

Cambridge **TECHNICALS LEVEL 3**

Cambridge
TECHNICALS
2016

IT

Unit 19 – Computer systems – software
DELIVERY GUIDE

Version 2

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INTRODUCTION

This Delivery Guide has been developed to provide practitioners with a variety of creative and practical ideas to support the delivery of this qualification. The Guide is a collection of lesson ideas with associated activities, which you may find helpful as you plan your lessons.

OCR has collaborated with current practitioners to ensure that the ideas put forward in this Delivery Guide are practical, realistic and dynamic. The Guide is structured by learning outcome so you can see how each activity helps you cover the requirements of this unit.

We appreciate that practitioners are knowledgeable in relation to what works for them and their learners. Therefore, the resources we have produced should not restrict or impact on practitioners' creativity to deliver excellent learning opportunities.

Whether you are an experienced practitioner or new to the sector, we hope you find something in this guide which will help you to deliver excellent learning opportunities.

If you have any feedback on this Delivery Guide or suggestions for other resources you would like OCR to develop, please email resources.feedback@ocr.org.uk.

OPPORTUNITIES FOR ENGLISH AND MATHS SKILLS DEVELOPMENT AND WORK EXPERIENCE

We believe that being able to make good progress in English and maths is essential to learners in both of these contexts and on a range of learning programmes. To help you enable your learners to progress in these subjects, we have signposted opportunities for English and maths skills practice within this resource. We have also identified any potential work experience opportunities within the activities. These suggestions are for guidance only. They are not designed to replace your own subject knowledge and expertise in deciding what is most appropriate for your learners.



Please note

The timings for the suggested activities in this Delivery Guide **DO NOT** relate to the Guided Learning Hours (GLHs) for each unit.

Assessment guidance can be found within the Unit document available from www.ocr.org.uk.

The latest version of this Delivery Guide can be downloaded from the OCR website.

UNIT AIM

Computer systems rely on the combination of hardware and software to work effectively together to support the needs of all types of users, whether it is for business or an individual. Software comprising of operating systems and application software needs to be installed, configured and maintained correctly in order for the systems to remain efficient. This unit will help you to develop your knowledge, skills and understanding to successfully install or upgrade a wide range of software, including operating systems and application software. It will enable you to select and use appropriate utility software to carry out maintenance activities. In addition, you will be able to ascertain end user requirements in order to plan and carry out installation, upgrades and/or maintenance activities.

This unit is optional to the IT Infrastructure Technician specialist pathway due to its relevance in an IT technical environment. The unit supports the development of skills, knowledge and understanding relevant to a technical support or network technician job role. The unit is also an optional unit within the Emerging Digital Practitioner specialist pathway as the job roles in this field often require the development and installation of bespoke software applications such as creating software applications to accommodate the collection and manipulation of data or creation of software for use within mobile technology.

The learning in this unit will also support the delivery of the CompTIA A+, the CompTIA Mobility+ qualification objectives, as well as the Cisco ITE qualification.

The activities within this teaching and learning resource must not be used for summative assessment purposes. As part of our teaching we expect support to be given to your learners; such support is not permissible for summative assessment and is likely to be considered malpractice.

Unit 19 Computer systems – software

| | |
|------------|--|
| L01 | Understand different software installations and their purpose |
| L02 | Be able to implement software installations and upgrades to meet specified user requirements |
| L03 | Be able to conduct system maintenance using utility software |

To find out more about this qualification please go to: <http://www.ocr.org.uk/qualifications/cambridge-technicals-it-level-3-certificate-extended-certificate-introductory-diploma-foundation-diploma-diploma-05838-05842-2016-suite>

**2016 Suite**

- New suite for first teaching September 2016
- Externally assessed content
- Eligible for Key Stage 5 performance points from 2018
- Designed to meet the DfE technical guidance

RELATED ACTIVITIES

The Suggested Activities in this Delivery Guide listed below have also been related to other Cambridge Technicals in IT units/Learning Outcomes (LOs). This could help with delivery planning and enable learners to cover multiple parts of units.

