Cambridge Technical Introductory Diploma in IT

Y12 to Y13

Summer Independent learning

Due date: Ready to submit in the first lesson back in September

Unit 18 Computer Systems Hardware

LO 1: Understand computer system components

	Pass	Merit	Distinction
1. Understand computer system components	P1: Explain the function of computer hardware components	M1: Compare and contrast different hardware storage devices	D1: Justify the components chosen and how they meet the identified business requirements
	P2: Outline different types of backup storage available		
	P3: Select appropriate components to support identified business requirements		

Read the instructions carefully and complete all work to a high standard using references from your research where appropriate. You cannot copy and paste from the internet or from textbooks.

You will submit three files from this SIL work before your first lesson back in September:

Presentation (Task 1) – (P1, P2)

Report 1 (Task 2) – (M1)

Report 2 (Task 3) – (P3, D1)

Scenario: You are employed as a Network Manager at New College. As part of the internal staff development program you have been requested to deliver training to all staff on the topic of 'Computer Components'.

Task 1: A Presentation – P1, P2

Create a presentation with detailed speaker notes that explains the function of computer hardware components. Use images and diagrams to aid your explanations and remember not all staff are computer literate so you need to try and keep the terminology simple.

Include a section at the end to explain backup storage devices and their applications.
Wherever possible explain the characteristics, advantages and disadvantages.

You must include the following:

Internal system unit components: processors; motherboards; BIOS / UEFI. hard drive configuration and controllers (e.g. SATA, IDE, master, slave); Thunderbolt; VGA, DVI, DisplayPort, HDMI; internal memory (e.g. RAM, ROM, cache); specialised cards (e.g. network, graphic cards, sound); power supply
Peripherals: output devices (e.g. monitor, printer, speakers); input devices (e.g. camera/webcam, scanner, microphone, mobile devices)
Backup Storage: DASD, SAS, SSD, enterprise storage, NAS, SAN, hybrid systems, virtual tape drives, hard disks, cloud

Task 2: A Report – M1

Create a report to be given to staff that clearly **compares** (similarities) and **contrasts** (differences) the various types of storage devices available

For each device, be sure to cover their characteristics, advantages and disadvantages.

Task 3: Report – P3, D1

New College management have identified the need for new computer systems to be used by staff.

Suggest **two** different computer systems that would be appropriate; one pre-built and one custom-built. Identify each component clearly.

Write a report evaluating the two computer system specifications suitable for the needs of your client.

You will then select your preferred system and justify your choice.

Summary of SIL:

- **Presentation (Task 1) – (P1, P2)**
- **Report 1 (Task 2) – (M1)**
- **Report 2 (Task 3) – (P3, D1)**

Extra Guidance:

P1: Learners are required to explain the functions of the main internal and external components of a computer system. To evidence this, learners could provide a detailed user guide that explains the functions of the computer components. The evidence could be presented as a report, part of a technical guide or a presentation (which can either be videoed or have detailed speaker notes)

P2: Learners are required to outline different types of backup storage as identified in the teaching content. The evidence can be in the form of a report, presentation (either videoed or with detailed speaker notes) or as a teacher resource

M1: Learners are required to compare and contrast different types of hardware storage devices. The comparisons should include the similarities and differences between the devices including performance factors as outlined in the teaching content. The evidence could be presented as a report, part of a technical guide or presentation (either videoed or with detailed speaker notes).

P3: Learners are required to select appropriate components to support identified business requirements. They will need to be provided with a scenario that will enable them to consider each of the design considerations as per the teaching content. The evidence could be in the form of a report, presentation or work plan for the system

D1: Learners are required to justify why they have chosen the components and backup storage from P3.The evidence could be an extension to P3 or a separate report or presentation with the justifications clearly provided

This is the indicated content from the exam board and gives you an idea of what we are looking for across these tasks:

1.1 Computer hardware components, i.e.:

- internal system unit components
  - o processors
  - o motherboards
  - o BIOS / UEFI
  - o hard drive configuration and controllers (e.g. SATA, IDE, master, slave)
  - o Thunderbolt
  - o VGA, DVI, DisplayPort, HDMI
  - o internal memory (e.g. RAM, ROM, cache)
  - o specialised cards (e.g. network, graphic cards, sound).
  - o power supply
- peripheral devices
  - o output devices (e.g. monitor, printer, speakers)
  - o input devices (e.g. camera/webcam, scanner, microphone, mobile devices)

1.2 Storage, i.e.:

- pen drives
- optical media
- flash memory cards
- cloud
- portable and fixed drives
- DASD
- SAS
- SSD
- enterprise storage
- NAS
- SAN
- hybrid systems
- virtual tape drives
- characteristics
- advantages
- disadvantages
- performance factors (e.g. security, capacity, transfer rate)

2.1 Understanding business requirements, i.e.:

- purpose
- software
- hardware
- network sharing
- maintenance
- outputs
- integration
- accessibility including special requirements e.g. user has physical limitations)

2.2 Design considerations, i.e.:

- single points of failure
- recovery techniques i.e.:
  - o clustering
  - o replication
- upgrade or renew
- cost (e.g. financial, time, user)
- services delivered
- business requirements

2.3 Backup storage recommendations, i.e.:

- advantages/disadvantages (e.g. cost, security, capacity, frequency of saving, transfer rate, redundancy, expansion)
- DASD
- SAS
- SSD
- enterprise storage
- NAS
- SAN
- hybrid systems
- virtual tape drives.
- hard disks
- cloud

Optional Activities

Although the below are optional, we would suggest you look through all the below and make notes where appropriate. This will give you a head start and will work to your benefit from September 2021

Take a look and read through the contents of the coursework units for next year!

Unit 13 – Social Media and Digital Marketing
Unit 17 – Internet of Everything
Unit 18 – Computer systems - hardware

Ed Stout – IT Support Services Manager at Leeds Beckett University. Talks about his journey from college to current managerial position. Tips on how to gain experience, routes into the industry and what he looks for when recruiting.

IT Work Experience Talk

Here are a collection of interesting talks and interviews that will expand your understanding of the world of IT and Computing:

Joe Rogan Experience #1368 - Edward Snowden

YouTube CEO Susan Wojcicki | Full interview | Code 2019

How I used to rob banks! by FC (aka Freaky Clown)

GOTO 2018 • The Future of the Web • Sir Tim Berners-Lee

The mind behind Linux | Linus Torvalds

There are a series of good YouTube channels that regularly post interesting videos about the world of IT and Computing:

Linus Tech Tips

Computerphile

Techquickie

Crash course computing

Explaining computers

Another great exercise is to regularly read news articles and stories. These will keep you up to date with all of the latest happenings in technology:

BBC
Sky
The Guardian
Computer World
CNET