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| JPK's logo  sldn's logo  **LEARN AND WORK ASSIGNMENT**  **(LWA)** | | | |
| **NOSS**  **(CODE NOSS)** | **COMPUTER SYSTEM OPERATION**  **(IT-020-3:2013)** | | |
| **Competency Unit Title**  **(CU CODE)** | **COMPUTER SYSTEM MAINTENANCE**  **(IT-020-3:2013-C02)** | **LEVEL** | **3** |
| **Competency Unit Descriptor** | The computer system maintenance is the practice of keeping computers in a good state of performance. Two types of maintenance that the organisation normally practice which are preventive maintenance and corrective maintenance. Preventive maintenance refers to carrying out measures to prevent problems from occurring, while corrective maintenance, seeks to solve an existing problem.  The objective of computer maintenance is to keep computer hardware and software in good working order, specifically its internal, protect computer system from malfunction and data loss, improve computer performance, and prolongs computer life.  The person who is competent in this CU shall be able to carry out computer physical check up, software update, disk clean up, defragmentation, scan threats and performance optimization according to manufacturer instruction manual and computer system maintenance checklist.  The outcome of this competency is  ensure excellent condition of computer in term of functionality and reliability in accordance with computer system technical support requirements to meet users’ requirement  The personnel who are to be trained for this competency must in prior have the following competencies:  i. Competence in CU 1: Computer set-up. | | |
| **Candidate Name** |  | | |
| **Candidate I/C**  **Number** |  | | |
| **Company’s Name** |  | | |

**CU WORK ACTIVITY STATEMENT**:

PERFORM COMPUTER SYSTEM MAINTENANCE ACTIVITIES

**DURATION:**

**A. SETTING GOAL**

You are required to perform computer system maintenance activities based on performance criteria below:

* 1. Review and interpret maintenance schedule.
  2. Identify types of maintenance based on previous maintenance report
  3. Obtain and interpret maintenance activities checklist
  4. Prepare maintenance tools and equipment
  5. Conduct computer physical check-up (workplace area, cable management, cleanliness)
  6. Check computer firmware and hardware
  7. Install and update software patches according to manufacturer security/update recommendation
  8. Conduct computer storage device maintenance activities according to maintenance procedure
  9. Conduct computer security maintenance activities according to manufacturer security/update recommendation
  10. Remove unusable software and clean-up disk according to company Standard Operating Procedure (SOP)
  11. Carry out computer system data backup.
  12. Evaluate and perform computer performance optimization
  13. Access and interpret previous preventive report
  14. Access, diagnose and analyse computer system status
  15. Identify and confirm faulty components according to company Standard Operating Procedure (SOP)
  16. Report to supervisor and advise to the user of corrective action requirement
  17. Carry out corrective action according to company Standard Operating Procedure (SOP)
  18. Restore and test software, application, data and configuration according to user requirement and company Standard Operating Procedure (SOP)
  19. Test computer system functionality according to company Standard Operating Procedure (SOP)
  20. Record maintenance activity report
  21. Update maintenance schedule
  22. Record and submit computer maintenance job order to the client for acknowledgement
  23. Prepare computer maintenance report according to company Standard Operating Procedure (SOP)

**B. PLANNING**

You are required to plan activities in performing computer system maintenance to achieve setting goal by using resources listed below:

* 1. Identify tools, equipment & materials.

|  |  |
| --- | --- |
| **ITEMS** | **RATIO (ITEM : Trainees)** |
| 1. LCD Projector 2. Laptop/PC 3. Computer hardware components    1. Processor    2. Mother board    3. Network card    4. Memory module    5. Graphic card    6. Sound card    7. Power supply    8. Cooling Fan    9. Hard disk    10. Storage media    11. Optical drive    12. Casing    13. Heat sink    14. Thermal paste 4. Computer casing:    1. Mini tower    2. Medium tower    3. Desktop casing 5. Computer operating system and software 6. Types of computer cable connector, such as:    1. Network connector RJ45    2. Phone connector RJ11 7. Connector orientation:    1. Power cable    2. USB (1.1, 2.0, 3.0)    3. Monitor cable    4. Network cable (RJ45) 8. Computer monitor connector, such as    1. VGA,    2. DVI,    3. HDMI 9. Plug layout    1. Three pins    2. Two pins    3. International adaptor 10. Electrostatic precaution     1. anti-electrostatic wristband 11. Computer system set-up tools:     1. screw driver,     2. multi meter     3. Vacuum cleaner 12. Sample of computer maintenance   report  13. Sample of maintenance checklist  14. Sample of job order / change  request  15. Sample of job order / change  request report | 1:25  1:25  1:5  1:5  1:5  1:5  1:5  1:5  1:5  1:5  1:1  1:1  1:1  1:1 |