| This unit (Unit 19) | Title of suggested activity | Other units/LOs | |
|---------------------|--|---|--|
| LO1 | System software definition | Unit 1 Fundamentals of IT | LO2 Understand computer software |
| LO2 | Software installation/upgrade considerations | Unit 2 Global information | LO3 Understand the use of global information and the benefits to individuals and organisations |
| LO2 | Work plan | Unit 3 Cyber Security | LO3 Understand measures used to protect against cyber security incidents |
| | | Unit 6 Application design | LO2 Be able to investigate potential solutions for application developments LO4 Be able to present application solutions to meet client and user requirements |
| | | Unit 9 Product development | LO2 Be able to design products that meet identified client requirements |
| | | Unit 14 Software engineering for business | LO4 Be able to propose software solutions to meet business requirements |
| LO3 | Using utility software | Unit 2 Global information | LO6 Understand the principles of information security |
| | | Unit 3 Cyber Security | LO2 Understand the issues surrounding cyber security |
| | | Unit 4 Computer networks | LO4 Be able to plan maintenance activities for computer networks |
| | | Unit 20 IT technical support | LO2 Be able to diagnose faults and solutions for computer systems |

KEY TERMS

Explanations of the key terms used within this unit, in the context of this unit

| Key term | Explanation |
|--------------------------------------|--|
| Benchmarking | This is evaluating the performance of the PC. It is used to identify bottlenecks and potential system update requirements. |
| Bespoke software | This is software written from scratch for a specific purpose for a specific organisation or user. |
| Boot time | Boot time is the amount of time taken for your PC to be ready to use after you have turned the power on. |
| Defragmentation | As you save and delete applications and files to your hard disk the computer will start to slow down as fragmentations start to develop. By performing defragmentation, the computer will remove fragmentation so that it can run as efficiently as possible. |
| Freeware | This is proprietary software that is available to use at no cost to the user. The software will not come with a warranty or upgrade option. It is copyrighted by the developer and cannot be modified by its users. |
| General purpose software | General purpose software is also known as 'off the shelf' software. It is used for a variety of tasks. Examples include: word processors, spreadsheets, desktop publishing, databases and graphics packages. |
| Image deployment | An image is created containing all the software and applications the users require. This standard image is then copied across the entire network. |
| Installation | This is the action of installing the software. |
| Library program | This is a collection of programs and subroutines that are stored for immediate use. |
| Multi-boot | This term refers to the act of installing many (multi) operating systems on to a computer and then the user is given an opportunity to choose the operating system they would like to run. |
| Open source | Open source software is available to everyone to use and modify for their own purpose. The software does not require a license and is free from copyright law. |
| Registry cleaning | This is a utility program that deletes outdated and invalid entries. For example, if you remove a software application manually the product license number may still be held in the registry. |
| Service Level Agreement (SLA) | A Service Level Agreement is a contract between the software provider and the software user. Most often used with bespoke software contracts. Terms and conditions are built into the contract; these can refer to software updates or software maintenance. |
| Shareware | Shareware is software that is often free for a trial period for evaluation. After the trial period, a fee is charged to the user if they wish to continue to use the software. |
| Special purpose software | Special purpose software is created to carry out one specific task. For example, a software product designed specifically to play solitaire, will only let you play solitaire. |
| Systems software | This is the software used to run the hardware and communicate with the application software. |
| Translator software | Translator software converts a program written in one programming language into a different computer language. Another example of computer language translators is interpreters. |
| Unattended installation | An unattended installation is when the installation of a program does not need any user intervention. For example, the user is not required to select options; after the installation has started it can proceed until completion without any further communication with the user. |
| Upgrade | This refers to installing new and significant changes to a program that will improve performance. |
| Utility program/ utilities | This is system software designed to analyse, configure, optimise, maintain and protect your PC. Examples include: defragmentation, file conversion, firewalls. |
| Virtual memory | Virtual memory allows the computer to run larger programs as it simulates more random access memory than actually exists. |

