**D2 - Improvements to a computer system**

The computer system I have built is ready to use, but by upgrading hardware and software the performance could be improved, facilitating more efficient workflow.

The motherboard model determines the CPU models the computer can have. Because the motherboard in the computer is old (in terms of technology), it is likely the fastest compatible CPU would be an Intel Pentium. The highest end Pentium processor is the Pentium D Presler XE, which is dual core and has a clock speed of up to 3.7GHz, more than sufficient for an entry-level PC.

The GPU could also be upgraded, as the one currently in the PC is intended for low graphics-intense tasks, and will struggle to play videos and use any kind of graphics software.

As the bus standard for GPUs has not changed in about a decade, all modern graphics cards will be compatible with this PC, so it would be possible to get a high-end card such as the NVidia GTX 980. However, this would be overkill for a PC that is probably never going to do anything more graphically intensive than rendering a video, so a newer low-end card such as the AMD Radeon 5450 would be acceptable.

The computer has 2GB of RAM, likely because the hardware is from a time when 64-bit computers were new, so all software was designed to run on 2GB of RAM, so although it was possible to have more RAM, 2GB was enough and was the cheaper option. Now, however, applications are no longer designed with memory constraints in mind (for example, the Chrome and Firefox browsers use almost 1GB of RAM with just a few tabs open), so more RAM is needed. The computer has 4 RAM slots, so adding two more 2GB sticks of RAM will give 6GB, which is enough to multitask with new memory-intensive software.

Another piece of hardware that has a huge impact on performance is the hard drive. The hard drive currently in the PC is a SATA HDD, but upgrading it to an SSD would greatly increase disk access speed, resulting in much better perceived performance.

As well as hardware, software has a big impact on performance.

The computer almost certainly came with Windows XP, which is no longer supported by Microsoft and is incompatible with most new software. It should be upgraded to at least Windows 7, preferably Windows 10.

This is not entirely down to performance – XP would actually run better than newer versions of Windows because it is more ‘lightweight’ (i.e; designed to run a computer with lower specs). However, because it is no longer officially supported, there are no updates or security patches (except those made by volunteers, which may not be safe), and all new software is very unlikely to be compatible with XP. Upgrading to 7 or 10 (8 is generally considered to be the worst version of windows, followed by 8.1, which is why they are not mentioned here) ensures the PC is officially supported, and is compatible with software. Newer versions of the OS (particularly 10) are also designed with productivity in mind, and have many useful features older versions lack.

Other OS’s could be considered too – there are hundreds of versions of Linux available, many of which are even more lightweight than XP but with modern technologies and features. The only problem is compatibility – Linux is almost entirely volunteer built and maintained (and is very safe and well supported/documented as a result), so hardware manufacturers don’t always make drivers for it, and a lot of software isn’t designed for Linux either.