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# Southam College Computing & ICT Department



**Summer**

**Project**

This booklet provides several tasks for you to update your current knowledge and learn new concepts required for ICT

Please complete the research and tasks. These will form the basis of a suitability test when you return in September.

Bring this booklet back in for checking on your first lesson in September

Some Sources Of Information:

[www.teach-ict.com](http://www.teach-ict.com) --- YouTube: Craidave --- [www.orc.org.uk](http://www.orc.org.uk) --- bbc bitesize

Teach ICT Username: CV379DH Password: bitmap4

## Section 1 - Computer Hardware

Computer hardware can be defined as any component that the user can physically touch. These are generally broken down into Input & Output devices.

An Input device allows the user to interact with the computer system by entering data whereas an Output device allows the computer system to provide the user with information, data or instructions.

**Task 1** - The following is a selection of input and output devices. Complete the table indicating with a tick as to whether they are input or output devices plus briefly explain what its purpose is.

Device	Input or Output	Purpose
Speaker		
Mouse		
Keyboard		
Monitor		
Plotter		
Headphones		
Printer		
Scanner		

Sensor		
Microphone		
Barcode Reader		
Graphics Tablet		

**Task 2 - Research, identify, state and explain at least two different input and output devices specifically engineered for people with disabilities.**

Name of Input Device 1:

Explanation:

Name of Input Device 2:

Explanation:

Name of Output Device 1:

Explanation:

Name of Output Device 2:

Explanation:

Another part of a computer system is storage. Storage can generally be divided into two categories: Primary and Secondary.

**Task 3 - Using the tables below, research and complete the table to explain the features and purpose of the storage identified:**

### Primary Storage

Random Access Memory (RAM)	
Read Only Memory (ROM)	

### Secondary Storage

Magnetic	
Cloud	
Solid State	
Optical	

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**Task 4 - Question:**

Alicia is using a helmet mounted camera to record footage whilst snowboarding. Suggest two reasons why a flash memory card is a good choice for secondary storage in this scenario, and two reasons why a hard disk would be unsuitable

**Answer:**

**Section 2 - Software**

There are many different types of software and how these can be classified.

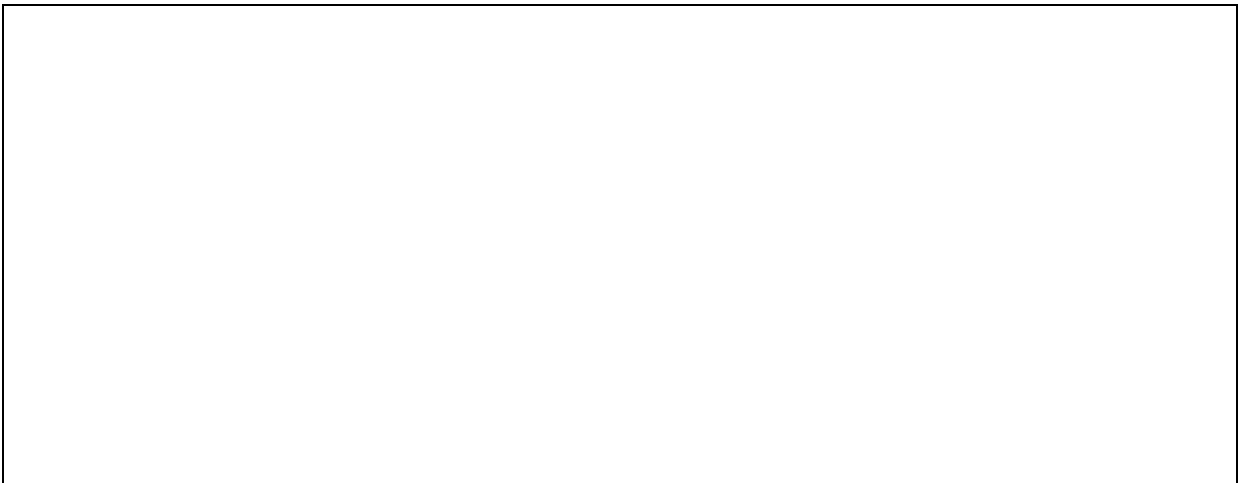
**Task 5 - Consider the different software classifications below and describe how each differ:**

