

COMPUTER SYSTEM ADMINISTRATION

UNIT CODE: 0612 551 12A

Relationship to Occupational Standards

This unit addresses the Unit of Competency: Perform Computer System Administration

Unit Duration: 220 Hours

Unit Description

This unit covers the competencies required to perform computer system administration. It involves managing computer systems, configuring computer hardware and software and upgrading computer systems.

Summary of Learning Outcomes

Learning Outcomes	Duration (Hours)
1. Manage Computer systems	120
2. Configure Computer hardware and software	120
3. Upgrade Computer systems	60
TOTAL	220

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Manage Computer systems	1.1 Computer systems incident response 1.1.1 Introduction to computer systems incident response management 1.1.2 Types of incident response reports ☐ Initial incident report ☐ Post incident review report ☐ Detailed incident analysis report 1.1.3 Computer systems incident management life cycle ☐ Incident identification. ☐ Incident categorization. ☐ Incident prioritization. ☐ Incident response. ☐ Incident closure.	● Practical test ● Project ● Portfolio of evidence ● Oral questioning ● Interviews ● Third party report ● Written tests ● Case study

	1.2 Computer system documentation and reporting compilation. 1.2.1 Meaning and importance of computer system documentation and reporting 1.2.2 Types of computer system documentation ☐ System documentation ☐ Technical documentation ☐ Installation guide documentation ☐ User documentation ☐ Maintenance documentation 1.2.3 Types of computer system reporting ☐ System performance report ☐ Error and event report ☐ Security reports ☐ Audit and compliance report ☐ Backup and recovery report 1.3 system user management 1.3.1 Importance of system user management 1.3.2 Types of system user accounts ☐ Administrator ☐ Guest ☐ Service ☐ Standard 1.3.3 Creating and managing system user accounts 1.3.4 Authentication and authorization ☐ Authentication methods(passwords, biometrics, Multi-Factor Authentication, Single Sign-On) ☐ Implementing authorization controls 1.3.5 User permissions and access control 1.4 Computer system resource allocation 1.4.1 Introduction to computer system resource allocation 1.4.2 Types of computer System resource ☐ Central Processing Unit ☐ Computer Memory ☐ Motherboard ☐ Device Drivers ☐ Computer Storage	
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	☐ Computer I/O devices ☐ Graphic Processing Unit ☐ Network bandwidth	
	1.4.3 Factors to consider when allocating computer system resources ☐ Type of resource ☐ Task requirement ☐ System performance and utilization ☐ Scalability ☐ Security and isolation	
	1.4.4 Techniques and concepts of computer system resource allocation ☐ Process scheduling ☐ Swapping ☐ load balancing ☐ disk partitioning	
	1.4.5 Computer system resource allocation environment ☐ Cloud computing ☐ Virtualization	
	1.4.6 Strategies for effective resource allocation ☐ Quality of service ☐ Dynamic resource ☐ Power management	
	1.5 Computer system disaster recovery plan	
	1.5.1 Introduction to computer system disaster recovery plan	
	1.5.2 Type of computer systems disasters ☐ Natural disasters ☐ Cyber security incident ☐ Human error and system failure	
	1.5.3 Risk assessment process for computer systems ☐ Identification of potential risks ☐ Evaluation of potential risks ☐ Risk prioritization ☐ Mitigation strategies	
	1.5.4 Computer system backup strategies	
	1.6 Computer system policy enforcement approaches. ☐ Role-based access control ☐ Automatic enforcement ☐ Mediation/monitoring	

