

**COMPUTERS AND COMPUTING SYSTEMS, NQF LEVEL 4, CREDITS 12**

**SUMMATIVE ASSESSMENT**

<b>Module #</b>	251201-005-00-KM-01:
<b>NQF Level</b>	level 4
<b>Notional hours</b>	120
<b>Credit(s)</b>	Cr 12
<b>Occupational Code</b>	251201005
<b>Qualification Title</b>	Occupational Certificate: Software Developer

**CONTACT INFORMATION:**

<b>Name</b>	
<b>Contact Address</b>	
<b>Telephone (H)</b>	
<b>Telephone (W)</b>	
<b>Cellular</b>	

### **Note to the learner**

This Learner Guide provides a comprehensive overview of the module. It is designed to improve the skills and knowledge of learners, and thus enabling them to effectively and efficiently complete specific tasks.

### **Purpose**

The main focus of the learning in this knowledge module is to build an understanding of what computers can do and the processes that make them function in terms of the four major parts: input, output, CPU (central processing unit) and memory. It gives an overview of networks and connectivity as well as security issues pertaining to IT ecosystems

### **Topic elements to be covered include**

The learning will enable learners to demonstrate an understanding of:

- KM-01-KT01: Problem solving skills for IT Professionals 5%
- KM-01-KT02: Techniques for safety 5%
- KM-01-KT03: System components 5%
- KM-01-KT04: Motherboards 5%
- KM-01-KT05: Processors 5%
- KM-01-KT06: Memory 5%
- KM-01-KT07: BIOS and CMOS 5%
- KM-01-KT08: Hard drives and storage devices 5%
- KM-01-KT09: Power supplies and voltage 5%
- KM-01-KT10: Ports, cables, and connectors 2%
- KM-01-KT11: Networking and network operating systems 5%
- KM-01-KT12: Networking and wireless connections 3%
- KM-01-KT13: Input and output devices 3%
- KM-01-KT14: Installing and managing printers 2%
- KM-01-KT15: Mobile devices, multimedia, and laptop computers 2%
- KM-01-KT16: Preventative maintenance 2%
- KM-01-KT17: Troubleshooting procedures 2%
- KM-01-KT18: Operating systems 5%

- KM-01-KT19: Managing files 2%
- KM-01-KT20: Applications utility, troubleshooting, and optimization 2%
- KM-01-KT21: Configuring device drivers 5%
- KM-01-KT22: Recovery 5%
- KM-01-KT23: Cloud computing 5%
- KM-01-KT24: Security fundamentals 5%
- KM-01-KT25: Programming and development 5%

### **Entry Requirements**

NQF 4

### **Provider Accreditation Requirements for the Knowledge Module**

#### **Physical Requirements:**

- The provider must have lesson plans and structured learning material or provide learners with access to structured learning material that addresses all the topics in all the knowledge modules as well as the applied knowledge in the practical skills
- QCTO/ MICT SETA requirements

#### **Human Resource Requirements:**

- Lecturer/learner ratio of 1:20 (Maximum)
- Qualification of lecturer (SME):
- NQF 6 in industry recognised qualifications with 1 year's experience in the IT industry
- AI vendor certification (where applicable)
- Assessors and moderators: accredited by the MICT SETA

#### **Legal Requirements:**

- Legal (product) licences to use the software for learning and training (where applicable)
- OHS compliance certificate
- Ethical clearance (where necessary)

#### **Exemptions**

- No exemptions, but the module can be achieved in full through a normal RPL process

### **Venue, Date and Time:**

Consult your facilitator should there be any changes to the venue, date and/or time.

Refer to your timetable

### **Assessments**

The only way to establish whether you are competent and have accomplished the learning outcomes is through continuous assessments. This assessment process involves interpreting evidence about your ability to perform certain tasks. You will be required to perform certain procedures and tasks during the training programme and will be assessed on them to certify your competence.

This module includes assessments in the form of self-evaluations/activities and exercises. The exercises, activities and self-assessments will be done in pairs, groups or on your own. These exercises/activities or self-assessments (Learner workbook) must be handed to the facilitator. It will be added to your portfolio of evidence, which will be proof signed by your facilitator that you have successfully performed these tasks.

Listen carefully to the instructions of the facilitator and do the given activities in the time given to you.





### SECTION 3: KM-01-KT03 : System components 5%

### Learning Outcome

**Describe the storage devices such as hard drives, magnetic tapes, flash drives functions**

[illegible]



#### SECTION 4: KM-01-KT04 : Motherboards 5%

### Learning Outcome

Topic elements to be covered include:

## Outline the components of a Computer System

**A computer system has five major hardware components: input, processing, storage, output, and communication devices. Are devices that input data or instructions into the central processing unit. They are classified based on the method they use to enter data.**

## **SECTION 5: KM-01-KT05 : Processors 5%**

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### **Learning Outcome**

**Describe the basic computer Term**

**CPU. CPU means 'Central Processing Unit'. ... RAM. RAM is an abbreviation for "Random Access Memory" or "Ready Access Memory."... Hard Disk Drive....**

**Floppy Disk.... Hardware....**

**Software.**\_\_\_\_\_

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## **SECTION 6: KM-01-KT06 : Memory 5%**

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### **Learning Outcome**

**Explain the types of memory: ram and rom including dram, sram, cmos ram, and vram**

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**RAM is classified into three types: static RAM (SRAM), dynamic RAM, and random access memory (RAM) (DRAM). Static RAM is more expensive and has more storage capacity than dynamic RAM, which must be refreshed more frequently and thus is slower. ROMs are integrated circuits that store data and, in most cases, cannot be changed**

## SECTION 7: KM-01-KT07 : BIOS and CMOS 5%

### Learning Outcome

## Describe how to update your computer's BIOS

**You save the BIOS file to a USB drive, restart your computer, and then navigate to the BIOS or UEFI screen. Then, select the BIOS-updating option, navigate to the BIOS file you saved to the USB drive, and the BIOS updates to the new version.**

[illegible]

**SECTION 8: KM-01-KT08 : Hard drives and storage devices 5%**

### Learning Outcome

## What Does Hard Disk Drive (HDD) Mean?

**A hard drive, also known as a hard disk drive (HDD), is a type of data storage device found in laptops and desktop computers. An HDD is a "non-volatile" storage drive, which means it can retain data even when the device is turned off.**

## SECTION 9: KM-01-KT09 : Power supplies and voltage 5%

### Learning Outcome

### Describe the affecting system hardware and components

**Motherboard, CPU, RAM, Hard drive, Solid-state drive (SSD), Optical drive, Heat sink, Graphics processing unit.**\_\_\_\_\_

**SECTION 10: KM-01-KT10 : Ports, cables, and connectors 2%**

### Learning Outcome

## Describe what are AC-DC Converters

**Electrical circuits that convert alternating current (AC) input to direct current (DC) output are known as AC/DC converters. AC/DC converters, also known as "rectifiers," convert the input AC voltage to variable DC voltage before optimizing it through a filter to produce an unregulated DC voltage.**

**SECTION 11: KM-01-KT11 : Networking and network operating systems 5%**

### Learning Outcome

## An understanding of secure collaboration across the internet

## Control the Collaboration Environment. Manage Document Access.

**Limit the sharing of personal information.**

### Examine Third-Party Integrations or Apps.

## Organize and safeguard customer data.

## Create Collaboration Guidelines...

**Security Awareness Training... Peer Audits on a Regular Basis.**

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**SECTION 12: KM-01-KT12 : Networking and wireless connections 3%**

### Learning Outcome

### **Describe the common functionality of server networks**

**Network servers manage and control network resources such as files, printers, users, groups, and so on. Servers are classified based on the network service they provide. File servers are used to store files; print servers are used to control one or more printers; and network servers are used to manage network traffic and access.**