Open Source 'vs' Closed Source

Off The Shelf 'vs' Bespoke

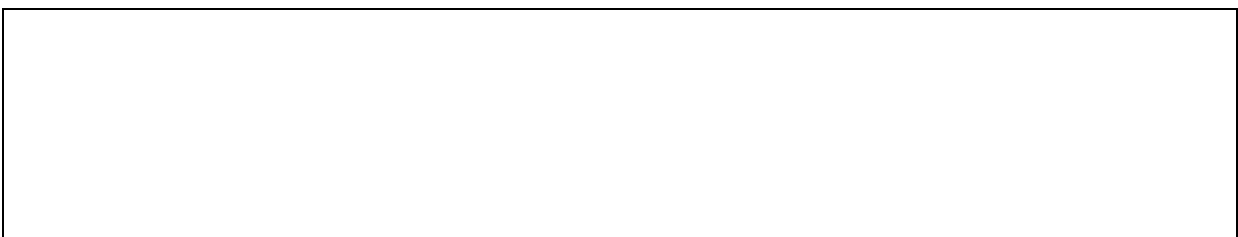


Shareware 'vs' Freeware



Software is more commonly known as Application Software (or Apps for short)

**Task 6 - Define the term 'application software'**



**Task 7 - The following is a common list of application software that you may use quite frequently. For each describe its main purpose:**

Word Processor:

Spreadsheet Packages:

Presentation Software:

Desktop Publishing Software (DTP):

Web Browsers:

One major piece of software on most computer systems is the operating system

**Task 8 - Define what an operating system is:**

There can be many various types of operating systems on different computer systems (Multi-Tasking, Multi-User, distributed, Embedded & Real-Time).

**Task 9 - Describe how each of the following operating systems function on a computer system:**

Multi-Tasking:

Multi-User:

Distributed:

Embedded:

Real-Time:



**Task 10 - Question:**

Which of these operating systems would be best suited for running on a nuclear power station computer system? Explain your answer.

Answer:

**Task 11 - Question:**

What type of operating system is Windows 10?

Answer:

Utilities Software is a relatively small program that usually only has one purpose or function on a computer system. They are usually only concerned with the maintenance of the computer system.

**Task 12 - Choose ONE of the following and describe its function/purpose:**

**Anti-Virus, Disk Defragmentation, Compression, File Manager or Backup Utilities.**

Software Choice:

Function/Purpose:

### Section 3 – Networks

Networks are collections of connected computing devices. They consist of a number of devices known as nodes, which are mostly made up of various computers, but can also include shared peripherals such as printers, scanners and secondary storage devices.

Networks can be implemented in a variety of topologies depending upon how they need to be used. Each with their own advantages and disadvantages.

**Task 13 – For each of the following network topologies draw a diagram of its layout and describe one advantage and one disadvantage for each.**

Bus:

Star:

Ring:

Mesh:

There are two models of networks that commonly appear, these are 'Client-Server' and 'Peer-to-Peer'.

**Task 14 - Describe two differences between a Client-Server and Peer-to-Peer network**

The extent at which networks are designed also play a factor in what topology or model may be employed. These extents are described as LAN's, WAN's, MAN's and PAN's.

**Task 15 – Define a LAN, WAN, MAN and PAN (do not just state what the acronym means!).**

LAN:

WAN:

MAN:

PAN:

For networks to function successfully there have to be rules and standards that must be followed. These are known as 'Protocols'. One common protocol is the TCP/IP stack model. This governs how data should be formatted, addressed and routed across a network. This model makes use of four layers (Application, Transport, Internet & Link).

**Task 16 – Using the table on the next page, explain how the TCP/IP stack model works and describe each of the layers involved**

Explain the TCP/IP stack model:

<b>Layer</b>	<b>Purpose</b>
Application	
Transport	
Internet	
Link	

Other standard protocols used include UDP, SMTP, FTP, HTTP, SNMP, ICMP, POP.

**Task 17 – Select any two of the protocols mentioned above, describe what the protocol is used for and reasons as to why it is needed.**

Protocol name, uses & why it is needed:

Protocol name, uses & why it is needed:

One key piece of technology when communicating with web pages is a DNS (Domain Name Server)

**Task 18 – Explain how a DNS works in relation to finding and displaying web pages**

DNS:

## Section 4 – Threats To Computer Systems

All computer systems come with a degree of insecurity, some larger than others. Each of these threats are usually aimed at targeting one aspect of the computer system.

**Task 19 – Explain each of the following security threats and what they are specifically targeting:**

Phishing:

Hacking:

Virus:

Trojan:

Key Logging:

To protect against these (and other attacks) a range of security measures are available. These are broken down into 'Physical Security' and 'Digital Security'.

