

Cambridge TECHNICALS LEVEL 3

IT

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Unit 18

Computer systems – hardware

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General information for learners from OCR

Q What do I need to do to pass this assignment?

A You need to produce evidence to meet the requirements of all the pass criteria for the unit this assignment relates to. If you miss just one pass criterion, you will not achieve this unit and will receive an unclassified result.

Q What do I need to do if I want to get a merit or distinction for this assignment?

A For a merit, you need to produce evidence to meet the requirements of all the pass criteria for the unit this assignment relates to and you need to produce evidence to meet all the merit criteria. For a distinction, in addition to the above, you also need to meet all the distinction criteria for this unit.

Q What help will I get?

A Your tutor will support you when completing this assignment and will make sure that you know what resources or facilities you need and are allowed to use. We've given your tutor information about how much support they can give you.

Q What if I don't understand something?

A It's your responsibility to read the assignment carefully and make sure you understand what you need to do and what you should hand in. If you are not sure, check with your tutor.

Q I've been told I must not plagiarise. What does this mean?

A Plagiarism is when you take someone else's work and pass this off as your own, or if you fail to acknowledge sources properly. This includes information taken from the internet. It's not just about presenting a whole copied assignment as your own; you will also be plagiarising if you use the ideas or words of others without acknowledgement, and this is why it's important to reference your work correctly (see Q&A below for more information on referencing). Plagiarism has serious consequences; you could lose the grade for this unit or you may not be allowed to achieve the whole qualification.

Always remember that the work you produce must be your own work. You will be asked to sign a declaration to say that it is.

Q What is referencing and where can I find out more information about it?

A Referencing is the process of acknowledging the work of others. If you use someone else's words and ideas in your assignment, you must acknowledge it, and this is done through referencing.

You should think about why you want to use and reference other people's work. If you need to show your own knowledge or understanding about an aspect of subject content in your assignment, then just quoting and referencing someone else's work will not show that you know or understand it. Make sure it's clear in your work how you are using the material you have referenced to inform your thoughts, ideas or conclusions. You can find more information about how to reference in the OCR Guide to referencing available on our website: <http://www.ocr.org.uk/i-want-to/skills-guides/>.

Q Can I work in a group?

A Yes. However, if you work in a group at any stage, you must still produce work that shows your individual contribution. Your tutor can advise you how to do this.

Q Does my work for each task need to be in a particular format?

A You can present your work in a variety of ways – it can be handwritten, word-processed, on video or in digital media. What you choose should be appropriate to the task(s) and your tutor can advise you. There may be times when you need proof that you have completed the work yourself: for example, if you do something during work placement that you want to use as evidence, the tutor might ask the employer to provide a witness statement. Make sure you check the wording in each task carefully. For each task, we'll tell you if your evidence has to be in a specific format:

If we say use the word 'must', for example 'You must produce a report' or 'Your evidence/work must include a diagram', then you must produce the work in the stated format.

If we use the word 'could', for example 'You could include sketches of your ideas' or 'You could do this by annotating your diagram', this means that you are not required to follow the format we have given, but you must make sure that the work you do produce allows you to demonstrate the requirements of the grading criteria. If you are unsure about what evidence you need, please ask your tutor.

Q Can I ask my tutor for feedback on my work?

A Yes, but they can't give you detailed feedback. We have given your tutor instructions on what kind of feedback they can give you. For example, they are not allowed to tell you exactly what to do to make your work better, but they can remind you about what they've taught you and you can use this additional learning to try and improve your work independently. They can say what they've noticed might be wrong with your work, for example if your work is descriptive where an evaluation is required, but your tutor can't tell you specifically what you need to do to change it from a description to an evaluation – you will need to work out what you need to do and then do it for yourself.

Q When I have finished, what do I need to do?

A If you have included the personal details (such as name, address or date of birth) of someone other than yourself in your work, this must be blanked out (anonymised) – your tutor will tell you how to do this. You don't need to do this for information contained in references.

You can complete the evidence checklist to show your tutor where they can find the evidence for each grading criterion in your work.

