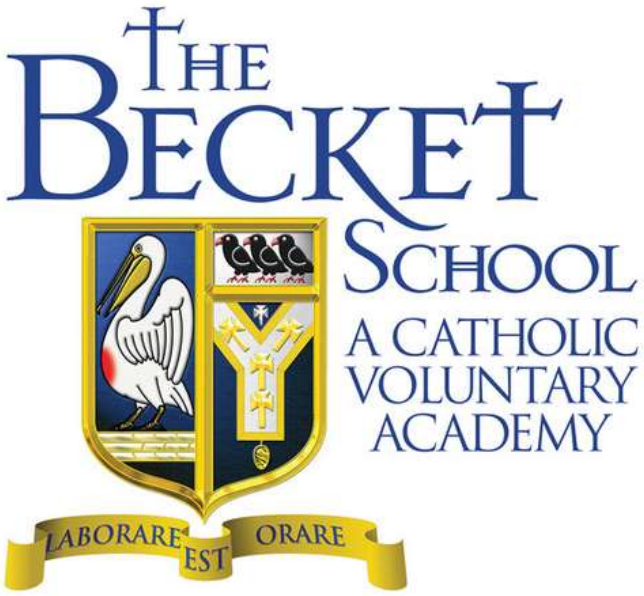

Computer Science

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Induction task 1: Definitions

Induction task 2: System & Application software

Induction task 3: Past paper questions

I am pleased you have chosen to study Computer Science AS level.

You will be studying AS Computer Science (H046) from the OCR exam board. This consists of 2 modules Computing principles (01) and Algorithms and problem solving (02*); both of these modules are assessed by a 1 hour 15 minutes examination.

Further information provided by the exam board may be found at:

http://www.ocr.org.uk/qualifications/as-a-level-gce-computer-science-h046-h446-from-2015/

In this preparation task you will cover some of the language and concepts of computer systems. You may well be familiar with some of the terms and ideas from studying Computer Science at GCSE level. It is important that you can use the words and ideas correctly and have a solid understanding of these basics for the start of your course.

I have included some past paper questions so you can see that this work does get tested in your exam which you will sit next June.

Please bring your work with you (paper or electronically) to our first lesson in September.

We hope you have a good summer and look forward to seeing you in Year 12.

Mr Muldoon

Course Administration

As part of you course we will provide you with a course book (paper or electronic) which will form the backbone of your AS studies.

Additional notes, either taken by you or provided by us, will be required to extend your understanding of the topics being studied. Please bring to all lessons:

- An A4 binder
- A4 lined paper
- Pens, pencils, ruler etc.

To get the most out of the course you need to research around the topics we cover in lessons, add these additional notes to your folder.

Every week we suggest you review the previous weeks work and produce revision style resources using the techniques you found most effective when revising your GCSE level work (notes, mind maps, flash cards, presentations, podcasts etc.).

The programming topics are mainly covered in Algorithms and problem solving (02*) (examined next June) however programming is a topic where there is no substitute for practice and in addition to the theory we will be setting you programming tasks to complete.

In order to run your programming solutions on the school network you will need to be given special access rights; these come with a great deal of responsibility and I want to make it clear at the beginning of the course that anyone abusing these rights will be expelled from the course.

I hope this helps you understand how AS Computer Science works and if at any point in the course you have questions please come and ask; we will always try to help.

Section 1 – Components of a computer system

1. Types of Hardware
2. Types of Software

Candidates should be able to:

a) Define the terms
   i) Hardware
   ii) Software
   iii) Input device
   iv) Storage device
   v) Output device;

b) Describe the purpose of:
   i) Input devices
   ii) Storage devices
   iii) Output devices;

c) Describe the different roles and functions of:
   i) Systems software
   ii) Applications packages;

Topic 1 – Definitions

Definitions

Complete the following giving one concise sentence for each. Use the internet or books you have.

