a lot of instructions to describe interface elements, you just add pre-defined objects such as buttons, icons and dialog boxes It enables programmers to create a variety of Windows applications.

Student B

VoiceXML (EXtensible Markup Language) was created in 2000 to make web content accessible via the telephone. For input, it uses voice recognition. For output, it uses pre- recorded audio content and text-to-speech.

Applications:

* voice portals, where you can hear information about sports, news, traffic, etc.
* voice-enabled intranets (private networks)
* voice e-commerce
* home appliances controlled by voice.

|  |  |  |
| --- | --- | --- |
|  | **Visual BASIC** | **VoiceXML** |
| **What does Visual BASIC/ VoiceXME stand for?** | Beginner’s All-purpose Symbolic Instruction Code | Voice Extensible Markup Language |
| **When was it developer?** | 1990 Microsoft | 2000 |
| **What are its main features?** | instead of whiting a lot of instructions to describe interface elements, the programmer adds pre-defined objects, such as button, icons, etc. | For input, it uses voice recognition; for output, it uses pre-recorded audio content and text-to-speech. |
| **What is it used for?** | To create Windows applications | To make Web content accessible via the telephone.  Voice applications: web portals, intranets, e-commerce, home appliances. |