**Task 20 – Explain what is meant by 'Physical' and 'Digital' security and give 3 examples of each**

Physical Explanation:

Example 1:

Example 2:

Example 3:

Digital Explanation:

Example 1:

Example 2:

Example 3:

## **Section 5 – Legislation**

There are many Acts of Parliament and levels of Government Legislation (UK, European & Worldwide) that have a big impact upon Computer Systems. These Acts of Law cover aspects such as Data Protection, Computer Misuse, Copyright, Safe Disposal, Recycling and Internet Interception.

**Task 21 – The Data Protection Act has 8 Principles at its core. State and explain these 8 principles**

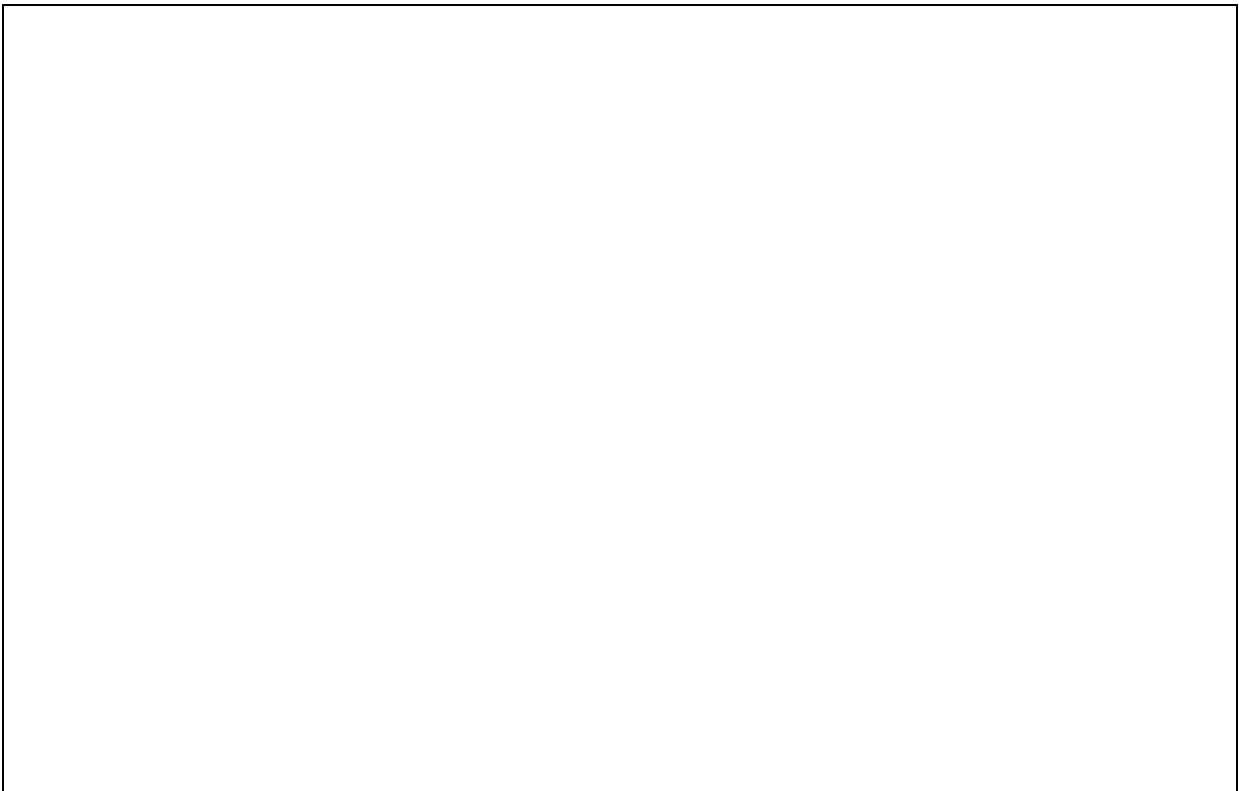


<b>Data Protection Act</b>	
<b>Principle</b>	<b>Explanation</b>

**Task 22 - In the box below explain what is covered by 'The Regulation of Investigatory Powers Act'.**

## Section 6 – Ethical, Moral & Cultural Issues

**Task 23 – Pick a recent news topic relating to the use of computers. Examples could include: the recent NHS system crash; the introduction of self-driving cars; Facebook privacy. Discuss in 250 words the Social, Moral or Cultural impacts of the chosen news story.**



**DON'T FORGET TO HAND THIS IN WHEN YOU RETURN IN SEPTEMBER**