Cambridge Technical Extended Diploma in IT

Y12 to Y13

Summer Independent learning

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

Unit 19 Computer Systems Software

LO3: 3. Be able to conduct system maintenance using utility software

	Pass	Merit	Distinction
3. Be able to conduct system maintenance using utility software	P7 Plan maintenance activities for a specified system	M3 Document the benefits of maintenance activities within the maintenance plan for the specified system	D2 Evaluate implemented maintenance activities for the specified system, post maintenance activities
	P8 Implement maintenance activities for the specified system		

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 prepare a report from this SIL work before your first lesson back in September:

Report/Presentation (P7, M3, P8 & D2)

Task 1: Firstly, you will need to create a maintenance plan for the new staff computers at New College. The maintenance plan that you produce will need to include the following elements for each maintenance activity (shown below) (P7):

• date
• system description
• maintenance activity
• benchmark information (prior to maintenance activities and post maintenance activities) :
     o benchmarking software e.g.: SiSoft Sandra Lite, Futuremark, PCMark 8, HyperPi, Phoronix Test Suite (Linux), Passmark Performance Test
• licensing requirements/legislative requirements
• security risks
• backup requirements
• software to be used
• benefit to system
• configuration requirements
• testing
• activities to be automated

The actual maintenance activities that you will carry out should cover the following areas, which will need to be documented within your test plan with photographic/image evidence where possible:

• virtual memory settings
• defragmentation of drives
• registry cleaning
• removal of unwanted:
  o data files
  o installation files
  o start-up programs
  o service settings
• cleansing of internet history, temporary and cached files
• automatic software updates
• automatic anti-virus and spyware scanning
• utilities (e.g. scan disk, clean disk)

Task 2: You line manager at New College has viewed your maintenance plan for the new staff computers and is concerned that conducting this maintenance on all of the staff machines may not be a productive use of your time. As a result, they have requested that you create a **Power Point presentation** (with detailed speaker notes**) that documents the <u>purpose and various benefits to the system of carrying out each of the maintenance activities</u> that you have identified within your plan (from task 1) (M3).**

You should aim to apply the following improvement elements, as appropriate, to each maintenance activity that you cover:

•   improvements to system:

  o   boot time
  o   processing speed
  o   security
  o   stability of system
  o   storage capacity
  o   memory usage

•   benchmarking

Task 3: You now need to implement the maintenance activities you have proposed in task 2. **(P8)**

As you do this task you should use your test plan (from task 1) to conduct thorough testing of your system, both during and after the maintenance activities. You should ensure to benchmark (and document) the system before any maintenance activities have been carried out, as this will then enable post-maintenance benchmarks to be directly compared, which is required for the next task.

Evidence for this task will include a witness statement supported by **annotated photographs of the maintenance activities, along with the completed test plan with appropriate supporting photographs**. Should amendments to the maintenance plan be required due to any unforeseen problems, then these changes should also be evidenced and fully explained/justified at this stage.

Task 4: **Provide a detailed report that evaluates the effect of the maintenance activities that you carried out in the previous task.**

Now that you have conducted the maintenance activities that you previously suggested, your line manager has asked you to provide them with a detailed report or presentation that evaluates the effect of the maintenance activities that you carried out in the previous task. This will need to include a comparison of the results of the benchmark tests that you recorded both before and after the maintenance activities.

Evidence for this task can be in the form of either a report and you should aim to include the following elements:

• analysis of results
• comparison with identified benchmarks
• identified issues and potential resolutions
• future considerations
• documentation of activities

Extra Guidance:

P7: Learners are required to plan maintenance activities for a specified system. Learners must produce a maintenance plan to include the sections identified within the teaching content. The test plan should be completed during and after the maintenance activities and not completed retrospectively.
The evidence will be the maintenance plan and test plan.

M3: Learners are required to document why the maintenance activities identified in the work plan produced for P7 will benefit the functionality of the specified system. The documentation should include the purpose or reason for each of the activities, as well as how this would benefit the system. The evidence could be in the form of a report, technical guide or presentation (either videoed or with detailed speaker notes).

P2: Learners are required to outline the different application software available to end users. The outlines must cover general purpose, special purpose and bespoke, and include an account of the purpose of each application software category as well as the purpose for the example of each category type selected. The evidence can be in the form of a report, a presentation (either videoed or with detailed speaker notes) or as a teacher resource.

P8: Learners are required to implement the maintenance activities for the system that they have identified within their maintenance plan created in P7. It is acceptable for learners to make adjustments to their maintenance plans during the maintenance activities, should they identify any unforeseen issues.
They must, however, document these changes and provide an explanation as to why these changes were made. Their evidence could be in the form of a detailed witness statement supported by any documentary evidence e.g. completed maintenance plans. They must also include evidence of testing which must include the completed test plans. Additional evidence could be from photographs, printouts of tests etc.