	☐ Asymmetry	
2. Configure Computer hardware and software	2.1 Computer hardware and software configuration 2.1.1 Introduction to Computer hardware and software configuration ☐ Basic concepts and terminologies ☐ Importance of proper configuration ☐ Overview of hardware and software configuration 2.1.2 Understanding Systems requirements 2.1.3 Importance of system requirements 2.1.4 Types of system requirements ➤ Hardware requirement ➤ Software requirement ➤ connectivity requirement 2.1.5 Determining system requirements 2.2 Tools and workspace Preparation 2.2.1 Proper user of tools 2.2.2 Hardware tools ☐ ESD tools ☐ Hand tools ☐ Cleaning tools ☐ Diagnostic tools ☐ Cable tester ☐ Crimping tool ☐ Stripper ☐ Fiber Splicer 2.2.3 Software tools ☐ Disk management tools ☐ Protection software tools ☐ Diagnostic software tools 2.2.4 Organizational tools 2.2.5 Reference tools ➤ Personal reference tool ➤ Internet reference tool ➤ Standard and procedures 2.3 Software installation and configuration ☐ Operating software installation and setup ☐ Installing and configuring drivers ☐ Setting up virtual machine (VirtualBox or VMware)	● Practical test ● Project ● Portfolio of evidence ● Oral questioning ● Interviews ● Third party report ● Written tests ● Case study

	☐ Managing and optimizing virtual environments ☐ Application software installation ☐ Managing software updates and patches 2.3.1 Hardware configuration ☐ Identifying hardware components ☐ Setting up and installing hardware ☐ BIOS/UEFI configuration ☐ Configuring hard drives and SSDs ☐ Setting up RAID arrays and storage pool ☐ Managing partitions and file systems ☐ Hardware troubleshooting techniques 2.4 System functionality testing 2.4.1 Introduction to Network 2.4.2 Testing Methodologies 2.4.3 Performance Metrics 2.4.4 Troubleshooting and Debugging 2.4.5 Security Testing 2.4.6 Documentation and Reporting 2.5 Introduction to data migration 2.5.1 Data migration strategies ☐ Bing bang ☐ Phased data migration strategies 2.5.2 Planning for data migration 2.5.3 Challenges to data migration 2.5.4 Data migration tools and techniques 2.5.5 Data security compliance during migration 2.6 Systems backup and recovery 2.6.1 Developing a backup strategy 2.6.2 Configuring backup software and hardware 2.6.3 Testing and verifying backups 2.6.4 Recovery planning	
3. Upgrade Computer systems	3.1 computer system updates and upgrades 3.1.1 Introduction to computer system updates and upgrades 3.1.2 Types of software upgrades and updates	● Practical test ● Project ● Portfolio of evidence

	☐ Functionality expansions upgrades ☐ System integration upgrades ☐ Security features upgrade ☐ Software version upgrade 3.2 Categories of Computer systems for update and upgrade 3.2.1 Types of hardware upgrades and updates ☐ RAM upgrades ☐ Storage upgrades ☐ Processor upgrades ☐ motherboard upgrades ☐ NIC upgrades 3.3 Performing computer system updates and upgrades 3.3.1 Computer system hardware and software updates and upgrades process 3.3.2 Maintaining upgrades and updates documentation 3.4 Creating and updating upgrades and updates reports 3.4.1 Best practices for documentation	● Oral questioning ● Interviews ● Third party report ● Written tests ● Case study ● Written tests ● Case study
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Suggested Methods of delivery

- Role playing
- Viewing of related videos
- Group discussions.
- Instructor led facilitation using active learning strategies.
- Projects.
- Demonstrations.
- Site visits.

Recommended Resources for 25 Trainees

S/No.	Category/Item	Description/Specifications	Quantity	Recommended Ratio (Trainee: Item)
A	Learning Materials			
1.	Textbooks		13 pcs	2:1
2.	Installation manuals			
3.	Flip Charts			

4.	PowerPoint presentations	For trainer's use		
B	Learning Facilities & infrastructure			
5.	Lecture/theory room		1	25:1
6.	Laboratory		1	25:1
C	Consumable materials			
7.	Printing papers		1 ream	1:20
8.	Toners/Cartridges		2 pcs	13:1
9.	Assorted colour of whiteboard markers			
D	Tools and Equipment			
10.	Computers		25 pcs	1:1
11.	Projector		1 pc	25:1
12.	Flash drives		25 pairs	1:1
13.	External CD/DVD drives		13 pcs	2:1