

Cambridge Technical Diploma in IT

Y12 to Y13

SIL 2022–2023 (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 (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: Your 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 purpose and various benefits to the system of carrying out each of the maintenance activities 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
 - o 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

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 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](#)

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](#)