You should make sure your work is labelled, titled and in the correct order for assessing. Hand in the work that you've completed for each task to your tutor. They might ask to see your draft work, so please keep your draft work in a safe place.

Q How will my work be assessed?

A Your work will be marked by someone in your centre who has been authorised to do so. They will use the information in the grading criteria to decide which grade your work meets. The grading criteria are detailed in each unit and are also given in the tasks within this assignment. Please ask your tutor if you are unsure what the grading criteria are for this assignment.

Assignment: Unit 18- Computer Systems - Hardware

Qualification		Unit number and title
Cambridge Technical Diploma in IT		18- Computer Systems - Hardware
Student name		Assessor name
		M Singh
Date issued	Guided Learning Hours	Submitted on
	60	

Assignment title	Smeaton Solutions Ltd
In this assessment you will have opportunities to provide evidence against the following criteria. Indicate the page numbers where the evidence can be found.	

Learning Outcomes	Pass	Merit	Distinction
1 Understand the components of a computer system	P1: Explain the function of computer hardware components	M1: Compare and contrast different hardware storage devices	
	P2: Outline different types of backup storage available		
2 Be able to propose computer systems for identified business requirements	P3: Select appropriate components to support identified business requirements		D1: Justify the components chosen and how they meet the identified business requirements
3. Be able to build or upgrade computers	P4: Install different hardware components on an identified computer system	M2: Recommend preventive maintenance activities for the identified computer system	
	P5: Implement preventative maintenance requirements for the identified computer system		
4. Be able to test and evaluate the functionality of computer systems	P6: Plan and implement test activities for the identified computer system, rectifying any errors	M3: Select and implement benchmarking activities for the identified computer system	D2: Analyse results from benchmarking activities for the identified computer system

Student declaration
<p>I certify that the work submitted for this assignment is my own and research sources are fully acknowledged.</p> <p>Student signature: _____ Date: _____</p>

Scenario

You work for Smeaton Solutions Ltd, an IT support company that specialises in developing bespoke solutions to clients IT needs. Some of the solutions that Smeaton Solutions provides are:

- Systems Installation
- Systems Management
- Configuring Networks
- Network Security
- Network Maintenance

Joe Louis (client) is planning to expand his business, which consists of selling electrical goods. He currently uses a computer to record his day-to-day business activities.

Joe has relatively little expertise in the area of computing and has tasked you with helping him to identify his needs prior to him expanding his business.

Joe he has detailed what he would need his computer system for, some of these tasks include creating documentation for his business, accessing online retailers for stock, as well as having the ability to contact customers. He has also said he would in the future, like to expand his business further by bringing in more employees and computer systems to share resources within his business. He has decided he will implement a budget of £1250 in order to achieve a system, which would allow him to complete his tasks.

Task 1: The internal and external components of a computer system.

Time: 2-3 Hours

Learning Outcome: LO1 Understand the components of a computer system

Your task is to explain the main internal and external components of a computer *system listed in the teaching content*; this is to be presented to your client. Explanations must include the purpose of the components as well as giving an overview as to their importance in relation to your client.

You are required to outline, compare and contrast the different types of backup storage *as identified in the teaching content*. The comparisons should include the similarities and differences between the devices including performance factors as *outlined in the teaching content*.

You 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*.

Pass	Merit	Distinction
P1: Explain the function of computer hardware components	M1: Compare and contrast different hardware storage devices	
P2: Outline different types of backup storage available		
Evidence		
<u>Presentation with detailed speaker notes- P1, P2 & M1</u>		
<p>This presentation should explain the different components of a computer system, their function as well as their importance in relation to your client.</p> <p>As part of the presentation you will be required to compare and contrast the different types of backup storage available to your client. Your comparisons must include similarities as well as differences between the different forms of backup devices.</p> <p>You are required to compare and contrast the different types of hardware storage available to your client. Your comparisons must include similarities as well as differences between the different forms of hardware storage devices.</p> <p>You will be required to present this information to your client.</p>		

Task 2: Computer System Proposal.

Time: 2 Hours

Learning Outcome: LO2 Be able to propose computer systems for identified business requirements

Based upon your research and presentation delivered, you are to propose a computer system solution that you have created that supports the identified business requirements. You must justify your choice of computer system and how it would meet the given business purpose outlined by the client.

