Worksheet 6: Storage devices

**Task 1**

1. Look up some facts and figures about hard disks and solid state drives.

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|  | **Hard disk** | **SSD** |
| **Capacity** | 500GB, 1,2,4 TB | 120GB – 30TB |
| **Cost** | ~20 to 100+ pounds | Few hundred pounds |
| **Access speed** | 5 to 10 ms | ~0.1 ms |
| **Durability** | Can last many years but the mechanical parts begin to wear out between 3-5 years. Not very durable against many physical factors like it is vulnerable to impact due to having many mechanical parts, and sensitive to vibrations though it handles heat a little better than SSD | No moving parts so generally more durable due to it also being more compact and smaller. Lasts longer generally than hard disks, 5-10 years of constant/normal use. Not very sensitive to vibrations like hard disks, but more sensitive to high temperatures |
| **Typical use** | Mass storage, especially for cheaper computers. So archives, backups, etc. | Used for its efficiency and speed so in higher end computers and for more grueling tasks that require better performance, like gaming computers. |
| **Other information** | Helium filled hard disks exist so that friction from moving parts is reduced to improve performance | SSDs are nearly silent because they don’t have moving parts. |

2. What type of storage device does a digital camera have? Why is is suitable?

Look up some typical capacities and prices for digital camera storage.

SSD, because it is small and portable, so it can be put inside the digital camera. It is also fast and efficient so when pictures or videos are taken, they can be quickly and easily written into the SSD.

120GB-30TB, for these they can be a few hundred pounds due to their larger capacity.

Prices range from £5 to £450 depending on type, capacity, speed, reliability etc.

3. What do RAM and ROM stand for?

Random Access Memory, RAM

Read Only Memory, ROM

Explain what is meant by the sentences below:

(a) RAM is volatile

When computer is turned off, the contents in the memory of this kind are lost.

(b) ROM is non-volatile

The memory’s contents are not lost when computer is turned off, it is permanently stored.

A washing machine has a program in memory. Is it held in RAM or ROM? Explain.

ROM because it is an embedded system, so you want the washing machine to be able to do its job; wash clothes always. You don’t want it to forget how to wash clothes once you turn it off or stop using it.

4. What is virtual storage? When is it used? Can a user access it?

It is used in conjunction with RAM. It is essentially an extension of RAM, an emergency bit of storage for RAM in case it runs out of memory. It is used when RAM is nearly or completely full. A user can access it when they are trying to open up for example an application when the RAM is full. So the RAM copies unused programs and data into the VM temporarily, to make space for the new program in the RAM.