D2: Learners are required to evaluate the effect that the implemented maintenance activities have had on the system after the maintenance activities have been completed. Learners should be able to carry out benchmark tests on the current system and compare them with the benchmark information taken prior to the maintenance activities occurred. Learners should make qualitative judgements, taking into account different factors and using the evidence that they have available to them. This evidence should include any documentary evidence from the benchmarking of the system prior to the maintenance activities, as well as after maintenance has taken place. This could be supported by a report, information sheet or presentation (videoed or with detailed speaker notes).

Unit 16 Developing a Smarter Planet

LO 1: Understand what is meant by a Smarter Planet

	Pass	Merit	Distinction
1. Understand what is meant by a Smarter Planet	P1*: Describe the evolution of the Smarter Planet in different global situations		D1: Evaluate why the Smarter Planet concept is important for a global society
	P2: Describe the impacts of the Smarter Planet on society	M1: Explain the impact of the Smarter Planet within a specified sector	

Task 1: A Report – P1 and P2

You need to produce a report which describes what a smarter planet is and gives examples of developments which have been made. This report should cover the purpose and the impacts of the developments on society as well as human factors which have been supported within the development. These can be positives and negatives impacts on below areas:
- **- Environmental**
- **- Ethical**
- **- Social**
- **- Individual**
- **- Life styles**

Task 2: A Newspaper Report – M1

You need to create a report which explains the impact of smarter planet on society within each of the below sectors:
- **- Healthcare**
- **- Environmental**
- **- Engineering**
- **- Manufacturing**
- **- IT, retail**
- **- Electronics**
- **- Transport**

Task 3: A Report – D1

You need to evaluate the concept of a smarter planet and its importance to global society. Within this report you must give examples of concepts which have been used.

Extra Guidance:

P1: The learner will describe the evolution of the Smarter Planet for different global situations as identified in the teaching content for the unit. Each situation must be from a different category in the teaching content. Evidence can be in the form of a written report, a presentation with detailed speaker notes, a video of the learner presenting the information to an audience, or an information guide on the evolution of the Smarter Planet in different situations.

D1: The concept of the Smarter Planet will be evaluated in relation to its importance for a global society. A variety of concepts should be evaluated. Evidence can be in the form of a written report, a presentation with detailed speaker notes, a video of the learner presenting the information to an audience, or an information guide. P2: The Smarter Planet has impacted on a number of areas of the global society. The learner should describe different impacts. Evidence for this criterion may link with criterion P3. Evidence can be in the form of a written report, a presentation with detailed speaker notes, a video of the learner presenting the information to an audience, or an information guide on areas of impact within a global society.

M1: The evidence for this assessment criterion will link with criterion P2 and will focus on the impact of the Smarter Planet within a specified sector. The selected sector does not need to be IT based, and learners should consider examples identified in the teaching content. The evidence can be presented as a newspaper article, report or presentation with detailed speaker notes.

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 Evolution of a Smarter Planet, i.e.:
- improvements to original developments e.g.:
  - o radio to DAB
  - o telephones to mobile
  - o manual to automated machinery
  - o greener IT
- purpose to, e.g.:
  - o speed processes
  - o improve efficiency
  - o reduce waste and inefficiency
  - o harness natural resources
- human factors, e.g.:
  - o reduce manpower requirements
  - o improve quality of life

1.2 Importance for a global society, i.e.:
- principles, e.g.:
  - o information
  - o instrumented
  - o interconnected
- focus/objectives (e.g. why do we need it?)
- relevance

1.3 Impacts, i.e.:
- environmental, e.g.:
  - o pollution
  - food miles
  - o increased energy consumption
- • ethical, e.g.:
  - o health and transplants
  - o the internet
  - o data privacy
- • social, e.g.:
  - o acceptance
  - o communication
  - o exposure to threat
  - o reduced face-to-face communication
- individuals, e.g.:
  - o health
  - o labour saving
  - o time saving
  - o flexibility
  - o accessibility

- life styles, e.g.:

- o health
- o comfort
- o travel
- o communication
- o social

1.4 Business sectors, e.g.:
- healthcare
- environmental
- engineering
- manufacturing
- IT, retail
- electronics
- transport

1.5 Sectors with applications of a Smarter Planet, e.g.:
- banking
- construction
- towns and cities
- computing and data storage
- education
- energy
- healthcare
- infrastructures
- oil
- products
- regulatory bodies
- retail
- telecoms
- transport/traffic
- water
- e-commerce
- environmental

Unit 5 Virtual and Augmented Reality

LO 1: Understand virtual and augmented reality and how they may be used

	Pass	Merit	Distinction
1. Understand virtual and augmented reality and how they may be used	P1: Describe the uses of virtual and augmented reality by organisations	M1: Explain the impact that an identified virtual reality resource has had on society	D1: Assess the impact that an identified augmented reality resource has had on society
4. Be able to predict future applications for virtual and augmented reality	P6: Suggest possible future roles of virtual and augmented reality in future applications	M3: Evaluate the specific benefits to be gained by repurposing current examples of virtual and augmented reality into identified roles	

Task 1: A Report – P1

You need to produce a report which describes the use of Virtual and Augmented reality in a variety of organisations. You must make it clear whether each use is **VIRUTAL** or **AUGMENTED**. The organisations and their use you must cover are:

- **architecture**
- **business** (marketing, service and planned maintenance)
- **education** (e.g. textbooks, skills development, remote collaboration)
- **entertainment, leisure and the media** (tourism, games, museums)
- **health care and surgery** (training, simulations)
- **military** (training, simulations)
- **sport** (live streaming of scores and other statistics, sponsorship images)

Task 2: A presentation for an open evening – M1

You need to create a PowerPoint Presentation which explores the impact of ONE use of augmented or virtual reality from Task 1.

Detail your presentation with images, links to suitable videos and explore the impact and where it could go in the future.

Some of the things you could thing about:
Possible impacts, i.e.:
- visualisation of designs
- simulations
- training
- demonstrations of concepts
- virtual tours

Task 3: Extension to Task 2 PowerPoint Presentation – D1
You need to evaluate the chosen use of augmented or virtual reality selected for task 2. This should include a critical look at how much difference has it made to the world / society /individuals and so on.

Evaluate the main positives of the chosen use, the main negatives and what could be done to improve it further and potential long term impact of those changes.

Task 4: A report – P6

You need to write a report that explores A MINIMUM OF 3 future uses of augmented or virtual reality that DO NOT CURRENTLY EXIST or EXTEND BEYOND CURRENT USES. You should explain how it could be used and the impact of each of these potential developments.

Task 5: A report – M3
You must produce a report which evaluates the re-purposing of augmented or virtual reality in at least 4 ways. Focus on the potential benefits of repurposing this augmented or virtual reality in this way.

Suggested ideas: Re-purposing, i.e.:
- how existing products may be re-purposed and used in wholly new ways
- benefits of repurposing using current examples of resources in new ways (e.g. medical uses in the field of animal welfare, training uses in the field of education)
- heads up display used to augmented learning in schools

Guidance:
P1: Learners are required to describe the use of virtual and augmented reality by organisations. Learners should discuss at a wide range of uses and include examples of where and how they are used. The learner must ensure that they clearly identify whether they are describing virtual or augmented reality applications and their uses. The evidence could be presented as a report, part of a technical guide or a presentation (either videoed or with detailed speaker notes).

M1: Learners are required to select one example of a virtual reality resource and explain the impact that the use of the identified technology has had on society. The evidence could be in the form of a presentation (either videoed or with detailed speaker notes), report, or information sheet.

D1: Learners are required to select one example of an augmented reality resource and assess the impact that the use of the identified technology has had on society. The evidence could be in the form of a presentation (either videoed or with detailed speaker notes), report or information sheet.

P6: Learners are required to suggest possible future roles for virtual and augmented reality in future applications. Both virtual and augmented reality should be considered and a range (at least three) of predictions should be made. The evidence could be a written report, a journalistic report (to camera or as a written piece for inclusion in a magazine), or a presentation with detailed speakers notes.

M3: Learners are required to use the research into current uses of virtual and augmented reality applications in LO1 to identify and describe the benefits to be gained by utilising specified applications in new and creative ways. Both virtual and augmented reality should be considered and a range (at least three) of possible instances of repurposing should be made. The evidence could be a written report, a journalistic report (to camera or as a written piece for inclusion in a magazine), or a presentation with detailed speakers notes.

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

Learning outcomes The Learner will:	Teaching content Learners must be taught:

1. Understand virtual and augmented reality and how they may be used	1.1. Virtual reality as a concept i.e.:
	• pioneers of virtual and augmented reality e.g.:
	    ○ Douglas Engelbart
	    ○ Ivan Sutherland
	    ○ Tom Caudell and David Mizell
	
	• uses of virtual and augmented reality e.g.:
	    ○ US Military Nuclear Defence systems
	    ○ pilot training
	    ○ Mattel "data glove"
	    ○ personal guidance system for visually impaired
	    ○ chameleon
	
	1.2. Areas of use, e.g.:
	• architecture
	• business (marketing, service and planned maintenance)
	• education (e.g. textbooks, skills development, remote collaboration)
	• entertainment, leisure and the media (tourism, games, museums)
	• health care and surgery (training, simulations)
	• military (training, simulations)
	• sport (live streaming of scores and other statistics, sponsorship images)
	
	1.3. Possible impacts, i.e.:
	• visualisation of designs
	• simulations
	• training
	• demonstrations of concepts
	• virtual tours

4. Be able to predict future applications for virtual and augmented reality	4.1. Future uses, i.e.: • possible developments of virtual and augmented reality and how these may impact on society. (e.g. advances in treating injuries or disease, leisure activities, the environment, the home and education). 4.2. Re-purposing, i.e.: • how existing products may be re-purposed and used in wholly new ways • benefits of repurposing using current examples of resources in new ways (e.g. medical uses in the field of animal welfare, training uses in the field of education) • heads up display used to augmented learning in schools

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 at some of the coursework units for next year!

Unit 19 Computer systems - software
Unit 8 Project Management
Unit 9 Product Development
Unit 12 Mobile Technology
Unit 16 Developing a Smarter Planet
Unit 13 Social Media and Digital Marketing
Unit 5 Virtual and Augmented reality

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](#)