* 1. Perform computer system maintenance workflow.
  2. Identify computer system maintenance procedures, flow chart and correct sequence.
  3. Plan duration/time of computer system maintenance procedures.
  4. Identify manpower in performing computer system maintenance activities.
  5. You may review REFERENCES as guidelines in performing this activity.

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| --- |
| REFERENCES |
| 1. Books, Hephaestus (2011) . Computer Peripherals, Including: Computer Monitor,   Fax, Hard Disk Drive, Stored Energy Printer, Peripheral, Plug and Play, Auto-Configuration, Game Port, Hot Swapping, Autodetection, Surge Protector, Remote Terminal Unit,. Western Digital Media Center. Hephaestus Books, Lightning Source Uk Ltd. ISBN-13: 978-1-242-97956-9   1. Jyoti Snehi. (2006). Computer Peripherals and Interfacing. Firewall Media. ISBN-13:   978-81-7008-929-2   1. R.A. Penfold. (2005). How to Set Up Your New Computer. Bernard Babani   Publishing ISBN-13: 978-0-85934-559-0   1. Robert B J Warnar (2012). Computer Peripheral Memory System Forecast (Volume   500-545). General Books. ISBN-13: 978-1-235-71266-1 |

**C. DECISION MAKING**

* 1. You are required to get coach approval before performing computer system maintenance activities.

**D. EXECUTING & MONITORING**

You are required to perform computer system maintenance activities according to the steps below:

* 1. Check types of computer maintenance
  2. Check previous maintenance report
     1. Fault history
     2. Corrective history
     3. User history
  3. Ensure maintenance tools.
  4. Clean-up workstation area

.

* 1. Update computer firmware and upgrade computer hardware.
  2. Diagnose and fix computer hardware and peripheral cable connectivity.
  3. Install and update software patches.
  4. Conduct computer storage device maintenance.
  5. Perform computer security.
  6. Execute disk defragmentation.
  7. Optimise computer performance.
  8. Backup computer data

.

* 1. Check previous preventive maintenance report
  2. Diagnose and analyse computer system status
  3. Interpret warning alarm.
  4. Define Power On Self Test (POST) messages
  5. Carry out data back up.
  6. Determine types of corrective action.
  7. Identify faulty components.
  8. Calculate maintenance estimation cost.
  9. Report corrective action requirement to supervisor and user.
  10. Perform repair job and replace faulty parts.
  11. Restore software, application, data and configuration.
  12. Carry out computer system functionality test in accordance to manufacturer operating

manuals.

* 1. Apply computer part disposal procedure to disposed faulty part.
  2. Record computer maintenance checklist.
  3. Update computer maintenance record.
  4. Prepare computer maintenance job order / change request report.

4.29 Comply with attitude, safety and environment listed below when performing this activity.

|  |  |  |
| --- | --- | --- |
| **ATTITUDE** | **SAFETY** | **ENVIRONMENTAL** |
| Detail and precise in assessing previous maintenance report | Adhere to work area safety requirement | Adhere to work area safety requirement |
| Meticulous in identifying types of maintenance to be performed | Adhere to company confidentiality policy when conducting data back-up | Adhere to company confidentiality policy when conducting data back-up |
| Analytical mind and precise in rectifying computer | Adhere to manufacturer instruction manual | Adhere to manufacturer instruction manual |
| Care and cautious in installing and updating software patches and conducting security maintenance and disk defragmentation | Adhere to company confidentiality policy and record management procedure | Adhere to company confidentiality policy and record management procedure |
| Detail and systematic in diagnosing computer system status | Adhere to computer part disposal procedure | Adhere to computer part disposal procedure |
| Thorough and details in defining types of computer warning alarm and types of Power On Self Test (POST) messages |  |  |
| Transparent and detail in preparing computer system maintenance report |  |  |

