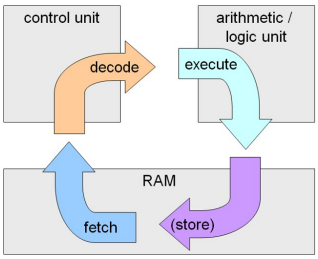
Unit 1—App Development...

HCCS STEM—Computer Science, IT, Engineering, Food/Nutrition, Business Studies

What do I need to be able to do?

1. You must **build an app** in App Lab that explains how computers work.
2. This app needs to include pages covering the **CPU, Input and Output devices and the Input-Process-Output concept**, and different types of **storage** like RAM, ROM, Magnetic, Optical, and Solid State.
3. You will also need to **code buttons** to create a functional navigation system between the pages and **provide evidence** of your completed app pages and tasks in your eBook.

The CPU, or Central Processing Unit, is often called the brain of the computer. It's the part that executes programs, which are sequences of stored instructions, and performs thousands of calculations every second. The CPU is made up of three main parts: the Control Unit (CU), the Immediate Access Store (IAS), and the Arithmetic Logic Unit (ALU). The CPU works using a concept sometimes called the Fetch-Decode-Execute cycle where essentially, the CPU accesses programs and data that are held in the Immediate Access Store, which is part of the computer's primary memory. The Control Unit manages communication between hardware and helps control the input and output of data, while the Arithmetic Logic Unit is where all the calculations that make the machine work actually happen.



Keywords

CPU: Known as the brain or processor of the computer, it executes programs and performs calculations. It is made up of the Control Unit, Immediate Access Store, and Arithmetic Logic Unit.

Control Unit (CU): A main component of the CPU that controls and monitors communications between hardware and controls the input and output of data.

Arithmetic Logic Unit (ALU): A main component of the CPU where arithmetic and logic operations are performed – it does all the working out of everything in the Computer.

Immediate Access Store (IAS): A main component of the CPU where the CPU holds all the data and programs that it is currently using, these are sometimes called Registers,

FDE Cycle: A concept related to how the CPU works, involving steps like fetching instructions, decoding them, and then executing them.

Input Devices: Devices used to input data into a computer system, such as keyboards, touch screens, and microphones.

Output Devices: Devices that receive output from the computer after processing, including screens, printers, speakers, and headphones.

Input-Process-Output (IPO): The fundamental concept that a computer system processes input data to produce output information.

Primary Storage: Also known as main memory or RAM, this component holds data, programs, and instructions that are currently in use, providing fast access for the processor.

Secondary Storage: This is non-volatile, long-term storage used to keep programs and data indefinitely, which would be lost when the computer is switched off. Usually a Hard Disk, CD or SSD.

This whole process starts with **Input devices**, like keyboards or microphones, which are used to **input data** into the computer system. This data then gets sent into the system, and the **CPU processes** it. Inputs are routed via the computer's primary memory (like the RAM) so the CPU can access them for processing. After the CPU has finished processing the input data, it produces **output**. This output is sent back out of the computer, also routed via the primary memory (RAM), to **Output devices**, such as screens or speakers, ready for you to see or hear. This overall flow, from getting data **in** to doing something with it (**process**) and then showing the result (**output**), is known as the **Input-Process-Output** concept.

Your assessment is to **build a "teach yourself" app** in App Lab that explains **how a computer works**, covering key areas like the **CPU, Input and Output devices**, the **Input-Process-Output concept**, and different types of **Storage**. You will also need to **code buttons** to make the app pages navigation work and **provide evidence** of your progress and finished pages in your eBook.

10 Test your understanding questions

Here are 10 multiple-choice questions summarising the whole unit:

1. What is the main platform you will use to **build the app** for this unit?

a) Code.org b) App Lab c) eBook d) Google Classroom

2. The app you build for this unit is primarily designed to explain **how computers work**. Which of the following topics are explicitly mentioned as needing to be covered in the app?

a) Graphics Processing Units, Networking, and Cybersecurity b) The CPU, Input and Output devices, the Input-Process-Output concept, and Storage c) Software development life cycle and databases d) Binary numbers and logic gates

3. Which component is known as the **brain of the computer** and is also referred to as the processor?

a) Immediate Access Store (IAS) b) Arithmetic Logic Unit (ALU) c) Central Processing Unit (CPU)
d) Control Unit (CU)

4. Devices used to **input data into a computer system** are called:

a) Output Devices b) Storage Devices c) Input Devices d) Processing Devices

5. When a computer has finished processing input, the result is sent back out of the computer ready to be used via **devices called**:

a) Input Devices b) Storage Devices c) Processing Devices d) Output Devices

6. The concept that a computer system has to **Process Input in the form of data into Output in the form of information** is known as:

a) Fetch-Decode-Execute Cycle b) Input-Process-Output c) Von Neumann Architecture d) Event-Driven Programming

7. The CPU is made up of three main components. Which of the following is **NOT** listed as one of the main components of the CPU in the sources?

a) The Control Unit b) The Immediate Access Store c) Secondary Storage d) The Arithmetic Logic Unit

8. Where does the CPU hold all the **data and programs that it is currently using**?

a) Secondary Storage b) Immediate Access Store (IAS). c) Control Unit (CU) d) Arithmetic Logic Unit (ALU)

9. To make the app pages change when a user interacts, you need to **code buttons**. What programming concept is used for this navigation in App Lab, where the flow is controlled by user actions like mouse clicks? #

a) Sequential Programming b) Conditional Programming c) Iterative Programming d) Event-Driven Programming

10. What must you provide evidence of in your **eBook** as part of the assessment?

a) Listing all code used in the app b) A written report explaining the project c) Screenshots of completed app pages and tasks d) A video demonstration of the app

10 Test your understanding answers

1: b, 2: b, 3: c, 4: c, 5: d, 6: b, 7: c, 8: b, 9: d, 10: c