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**SECTION 13: KM-01-KT13 : Input and output devices 3%**

### Learning Outcome

## **Describe the functions of keyboards, mouses, and touchscreens**

**Some, such as a mouse, keyboard, and touch screen, are used to control the computer. While a mouse moves the cursor on the screen, a keyboard types text on the computer screen. A touch screen allows users to perform computer functions by touching the screen.**

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## SECTION 14: KM-01-KT14 : Installing and managing printers 2%

### Learning Outcome

## Describe the installing and managing printers

**Simply connect your printer's USB cable to an available USB port on your PC and turn on the printer. To open the Printers & scanners system setting, click the Search icon on the taskbar, type Printers in the search bar, and then click Printers & scanners from the search results.**

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are approximately 20 lines visible. The paper has a slight shadow on the right side, suggesting it's resting on a surface. There is no handwriting or other markings on the paper.

### Learning Outcome

**Although the term "mobile device" may appear to include any electronic device small enough to be carried around, the term implies wireless communications as well as general computing capability. Tablets, smartphones, and e-readers are currently the most common examples of mobile devices.**

## **SECTION 16: KM-01-KT16 : Preventative maintenance 2%**

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### **Learning Outcome**

#### **Preventative procedures are explained**

Screenings, check-ups, and patient counseling are all part of routine health care.

**SECTION 17: KM-01-KT17 : Troubleshooting procedures 2%**

### Learning Outcome

**Hardware and software tools and the respective functions are described**

**Hardware is any physical component of a computer. This includes monitors, keyboards, and the insides of devices such as microchips and hard drives.**

**Software includes computer programs and apps on your phone that tell hardware what to do and how to do it.**

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## **SECTION 18: KM-01-KT18 : Operating systems 5%**

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### **Learning Outcome**

**An understanding of operating systems is demonstrated**

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**The operating system (OS) controls all of the computer's software and hardware. It manages files, memory, and processes, handles input and output, and controls peripheral devices such as disk drives and printers.**

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## **SECTION 19: KM-01-KT19 : Managing files 2%**

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### **Learning Outcome**

**Describe the copying, moving, deleting and archiving (ZIP) files and folders**

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**Copying entails creating a duplicate of the selected file or folder and storing it in a different location. Moving entails moving the original files or folder from one location to another (change the destination). The move command deletes the original file or folder, whereas the copy command creates a duplicate.**

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### Learning Outcome

## Find and download an.exe file.

**Find and double-click the.exe file.**

**A dialogue box will appear.**

**The software will be set up.**



## SECTION 21: KM-01-KT21 : Configuring device drivers 5%

### Learning Outcome

## Describe the system restore points

**System Restore creates Restore Points by taking a "snapshot" of some system files and the Windows registry. When an install fails or data is corrupted, System Restore can restore a system to working order without requiring you to reinstall the operating system.**

**SECTION 22: KM-01-KT22 : Recovery 5%**

### Learning Outcome

**Recovery processes are identified and application is described**

**Disaster recovery is the process by which an organization prepares for and responds to technological disasters. Any company's IT systems can fail unexpectedly due to unforeseen circumstances such as power outages, natural disasters, or security issues.**

## **SECTION 23: KM-01-KT23 : Cloud computing 5%**

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### **Learning Outcome**

**What is the relationship between internet and network (Network vs. Internet)?**

**A network is a collection of two or more computer systems. The internet, on the other hand, is the interconnection of a few networks.**

## **SECTION 24: KM-01-KT24 : Security fundamentals 5%**

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### **Learning Outcome**

**Describe what is a Computer Security Risk?**

[illegible]

**SECTION 25: KM-01-KT25 : Programming and development 5%**

### Learning Outcome

### Describe the game development

**\_ The art of creating games is known as game development, and it encompasses the design, development, and release of a game. It may include concept generation, design, construction, testing, and release. It is critical to consider game mechanics, rewards, player engagement, and level design when developing a game.**