Pass	Merit	Distinction
P3: Select appropriate components to support identified business requirements		D1: Justify the components chosen and how they meet the identified business requirements
Evidence		
<p>Report- P3 & D1</p> <p>You will be able to propose the computer network solution that you have created for the client in the form of a report. As part of your report you will need to justify your choice of computer system components as well as how they will help to meet the identified business requirements.</p> <p>The report should incorporate the design considerations such as costs as well as backup storage and load balancing recommendations. Refer to the teaching content for full details.</p>		

Task 3: Building the computer system

Time: 2-3 Hours

Learning Outcome: LO3 Be able to build or upgrade computers

LO4 Be able to test and evaluate the functionality of computer systems

While adhering to health and safety considerations while handling and installing components you are to build or upgrade a system which you designed as part of your report you must provide evidence of all of the activities that have been carried out during your installations. In addition to this you are to suggest ways in which the system can be cared for and maintained. During the build/maintenance of your system you are also to test the system to ensure that the system is working correctly and any faults are rectified.

Pass	Merit	Distinction
P4: Install different hardware components on an identified computer system	M2: Recommend preventive maintenance activities for the identified computer system	
P5: Implement preventative maintenance requirements for the identified computer system		
P6: Plan and implement test activities for the identified computer system, rectifying any errors		
Evidence		
<p>Test Plan P6 Prior to implementing your computer system, you must prepare a test plan which is to be completed during and after the build as well as maintenance activities. Any errors should be identified clearly including resolution and re-testing where applicable. A full list of what is to be included in your test plan can be found in the teaching content.</p> <p>Report or Presentation- P4, P5 You are to build your proposed computer system whilst adhering to all health and safety considerations, as part of the implementation you must document all of the components that are to be installed. This can be through video or photographic evidence. Evidence must also include the configuration of the computer system as well as implementing preventative maintenance procedures. A list of all procedures can be found in the teaching content</p> <p>Maintenance Plan Document- M2 Create a maintenance plan for the computer system that you have created. The maintenance plan should relate to the proposed solution from P3. The evidence will be the actual maintenance plan, which should consider issues as listed in the teaching content.</p>		

Task 4: Testing

Time: 2-3 Hours

Learning Outcome: LO4 Be able to test and evaluate the functionality of computer systems

As part of your testing you are to identify any areas that need to be retested and complete any further changes needed. Upon completing this you are to implement benchmarking activities for your computer system. The results from your benchmarking activities are to be analysed, analysis can include the use of statistics as well as graphs.

Pass	Merit	Distinction
P6: Plan and implement test activities for the identified computer system, rectifying any errors	M3: Select and implement benchmarking activities for the identified computer system	D2: Analyse results from benchmarking activities for the identified computer system
Evidence		
<p>Test Plan P6 Prior to implementing your computer system, you were to prepare a test plan that was to be completed during and after the build as well as maintenance activities. Diagnostic tools can be used to ensure that hardware components are fully functional. Any errors should be identified clearly including resolution and re-testing where applicable. All tests, which are to be completed, are available in the teaching content.</p> <p>Benchmarking and Analysis Report or Presentation M3 & D3 You are required to use performance tools to benchmark your computer system, recording all the results. Your recommendation should give an explanation of what these tools do and how they can be used.</p> <p>As part of your benchmarking, you are to analyse the results, which may include statistical and/or graphical analysis of the results, or a technical guide on how to analyse benchmarking test results.</p> <p>Refer to the teaching content for further details about benchmarking a computer system</p>		

Useful Links

OCR Guide to Referencing:

<http://www.ocr.org.uk/Images/168840-the-ocr-guide-to-referencing.pdf>

Link to the Unit Specification:

<http://www.ocr.org.uk/Images/267471-unit-18-computer-systems-hardware.pdf>

Evidence Checklist

For PASS have you: (as a minimum you have to show you can meet every pass criterion to complete the unit)	Where is your evidence located? Page numbers etc.
P1: Explain the function of computer hardware components e.g. a presentation or report explaining the components in a computer system	
P2: Outline different types of backup storage available e.g. a presentation or report explaining the types of backup storage in a computer system	
P3: Select appropriate components to support identified business requirements e.g. a report identifying components in relation to the business requirements	
P4: Install different hardware components on an identified computer system e.g. a report or presentation showing the installation of components	
P5: Implement preventative maintenance requirements for the identified computer system e.g. a report or presentation showing the maintenance requirements	
P6: Plan and implement test activities for the identified computer system, rectifying any errors e.g. a test plan which details all of the tests that have been carried out and the results	

For MERIT have you:	Where is your evidence located? Page numbers etc.
M1: Compare and contrast different hardware storage devices e.g. a presentation or report explaining the hardware storage devices	
M2: Recommend preventive maintenance activities for the identified computer system e.g. a maintenance plan recommending the maintenance activities for a computer system	
M3: Select and implement benchmarking activities for the identified computer system e.g. a report or presentation showing the different types of benchmarking activities as well as implementation	

For DISTINCTION have you:	Where is your evidence located? Page numbers etc.
D1: Justify the components chosen and how they meet the identified business requirements e.g. a report justifying why components were selected.	
D2: Analyse results from benchmarking activities for the identified computer system e.g. a report or presentation that provides an analysis of the benchmark activities	

Teaching Content (From OCR Specification)

Learning Outcomes	Teaching Content
<p>1. Understand the components of a computer system</p>	<p>1.1 Computer hardware components, i.e.:</p> <ul style="list-style-type: none"> • internal system unit components <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> o output devices (e.g. monitor, printer, speakers) o input devices (e.g. camera/webcam, scanner, microphone, mobile devices) <p>1.2 Storage, i.e.:</p> <ul style="list-style-type: none"> • 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)
<p>2. Be able to propose a computer system for identified business requirements</p>	<p>2.1 Understanding business requirements, i.e.:</p> <ul style="list-style-type: none"> • purpose • software • hardware • network sharing • maintenance • outputs • integration • accessibility including special requirements e.g. user has physical limitations) <p>2.2 Design considerations, i.e.:</p> <ul style="list-style-type: none"> • single points of failure • recovery techniques i.e.: <ul style="list-style-type: none"> o clustering o replication • upgrade or renew

	<ul style="list-style-type: none"> • cost (e.g. financial, time, user) • services delivered • business requirements <p>2.3 Backup storage recommendations, i.e.:</p> <ul style="list-style-type: none"> • 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 <p>2.4 Load balancing (e.g. optimise resource use, maximise throughput, minimise response time, and avoid overload of any single resource)</p> <p>2.5 Methods of presentation of proposal (e.g. presentation, report, quote)</p>
<p>3. Be able to build or upgrade computers</p>	<p>3.1 Health and safety considerations, i.e.:</p> <ul style="list-style-type: none"> • anti-static mats • wristbands • anti-static bags • appropriate use of tools <p>3.2 Configuration, i.e.:</p> <ul style="list-style-type: none"> • BIOS configuration (e.g. setting a BIOS password, editing power management options) • anti-virus configurations • start-up options and logon/access permissions <p>3.3 Preventative maintenance, i.e.:</p> <ul style="list-style-type: none"> • organisation, naming, deletion and archiving of files • back-up procedures (e.g. data prior to upgrading computer system, storage of backup, system backup for recovery) • defragmentation • deleting temporary files • cleaning hardware • partition hard drives • replacing consumables (e.g. printer paper, toner cartridges)
<p>4. Be able to test and evaluate the functionality of computer systems</p>	<p>4.1 Test plan/table for accuracy and functionality to include:</p> <ul style="list-style-type: none"> • test no • type of test • purpose of test • expected results • actual results • issue identified • resolution for identified issue • re-test no

4.2 Diagnostic software, i.e.:

- memory diagnostics tools
- device manager
- control panel
- administrative tools
- event viewer
- system information
- command prompt
- Regedit

4.3 Benchmarking, i.e.:

- Windows system assessment tool
- 3DMark
- Prime95
- Novabench
- PCMark
- SiSoftware Sandra
- HD Tune