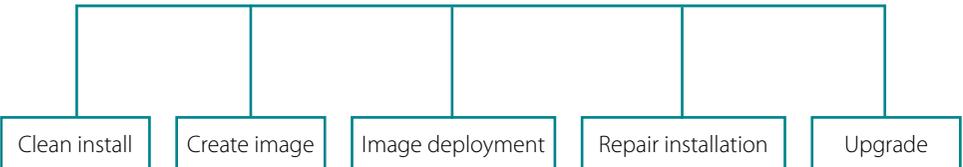
MISCONCEPTIONS

| Some common misconceptions and guidance on how they could be overcome | | |
|---|--|--|
| What is the misconception? | How can this be overcome? | Resources which could help |
| The difference between translators, interpreters and compilers | Learners confuse translators, interpreters and compilers. The web links give a definition of each term to clarify any confusion. | <p>Organisation: Teach ICT Resource Title: Translator Web Link: http://www.teach-ict.com/glossary/T/translator.htm Description: Definition of a translator.</p> <p>Organisation: Teach ICT Resource Title: Qualities of an interpreter Web Link: http://www.teach-ict.com/as_as_computing/ocr/H447/F453/3_3_2/translators_compilers/miniweb/pg12.htm Description: Qualities of an interpreter.</p> <p>Organisation: Teach ICT Resource Title: Summary of a compiler Web Link: http://www.teach-ict.com/as_as_computing/ocr/H447/F453/3_3_2/translators_compilers/miniweb/pg9.htm Description: Summary of a compiler.</p> |
| The difference between types of installation and installation stages | Learners could potentially mix up types of installation with installation stages, which are methods referred to within the system life cycle: direct, parallel, phased and pilot. Types of installation in this context are concerned with the different methods whereby software is integrated on a network e.g. creating an image, image deployment. | <p>Organisation: Teach ICT Resource Title: Installation stage: Methods Web Link: http://www.teach-ict.com/as_a2_ict_new/ocr/A2_G063/331_systems_cycle/slc_stages/miniweb/pg17.htm Description: The theory of installation methods.</p> <p>Organisation: HN Computing Resource Title: Installation Types Web Link: http://www.sqa.org.uk/e-learning/COS103CD/page_03.htm Description: Installation types.</p> |
| The difference between a work plan and an implementation plan | A work plan can be confused with an implementation plan. An implementation plan usually describes both the hardware and the software. Another guise for the work plan is the installation plan as this too can describe the hardware and software. | <p>Organisation: Project Kickstart Resource Title: Software Installation & Implementation Plan Template Web Link: https://www.projectkickstart.com/prj/Software%20Installation%20and%20Implementation%20Plan%20Assignments.htm Description: List of tasks required for a software installation.</p> |

SUGGESTED ACTIVITIES

| LO No: | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------------------------|---|--------------------------|------------------------|---------|---------|------------------------|--|--|--|--------------------------|--|--|--|------------------|--|--|--|------------------|--|--|--|---------------------|--|--|--|--------|------------|
| LO Title: | Understand different software installations and their purpose | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Title of suggested activity | Suggested activities | Suggested timings | Also related to | | | | | | | | | | | | | | | | | | | | | | | | |
| System software definition | <p>It is important for learners to understand the variations and use of system software.</p> <p>Learners could write down their own understanding of system software as a definition. Tutors could ask learners to share their definitions in small groups of four. Learners could discuss if they have a correct definition or modify and merge their definitions to make a new one. Tutors could then prompt learners to a definition of system software, for example: http://whatis.techtarget.com/definition/system-software</p> <p>Tutors could ask learners to research open operating systems, closed operating systems, utility programs, library programs and translator software. Learners could complete the table below:</p> <table border="1"> <thead> <tr> <th></th> <th>Example</th> <th>Purpose</th> <th>Benefit</th> </tr> </thead> <tbody> <tr> <td>Open operating systems</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Closed operating systems</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Utility programs</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Library programs</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Translator software</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> | | Example | Purpose | Benefit | Open operating systems | | | | Closed operating systems | | | | Utility programs | | | | Library programs | | | | Translator software | | | | 1 hour | Unit 1 LO2 |
| | Example | Purpose | Benefit | | | | | | | | | | | | | | | | | | | | | | | | |
| Open operating systems | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Closed operating systems | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Utility programs | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Library programs | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Translator software | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Title of suggested activity | Suggested activities | Suggested timings | Also related to | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---------|---------|------------------------|-------|-----------------------|---|--------------------------|---------|-----------------------------------|---|------------------|-----------------|---------------------------------------|-------------------------------------|------------------|-------------|---|------------------------|---------------------|--|---|---|--|--|
| System software definition (continued) | <p>Example solution</p> <table border="1" data-bbox="521 272 1590 890"> <thead> <tr> <th></th> <th>Example</th> <th>Purpose</th> <th>Benefit</th> </tr> </thead> <tbody> <tr> <td>Open operating systems</td> <td>Linux</td> <td>Open to customisation</td> <td>More secure as the operating system is not a standard setup. Open operating systems are less expensive. Features can be adapted to individual requirements.</td> </tr> <tr> <td>Closed operating systems</td> <td>Windows</td> <td>Standardised functions and layout</td> <td>Application developers can work to a standard format. Closed operating systems are more expensive. Features are consistent for all users.</td> </tr> <tr> <td>Utility programs</td> <td>Defragmentation</td> <td>The program will remove fragmentation</td> <td>Computer will run more efficiently.</td> </tr> <tr> <td>Library programs</td> <td>Source code</td> <td>Stores programming statements for immediate use</td> <td>Instant accessibility.</td> </tr> <tr> <td>Translator software</td> <td></td> <td>Converts a program written in one programming language into a different computer language</td> <td>Allows computer to run with more than one programming language.</td> </tr> </tbody> </table> | | Example | Purpose | Benefit | Open operating systems | Linux | Open to customisation | More secure as the operating system is not a standard setup. Open operating systems are less expensive. Features can be adapted to individual requirements. | Closed operating systems | Windows | Standardised functions and layout | Application developers can work to a standard format. Closed operating systems are more expensive. Features are consistent for all users. | Utility programs | Defragmentation | The program will remove fragmentation | Computer will run more efficiently. | Library programs | Source code | Stores programming statements for immediate use | Instant accessibility. | Translator software | | Converts a program written in one programming language into a different computer language | Allows computer to run with more than one programming language. | | |
| | Example | Purpose | Benefit | | | | | | | | | | | | | | | | | | | | | | | | |
| Open operating systems | Linux | Open to customisation | More secure as the operating system is not a standard setup. Open operating systems are less expensive. Features can be adapted to individual requirements. | | | | | | | | | | | | | | | | | | | | | | | | |
| Closed operating systems | Windows | Standardised functions and layout | Application developers can work to a standard format. Closed operating systems are more expensive. Features are consistent for all users. | | | | | | | | | | | | | | | | | | | | | | | | |
| Utility programs | Defragmentation | The program will remove fragmentation | Computer will run more efficiently. | | | | | | | | | | | | | | | | | | | | | | | | |
| Library programs | Source code | Stores programming statements for immediate use | Instant accessibility. | | | | | | | | | | | | | | | | | | | | | | | | |
| Translator software | | Converts a program written in one programming language into a different computer language | Allows computer to run with more than one programming language. | | | | | | | | | | | | | | | | | | | | | | | | |
| Application software | <p>Tutor could ask learners to list all application software they come across on a daily basis. Learners could then categorise the software into two categories.</p> <table border="1" data-bbox="521 1007 1529 1086"> <thead> <tr> <th>General purpose</th> <th>Special purpose</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table> <p>Tutors could then ask learners to find an example of bespoke software and compare it to special purpose software to identify the differences.</p> <p>Example solutions will include a comparison of brands, costs and features.</p> <p>Useful website link: http://www.softwire.com/what-we-do/software-consultancy/case-studies/</p> | General purpose | Special purpose | | | 1 hour | | | | | | | | | | | | | | | | | | | | | |
| General purpose | Special purpose | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Title of suggested activity | Suggested activities | Suggested timings | Also related to |
|--|---|-------------------|-----------------|
| Reasons for installation or upgrade | <p>Tutors could split learners into two groups. Each group of learners could be then further split up into pairs or threes to suit the group size.</p> <p>Learners within group 1 could think of scenarios in which it would be necessary to install or upgrade software. For each scenario, ask the learners to state the advantages and disadvantages.</p> <p>Learners in group 2 could think of solutions to installing or upgrading software. For each solution, ask the learners to state the advantages and disadvantages.</p> <p>Tutors could facilitate a discussion with learners from both groups to match scenarios with solutions.</p> | 1 hour | |
| Maintenance activities | <p>Learners, working in groups of three or four, take it in turns to respond orally to the question: What monthly maintenance checks should you perform on your PC to keep it running at its optimum performance?</p> <p>Tutors could ask learners to self-assess their work using the following website: http://sdpcfix.com/computer-advice/monthly-pc-maintenance-checklist/</p> <p>Extension work: Tutors could ask learners if they agree with the advice, if they would follow it, if the checks should be done more frequently or less frequently. Learners could also consider timings and scheduling a maintenance plan.</p> | 30 minutes | |
| Types of installation | <p>Learners could list types of installation. Tutors could ask learners to share their list with the rest of the group. From a revised list created by the group, learners could then create a timeline of when each type of installation is likely to take place.</p> <p>Example:</p>  <pre> graph TD A[Clean install] --- B[] C[Create image] --- B D[Image deployment] --- B E[Repair installation] --- B F[Upgrade] --- B B --- G[] </pre> | 30 minutes | |

| Title of suggested activity | Suggested activities | Suggested timings | Also related to |
|--------------------------------|---|-------------------|-----------------|
| Installation approaches | <p>Tutors could split learners into pairs. Tutors could give each pair an installation approach from this list:</p> <ul style="list-style-type: none"> • unattended installation • multi-boot • remote network installation • Windows networking • mobile device networking connectivity and email. <p>Learners could create a learning aid for their given approach. The learning aid could be a podcast, short movie or traditional presentation, dependent on ability.</p> <p>Learners can then deliver their learning aids to the group.</p> | 1 hour | |



SUGGESTED ACTIVITIES

| LO No: | 2 | | | | | | | | | | | | | | |
|--|--|--------------------------|------------------------|--|--------------------|-----------------------|---|--|--|-------|--|-------------------------------------|---|-------------------------------|---|
| LO Title: | Be able to implement software installations and upgrades to meet specified user requirements | | | | | | | | | | | | | | |
| Title of suggested activity | Suggested activities | Suggested timings | Also related to | | | | | | | | | | | | |
| Software installation/ upgrade considerations | Tutors could give each learner a set of key words. Tutors then ask learners to create their own definitions for each key word. Once they have established that they are accurate definitions, learners could create their own matching game as a revision aid for learners to match the definitions correctly. | 30 minutes | Unit 2 LO3 | | | | | | | | | | | | |
| | <table border="1"> <thead> <tr> <th>Key word</th> <th>Correct definition</th> </tr> </thead> <tbody> <tr> <td>end user requirements</td> <td>This term states the essential software specification for the end user.</td> </tr> <tr> <td>other stakeholder requirements (e.g. management)</td> <td>This term defines what the investors and management demand for the software specification.</td> </tr> <tr> <td>costs</td> <td>This relates to the financial funding of the software.</td> </tr> <tr> <td>existing configuration and software</td> <td>This considers the effectiveness of the software (if any) currently in use.</td> </tr> <tr> <td>Service Level Agreement (SLA)</td> <td>This is a contract with the software provider to acknowledge the terms and conditions of after install maintenance.</td> </tr> </tbody> </table> | | | Key word | Correct definition | end user requirements | This term states the essential software specification for the end user. | other stakeholder requirements (e.g. management) | This term defines what the investors and management demand for the software specification. | costs | This relates to the financial funding of the software. | existing configuration and software | This considers the effectiveness of the software (if any) currently in use. | Service Level Agreement (SLA) | This is a contract with the software provider to acknowledge the terms and conditions of after install maintenance. |
| | Key word | | | Correct definition | | | | | | | | | | | |
| | end user requirements | | | This term states the essential software specification for the end user. | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | |
| Software licensing | <p>Learners could create an information leaflet for the different types of software licensing for:</p> <ul style="list-style-type: none"> • End User License Agreement (EULA) • freeware • shareware • open source. <p>The leaflet could state the benefits, drawbacks and limitations of each type of license.</p> | 1 hour | | | | | | | | | | | | | |
|  | | | | | | | | | | | | | | | |
| Timescales | <p>Tutors could ask learners to write a report on timescale factors that arise from implementing software installations and upgrades to meet specified user requirements. Key features of the report will include:</p> <ul style="list-style-type: none"> • permissible downtime • risks involved (e.g. incompatibility issues, system downtime, loss of data and/or service, additional costs) • risk minimisation actions (e.g. backups, testing, low risk downtimes for installation). <p>Learners could then match the risks involved with the minimisation actions.</p> | 1 hour | | | | | | | | | | | | | |

| Title of suggested activity | Suggested activities | Suggested timings | Also related to | | | | | | | | | | | | | | | | |
|---------------------------------|---|-------------------|--|---------------|---------------------|---------------|---------------------|------------|-------------|--|--|--|--|--|--|--|--|------------|--|
| Work plan | <p>Tutors could ask learners to highlight the key elements of a software installation plan from the example that can be downloaded from: https://www.projectkickstart.com/prj/Software%20Installation%20and%20Implementation%20Plan%20Assignments.htm</p> <p>Learners could identify any missing elements such as:</p> <ul style="list-style-type: none"> • end user requirements • system specification • current system software • current system configuration • backup of system required • software to be installed • installation type • license requirements/legislative requirements • security risks • compatibility requirements • configuration requirements • timescales • test plan. <p>Tutors could ask learners to create their own work plan template. Learners could compare their layouts. After the work has been peer-assessed, learners could re-draft it according to the feedback (this can probe understanding by questioning learners as to what they have assessed and why they have changed their drafts).</p>  | 1 hour | Unit 3 LO3 Unit 6 LO2, LO4 Unit 9 LO2 Unit 14 LO4 | | | | | | | | | | | | | | | | |
| Implementing a work plan | <p>Tutors could give learners different scenarios to assess the functionality of their work plan design. Learners could then evaluate the benefits and drawbacks of their layout.</p> <p>Tutors could ask learners the questions: What homework would you set yourself on what you have learnt today? How would this help you to build on what you have done? (learners could then undertake that homework or the group can vote for the best one and all complete that homework).</p>  | 1 hour | | | | | | | | | | | | | | | | | |
| Test plan | <p>Tutors could ask learners to discuss the purpose of a test plan. Learners could design their own test plan template and share their ideas.</p> <p>Example solution:</p> <table border="1" data-bbox="521 1321 1563 1401"> <thead> <tr> <th>Test no.</th> <th>Date</th> <th>Test</th> <th>Expected result</th> <th>Actual result</th> <th>Outcome (pass/fail)</th> <th>Resolution</th> <th>Re-test no.</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>Learners could complete a test plan for installing a new software application.</p> | Test no. | Date | Test | Expected result | Actual result | Outcome (pass/fail) | Resolution | Re-test no. | | | | | | | | | 30 minutes | |
| Test no. | Date | Test | Expected result | Actual result | Outcome (pass/fail) | Resolution | Re-test no. | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |

SUGGESTED ACTIVITIES

| | | | |
|------------------------------------|--|--------------------------|------------------------|
| LO No: | 3 | | |
| LO Title: | Be able to conduct system maintenance using utility software | | |
| Title of suggested activity | Suggested activities | Suggested timings | Also related to |
| Maintenance plan | <p>Tutors divide learners into groups of four and ask each group to list as many elements as they can that will be present on a maintenance plan – there are many possible answers to this. Tutors select a learner from each group to provide feedback. This procedure is continued, each group feeding back while all learners record the answer.</p> <p>The comprehensive list could include:</p> <ul style="list-style-type: none"> • date • system description • maintenance activity • benchmark information • licensing requirements/legislative requirements • security risks • backup requirements • software to be used • benefit to system • configuration requirements • testing • activities to be automated. | 30 minutes | |