4.30 Apply core activities listed below when performing this activity.

|  |  |  |
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| **Social Skills** | | **Core Abilities** |
| Communication skills | 02.03 Communicate clearly. | |
| Conceptual skills | 01.02 Document information procedures or processes.  02.04 Prepare brief reports and checklist  using standard forms. | |
| Interpersonal skills | 01.11 Apply thinking skills and creativity.  03.01Apply cultural requirement to the  workplace.  03.07 Resolve interpersonal conflicts  03.15 Liaise to achieve identified outcomes.  03.16 Identify and assess client/customer  needs.  04.02 Set and revise own objectives and  goals. | |
| Leadership skills | 01.01 Identify and gather information.  02.11 Convey information and ideas to people.  03.02 Demonstrate integrity and apply  practical practices.  03.05 Demonstrate safety skills  03.06 Respond appropriately to people and  situations.  04.04 Apply problem solving strategies.  04.05 Demonstrate initiative and flexibility  04.07 Negotiate acceptance and support for  objectives and strategies  06.04 Adapt competencies to new  situations/systems | |
| Learning skills | 01.03 Utilize basic IT applications.  01.04 Analyse information.  01.05 Utilize the Internet to locate and gather  information.  01.06 Utilize word processor to process information  05.01 Implement project/work plans  06.01 Understand systems.  06.03 Identify and highlight problems  06.05 Analyse technical systems.  06.06 Monitor and correct performance of  systems. | |
| Multitasking and prioritizing | 02.10 Prepare reports and instructions.  04.03 Organize and maintain own workplace. | |
| Self-discipline | 02.01 Interpret and follow manuals, instructions and SOP's.  03.03 Accept responsibility for own work and  Work area.  04.01 Organize own work activities.  06.02 Comply with and follow chain of  command. | |
| Teamwork | 03.08 Develop and maintain a cooperation  within work group.  03.13 Develop and maintain team harmony  and resolve conflicts.  03.14 Facilitate and coordinate teams and  ideas. | |