Hardware:

Software:

Peripheral

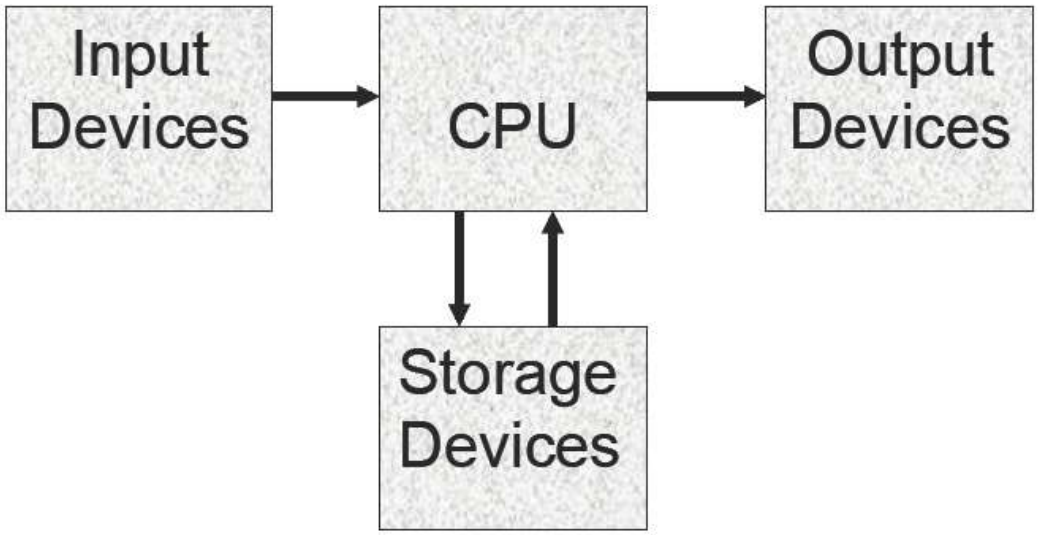
Input Device

Output Device

Storage Device

All computers have the same basic 4 building blocks:

1. Input Devices
2. The Central Processing Unit (CPU)
3. Output Devices
4. Storage Devices



Task 2: If you are working from a printed document in the same document as you used for the first task make a table with 3 columns. Put the headings:

INPUT DEVICES	OUTPUT DEVICES	STORAGE DEVICES

See how many devices you can list in each column off the top of your head.

Now research other devices and add them into your table.

Find out the approximate capacity (how much data it will hold) of each of the storage devices and create a new list of the storage devices in capacity order.

	STORAGE DEVICE	CAPACITY

Definitions

These definitions are from the BCS Glossary of ICT and Computing Terms (Eleventh Edition, 2005)

Software:

Software consists of programs, routines and procedures (together with their associated documentation) that can be run on a computer system.

Programs, routines and procedures are a sequence of instructions, understood by the computer, to be carried out by the computer system.

Software carries out tasks that can broadly be split into two categories:

1. Tasks that need to be carried out because of the existence and use of the computer

(things like the storage of data on discs, the handling of printers etc).

2. Tasks that people want to do even if computers did not exist (things like producing letters, doing calculations on columns of figures etc.).

These tasks are carried out by two areas of software:

1. System software

2. Applications software

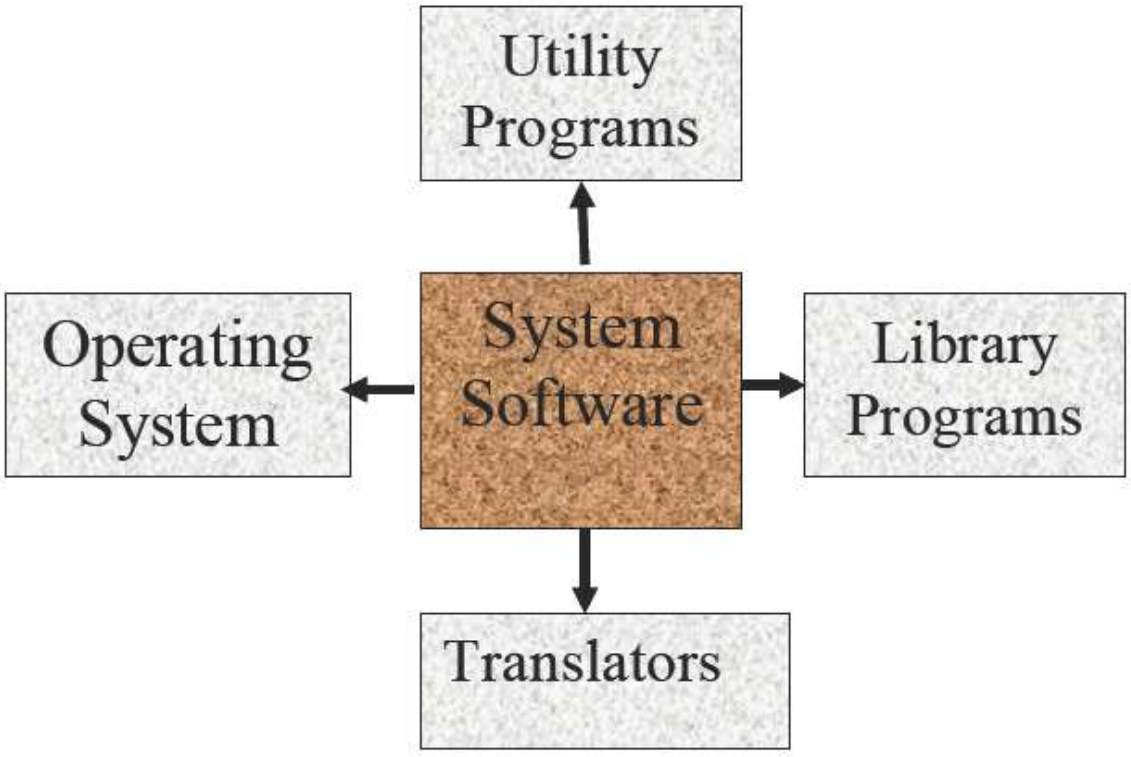
System software:

When you use a computer you don't have to worry about the detail of all the things that are going on to allow you to carry out actions like saving work to a removable disc or sending a file to the printer.

The software that allows the user to be unaware of how the computer carries out the list of commands needed for these simple user requests is system software.

System software is made up of the following f types of software:

1. The operating system
2. Utility programs
3. Library programs
4. Translators



Operating System:

Operating system is the name given to the collection of systems software that manages the computer. It is usually supplies with the computer.

The most common operating systems today are:

- o Windows and Linux(for the PC)
- o MacOS (for the apple Macintosh)
- o UNIX (for larger machines)

There are many other operating systems created for a variety of computer systems.

There are a standard features that all operating systems provide for example:

- o Management of the hardware
- o Error reporting
- o A user interface

Utility Programs

A utility program is a system program designed to perform a commonplace task, for example, the transfer of data from one storage device to another or sorting a set of data.

The exact definition of utility software was far easier when operating systems were relatively simple in comparison to the operating systems of today. Many of the utilities are now part of the OS whereas others have become applications in their own right (e.g. virus protection software).

Clear examples of utility software are:

- o Text editors
- o Disk formatting
- o Compression

Utility programs are programs that are available to the user via the operating system. Each piece of utility software is designed to carry out a specific task that users regularly need.

Library programs

Library programs are designed for users to include them in their own programs. Each piece of code is designed to do a specific job. Library programs are specific to the programming language being used.

Translators

A translator is a program that takes a program written in a programming language and translates it into a language the CPU can understand (machine code).

Driver:

A driver is a piece of software supplied with a peripheral (e.g. printer, mouse, monitor etc). a driver 'bridges the gap between the operating system and the peripheral and converts commands from one into instructions the other can obey.

Many drivers are delivered with the operating system, however, if you buy a new type of say a mouse or DVD drive you will be delivered a CD or DVD (or given a website address) with the driver for that specific device and you will need to install it.

Filter:

A filter is a piece of software, used in conjunction with an application that allows data stored in one format to be accessed by an application that uses another format.

For example Microsoft WORD has a series of filters that take files in, for example, WordPerfect format and converts them into a format WORD can handle.

Applications software:

Applications program:

An applications program is an information system designed to carry out a task that would need to be carried out even if computers didn't exist.

Examples: Keeping accounts, editing text.

An applications program does something useful for a user.

Applications package:

An applications package is a complete set of applications programs together with the appropriate documentation.

Generic software:

Where the application is appropriate to many areas it is usually described Generic software.

For example word-processing software is appropriate for creating a personal letter, producing business correspondence, academic research, producing notes, writing a book, etc.

Integrated package:

An integrated package is a single piece of software that provides a user with basic information processing functions.

It usually provides for word-processing, spreadsheets and small databases functions; it may also provide additional facilities such as charts, a diary and communications.

Integrated packages are designed so that data can be moved easily between the various parts enabling complex tasks to be performed easily.

Integrated packages have the features that:

1. They present a common style of user interface – this means that a user can quickly learn and use each one.

2. Input/export of data is easy between the applications

3. The elements are made by the same company

Tutorial:

A tutorial is a program that helps a user to learn about a new application.

The tutorial will include a simple explanation of how to use the system, diagrams and may include examples that the user can try – the results of which are sometimes monitored by the tutorial program.

Q1: What is a software driver and what is its purpose?

Q2: What 4 areas need to be discussed to fully describe system software?

Q3: What is the difference between system software and application software?

Q4: What is generic software? Give an example of generic software.

Q5: What are the features of an integrated software package?

Q6: What is a software filter?

Q7: Why do you think companies like MICROSOFT provide software filters for file formats of their rivals (like WordPerfect)?

AS Computer Science

Induction task 3: Past paper questions

On the following pages there are examples of exam questions taken from past papers. Please complete these questions (You can copy & paste these onto the Word document you have prepared in tasks 1 & 2 if you are working from the printed booklet)

Section 1: Components of a Computer System

1 (a) State what is meant by each of the following:

(i) An input device

.....

.....

.....[2]

(ii) An output device

.....

.....

..... [2]

(b) A supermarket checkout terminal has both input and output devices. State two input devices and two output devices which would be used at the checkout. In each case state why they would be used:

(i) Input device 1

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.....

.....

.....

(ii) Input device 2

.....

.....

.....

.....

(iii) Output device 1

.....

.....

.....

.....

(iv) Output device 2

.....

.....

.....

.....

[8]

Section 1: Components of a Computer System

Source Paper: 2010 June Q1

1. A small store currently has two exits for customers. Each exit has a computerisedcheckout.

(a) Describe the purpose of the following devices that would be used at the checkouts and in each case give an example:

(i) Input device

.....
.

.....

.....

.....

[2]

(ii) Output device

.....

.....

.....

.....

[2]

(iii) Storage device

.....

.....

.....

.....

[2]

(b) The checkouts will each use system software and application packages

State the function of each of the following:

(i) System software

.....

.....

.....

.....

[2]

(ii) Applications packages

.....

.....

.....

.....

[2]

Section 1: Components of a Computer System

1 A student has a stand-alone computer system.

(a) Explain the difference between the hardware and the software of a computer system.

.....

.....

.....

.....

[2]

(b) The student will use both systems software and applications software.

State the purpose of:

Systems software

.....

.....

Applications software

.....

.....

Thank you for completing these preparation tasks for AS Computer Science. By doing this you are showing your commitment to the course and your studies.

Completing these tasks will mean we can have confidence in your understanding and use of some of the terms you need to be familiar with in AS Computer Science.

We look forward to seeing you at The Becket School 6th form in September.

Mr Muldoon