| Title of suggested activity | Suggested activities | Suggested timings | Also related to | | | | | | | | | | | | | | | | | | | | | |
|---------------------------------|---|---------------------------|--------------------------|-------------------------|-------------------------|---|-----------------|-------------------|---|-------------------------------|-------------------------------|---|---------------------------|---------------------------------|---|-----------|-----------------------------|---|--|---------------------------|---|--|--------|--|
| Benchmark information | <p>Tutors could set up a game of Pictionary for the word 'Benchmark'. Tutors will split the group in two halves. One half of the group will receive the word 'Benchmark' and draw it for the other half of the group to guess.</p> <p>Tutors could then ask learners to research benchmark software features:</p> <table border="1" data-bbox="521 400 1525 826"> <thead> <tr> <th>Software</th> <th>Web link</th> <th>Features</th> </tr> </thead> <tbody> <tr> <td>SiSoftware Sandra Lite</td> <td>http://www.softpedia.com/get/System/System-Info/SiSoftware-Sandra.shtml</td> <td></td> </tr> <tr> <td>Futuremark</td> <td>http://www.futuremark.com/</td> <td></td> </tr> <tr> <td>PCMark 8</td> <td>http://www.futuremark.com/benchmarks/pcmark8</td> <td></td> </tr> <tr> <td>HyperPI</td> <td>http://www.softpedia.com/get/System/System-Info/Hyper-PI.shtml</td> <td></td> </tr> <tr> <td>Phoronix Test Suite (Linux)</td> <td>http://www.phoronix-test-suite.com/</td> <td></td> </tr> <tr> <td>Passmark Performance Test</td> <td>http://www.passmark.com/products/pt.htm</td> <td></td> </tr> </tbody> </table> <p> Learners could then evaluate the similarities and differences between them. Learners write/speak/act out their opinion(s) about benchmark software. This could be used as a springboard for shared evaluative discussion of what has been researched.</p> | Software | Web link | Features | SiSoftware Sandra Lite | http://www.softpedia.com/get/System/System-Info/SiSoftware-Sandra.shtml | | Futuremark | http://www.futuremark.com/ | | PCMark 8 | http://www.futuremark.com/benchmarks/pcmark8 | | HyperPI | http://www.softpedia.com/get/System/System-Info/Hyper-PI.shtml | | Phoronix Test Suite (Linux) | http://www.phoronix-test-suite.com/ | | Passmark Performance Test | http://www.passmark.com/products/pt.htm | | 1 hour | |
| Software | Web link | Features | | | | | | | | | | | | | | | | | | | | | | |
| SiSoftware Sandra Lite | http://www.softpedia.com/get/System/System-Info/SiSoftware-Sandra.shtml | | | | | | | | | | | | | | | | | | | | | | | |
| Futuremark | http://www.futuremark.com/ | | | | | | | | | | | | | | | | | | | | | | | |
| PCMark 8 | http://www.futuremark.com/benchmarks/pcmark8 | | | | | | | | | | | | | | | | | | | | | | | |
| HyperPI | http://www.softpedia.com/get/System/System-Info/Hyper-PI.shtml | | | | | | | | | | | | | | | | | | | | | | | |
| Phoronix Test Suite (Linux) | http://www.phoronix-test-suite.com/ | | | | | | | | | | | | | | | | | | | | | | | |
| Passmark Performance Test | http://www.passmark.com/products/pt.htm | | | | | | | | | | | | | | | | | | | | | | | |
| Maintenance activities | <p>Learners could unscramble the listed maintenance activities.</p> <table border="1" data-bbox="521 1031 1205 1347"> <tbody> <tr> <td>removal of unwanted files</td> <td>avlomre fo deanwut efsil</td> </tr> <tr> <td>virtual memory settings</td> <td>luritva yoemrm sgitestn</td> </tr> <tr> <td>defragmentation</td> <td>otanmafedrgetin</td> </tr> <tr> <td>registry cleaning</td> <td>rsyerigt nilecang</td> </tr> <tr> <td>cleansing of internet history</td> <td>nsialceng fo tretenin trihosy</td> </tr> <tr> <td>automatic software updates</td> <td>comutati torsfawe aputdes</td> </tr> <tr> <td>anti-virus and spyware scanning</td> <td>tain-survi dna ewyrpsa ncinsnga</td> </tr> <tr> <td>utilities</td> <td>eiluitts</td> </tr> </tbody> </table> <p>Tutor could give learners a scenario for a specified system. Learners could then identify the required maintenance activities for the specified system. Learners could then make a 60–90 second information bulletin about how to complete the planned maintenance activities and capture it on a media device or learner mobile phone. Learners to share their information bulletin with the group.</p> | removal of unwanted files | avlomre fo deanwut efsil | virtual memory settings | luritva yoemrm sgitestn | defragmentation | otanmafedrgetin | registry cleaning | rsyerigt nilecang | cleansing of internet history | nsialceng fo tretenin trihosy | automatic software updates | comutati torsfawe aputdes | anti-virus and spyware scanning | tain-survi dna ewyrpsa ncinsnga | utilities | eiluitts | 1 hour | | | | | | |
| removal of unwanted files | avlomre fo deanwut efsil | | | | | | | | | | | | | | | | | | | | | | | |
| virtual memory settings | luritva yoemrm sgitestn | | | | | | | | | | | | | | | | | | | | | | | |
| defragmentation | otanmafedrgetin | | | | | | | | | | | | | | | | | | | | | | | |
| registry cleaning | rsyerigt nilecang | | | | | | | | | | | | | | | | | | | | | | | |
| cleansing of internet history | nsialceng fo tretenin trihosy | | | | | | | | | | | | | | | | | | | | | | | |
| automatic software updates | comutati torsfawe aputdes | | | | | | | | | | | | | | | | | | | | | | | |
| anti-virus and spyware scanning | tain-survi dna ewyrpsa ncinsnga | | | | | | | | | | | | | | | | | | | | | | | |
| utilities | eiluitts | | | | | | | | | | | | | | | | | | | | | | | |