**E. EVALUATING**

You are required to evaluate computer system maintenance activities using the checklist below.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **A** | **ASSESSMENT CRITERIA**  **(60%)** | **MARKS GIVEN BY APPRENTICE** | | | | | **MARKS GIVEN BY**  **COACH** | | | | |
| **0** | **1-2** | **3-4** | **5-6** | **7** | **0** | **1-2** | **3-4** | **5-6** | **7** |
| 1 | Types of computer maintenance identified |  |  |  |  |  |  |  |  |  |  |
| 2. | Previous maintenance report assessed |  |  |  |  |  |  |  |  |  |  |
| 3. | Maintenance tools determined |  |  |  |  |  |  |  |  |  |  |
| 4. | Workstation area cleaned-up |  |  |  |  |  |  |  |  |  |  |
| 5. | Computer firmware and hardware rectified |  |  |  |  |  |  |  |  |  |  |
| 6. | Computer hardware and peripheral cable connectivity diagnosed and fixed |  |  |  |  |  |  |  |  |  |  |
| 7. | Software patches are installed and updated |  |  |  |  |  |  |  |  |  |  |
| 8. | Computer storage device maintenance conducted |  |  |  |  |  |  |  |  |  |  |
| 9. | Computer security maintenance performed |  |  |  |  |  |  |  |  |  |  |
| 10. | Disk defragmentation executed |  |  |  |  |  |  |  |  |  |  |
| 11. | Computer performance optimisation assessed |  |  |  |  |  |  |  |  |  |  |
| 12 | Computer data backup carried out |  |  |  |  |  |  |  |  |  |  |
| 13 | Previous maintenance report assessed and interpreted |  |  |  |  |  |  |  |  |  |  |
| 14 | Computer system status diagnosed |  |  |  |  |  |  |  |  |  |  |
| 15 | Warning alarm interpreted |  |  |  |  |  |  |  |  |  |  |
| 16 | Power On Self Test (POST) messages defined |  |  |  |  |  |  |  |  |  |  |
| 17 | Data back-up carried out |  |  |  |  |  |  |  |  |  |  |
| 18 | Types of corrective action determined |  |  |  |  |  |  |  |  |  |  |
| 19 | Faulty components determined |  |  |  |  |  |  |  |  |  |  |
| 20 | Maintenance cost estimated |  |  |  |  |  |  |  |  |  |  |
| 21 | Computer repair job performed and faulty parts replaced |  |  |  |  |  |  |  |  |  |  |
| 22 | Software, application, data and configuration restored |  |  |  |  |  |  |  |  |  |  |
| 23 | Computer system functionality test carried out |  |  |  |  |  |  |  |  |  |  |
| 24 | Faulty part is disposed in accordance with disposal procedure |  |  |  |  |  |  |  |  |  |  |
| 25 | Computer maintenance checklist recorded and compiled |  |  |  |  |  |  |  |  |  |  |
| 26 | Computer maintenance record updated |  |  |  |  |  |  |  |  |  |  |
| 27 | Computer maintenance job order / change request report prepared |  |  |  |  |  |  |  |  |  |  |
|  | **SUBTOTAL** | **A1** | | | | | **A2** | | | | |
|  | **FULL MARKS** | **189** | | | | | **189** | | | | |
| **B** | **ATTITUDE/SAFETY/**  **ENVIRONMENT**  **(20%)** | **MARKS GIVEN BY APPRENTICE** | | | | | **MARKS GIVEN BY**  **COACH** | | | | |
| **0** | **1-2** | **3-4** | **5-6** | **7** | **0** | **1-2** | **3-4** | **5-6** | **7** |
| 1 | Attitude |  |  |  |  |  |  |  |  |  |  |
| 2. | Safety |  |  |  |  |  |  |  |  |  |  |
| 3 | Environmental |  |  |  |  |  |  |  |  |  |  |
|  |  | **B1** | | | | | **B2** | | | | |
|  |  | **21** | | | | | **21** | | | | |
| **C** | **EMPLOYABILITY SKILLS**  **(SOCIAL SKILLS)**  **(20%)** | **MARKS GIVEN BY APPRENTICE** | | | | | **MARKS GIVEN BY**  **COACH** | | | | |
| **0** | **1-2** | **3-4** | **5-6** | **7** | **0** | **1-2** | **3-4** | **5-6** | **7** |
| 1 | Communication skills |  |  |  |  |  |  |  |  |  |  |
| 2 | Conceptual skills |  |  |  |  |  |  |  |  |  |  |
| 3 | Interpersonal skills |  |  |  |  |  |  |  |  |  |  |
| 4 | Multitasking and prioritizing |  |  |  |  |  |  |  |  |  |  |
| 5 | Self-discipline |  |  |  |  |  |  |  |  |  |  |
| 6 | Teamwork |  |  |  |  |  |  |  |  |  |  |
| 7 | Learning skill |  |  |  |  |  |  |  |  |  |  |
| 8 | Leadership skill |  |  |  |  |  |  |  |  |  |  |
|  |  | **C1** | | | | | **C2** | | | | |
|  | **FULL MARKS** | **56** | | | | | **56** | | | | |

**CALCULATION TABLE**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | MARKS GIVEN BY APPRENTICE | MARKS GIVEN BY COACH | WEIGHTED MARKS GIVEN BY  APPRENTICE | WEIGHTED MARKS GIVEN BY COACH |
| ASSESSMENT CRITERIA | A1 | A2 | A1 / 189X 60 | A2 /189X 60 |
| ATTITUDE, SAFETY & ENVIRONMENT | B1 | B2 | B1 / 21X 20 | B2 / 21X 20 |
| EMPLOYABILITY SKILLS (SOCIAL SKILLS) | C1 | C2 | C1 / 56X 20 | C2 / 56X 20 |
| Total | | | X | Y |
| Ratio of Percentage (Apprentice: Coach) | | | P% | Q% |
| Grand Total | | | (P/100 x X) + (Q/100 x Y) | |

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| --- |
| COMMENTS/ RECOMMENDATIONS BY COACH |

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COACH: APPRENTICE:

DATE: DATE: