Software

We have looked briefly at Hardware but equipment such as this needs instructions for it to do something – Programs or software. In ROM, is the smallest and first piece of software – Bootstrap loader. This program is set to run (execute) when the computer is first turned on. This program tells the computer to load its operating system.

**Software**

Sometimes abbreviated as S/W, software is a collection of instructions that enable a user to interact with the computer or have the computer perform specific tasks for them. Without software, the computer would be useless. For example, without your Internet browser software you would be unable to browse the Internet and without a software operating system the browser would not be able to run on your computer.

**Bootstrap loader**

Alternatively referred to as bootstrapping, boot loader, or boot program, a bootstrap loader is a program that resides in the computers EPROM, ROM, or other non-volatile memory that automatically executed by the processor when turning on the computer. The bootstrap loader reads the hard drives boot sector to continue the process of loading the computers operating system. The term boostrap comes from the old phrase "Pull yourself up by your bootstraps."

The boot loader has been replaced in computers that have an Extensible Firmware Interface (EFI). The boot loader is now part of the EFI BIOS.

**Operating system ABCs**

An operating system or OS is a software program that enables the computer hardware to communicate and operate with the computer software. Without a computer operating system, a computer and software programs would be useless

**Binary and Computers**

Fundamentally computers are many, many switches that work together to process data. These switches can only be in one of two states, on or off, and so a computer is often referred to as a two state device. The on/off states are more easily represented by 0 and 1.

Computers only understand instructions and data in binary and the first computers had to be programmed using binary instructions and the data that was to be processed had also to be in binary. This was very slow and difficult and errors in programs often meant rewriting large portions of code.

To speed up the process, low level programs (often called assembler languages) were developed that made the writing of instructions much easier and quicker. Every binary coded instruction is replaced by a short English word.

*The definition of a low level language is that one, and only one, assembler instruction replaces a machine language instruction (binary).*

Assembly language programming is beyond the scope of current GCSE courses but an understanding of binary is needed.

### Task 1

1. Create a prediction exercise from the Software notes page. Remove every 10th word
2. Create a prediction exercise from the Software notes page. Remove key words
3. Describe the merits off each exercise.

### Task 2

In pairs, discuss the presentation style of this page of notes and how it could be improved. Consider a range of target audiences.