

## Unit 8: Computer Systems Architecture

**Unit code** J/615/1628

**Unit level** 4

**Credit value** 15

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### Introduction

As technology develops, it is important to have a working foundation on which to build your knowledge. Despite hardware and software being constantly updated and seemingly becoming more complex, students with a solid, underpinned knowledge about computer systems architecture will not only be able to answer questions like, “How does a central processor work?”, “What does an operating system do?”, “How is information stored?”, “What is an instruction set?” and “How do I actually connect to the internet?”, but will also be able to transfer and apply their knowledge and skill to many other areas.

This unit introduces students to the foundations of computer systems architecture together with the integrated hardware and software components and subsystems that enable and allow data to be input, processed and output. The unit further explores the concepts of operating systems, hardware management and computer networks together with the practical skills needed to diagnose, troubleshoot and maintain computer systems taking the security of these systems into consideration.

Among the topics included in this unit are: CPUs, memory, input & output devices, ALU operations, program execution, operating systems (including kernel, file systems, API and system calls), hardware management, installation, firmware, device drivers, networking (including OSI and TCP/IP models), error and information gathering, fault diagnostics, security and problem resolution.

On successful completion of this unit, students will be able to explain the purpose and role of operating systems, the relationship between the subsystems embedded within a central processing unit, the core hardware and software components associated with computer operations and be able to configure the hardware and systems needed to establish a computer network together with practical diagnostic and troubleshooting techniques. As a result they will develop skills such as communication literacy, critical thinking, analysis, reasoning and interpretation which are crucial for gaining employment and developing academic competence.

## Learning Outcomes

By the end of this unit students will be able to:

- LO1 Explain the relationships between hardware components and the subsystems used in a computer system.
- LO2 Categorise the key features and services provided by different computer operating systems and hardware.
- LO3 Use network communication technology and the associated services to connect computer systems.
- LO4 Demonstrate diagnostic and troubleshooting skills to solve hardware, software and networking related issues.