| Title of suggested activity | Suggested activities | Suggested timings | Also related to | | | | | | | | | | | | | | | | | | | | |
|---|---|-------------------|---|-----------------|-------------|------------------|------|----------------|-------------|----------|------|-------------------------|-------------|---------------------|------|---------------------|-------------|--------------------|------|--------------|------|------------|--|
| Benefits of maintenance activities | <p>To check learners' understanding of maintenance activities, tutors could give learners a list of maintenance activities. Learners have to work out which will support improvements to the system and which are the odd ones out.</p> <table border="1" data-bbox="521 368 965 767"> <tbody> <tr><td>boot time</td><td>Real</td></tr> <tr><td>install malware</td><td>Odd one out</td></tr> <tr><td>processing speed</td><td>Real</td></tr> <tr><td>back up system</td><td>Odd one out</td></tr> <tr><td>security</td><td>Real</td></tr> <tr><td>update printer software</td><td>Odd one out</td></tr> <tr><td>stability of system</td><td>Real</td></tr> <tr><td>add new user rights</td><td>Odd one out</td></tr> <tr><td>storage capability</td><td>Real</td></tr> <tr><td>memory usage</td><td>Real</td></tr> </tbody> </table> <p>Tutors could ask learners to investigate the different points of view of people using software in business, at home, and at school. Learners could create an order of importance for the maintenance activities. Is the order of importance always the same or does it change? Learners could give reasons for their views in a formal written report.</p> | boot time | Real | install malware | Odd one out | processing speed | Real | back up system | Odd one out | security | Real | update printer software | Odd one out | stability of system | Real | add new user rights | Odd one out | storage capability | Real | memory usage | Real | 30 minutes | |
| boot time | Real | | | | | | | | | | | | | | | | | | | | | | |
| install malware | Odd one out | | | | | | | | | | | | | | | | | | | | | | |
| processing speed | Real | | | | | | | | | | | | | | | | | | | | | | |
| back up system | Odd one out | | | | | | | | | | | | | | | | | | | | | | |
| security | Real | | | | | | | | | | | | | | | | | | | | | | |
| update printer software | Odd one out | | | | | | | | | | | | | | | | | | | | | | |
| stability of system | Real | | | | | | | | | | | | | | | | | | | | | | |
| add new user rights | Odd one out | | | | | | | | | | | | | | | | | | | | | | |
| storage capability | Real | | | | | | | | | | | | | | | | | | | | | | |
| memory usage | Real | | | | | | | | | | | | | | | | | | | | | | |
| Using utility software | Learners with access to a personal computer or laptop could run and evidence defragmentation. Learners could show their evidence as a short movie or before and after graphics of the defragmentation process. | 30 minutes | Unit 2 LO6 Unit 3 LO2 Unit 4 LO4 Unit 20 LO2 | | | | | | | | | | | | | | | | | | | | |
| Maintenance evaluation | <p>Tutors could ask learners to implement maintenance activities identified for a specified system from the Benefits of maintenance activities activity above and evaluate the effectiveness of the maintenance activities.</p> <p>The evaluation will need to cover:</p> <ul style="list-style-type: none"> • analysis of maintenance activity requirements • comparison with identified benchmarks • issues raised and potential resolutions • future considerations • documentation of activities carried out • estimated time taken against actual time taken. | 1 hour | | | | | | | | | | | | | | | | | | | | | |

| Title of suggested activity | Suggested activities | Suggested timings | Also related to |
|---------------------------------------|---|-------------------|-----------------|
| Software installation evidence | <p>Learners could develop an aide memoire to help them remember different techniques for software installation. This could be a mnemonic, visual or aural aid.</p> <p>Tutors could develop this work further by asking learners to share their aide memoires and producing a pool of the most helpful ones.</p> | 1 hour | |



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