

1.1 – Systems Architecture

Email *

william.dargan@adamsgs.uk

CPU & Performance - Section A

✓ Processors have a speed measured in (1-4)

- ☒ Hertz ✓
- ☐ Bits
- ☐ Bytes
- ☐ Seconds

✓ Data and Instructions in use are stored in the: (1-4)

- ☐ Processor
- ☐ Embedded System
- ☐ Hard Disk Drive
- ☒ Main Memory ✓



✓ Typical modern processor speed: (1-4)

- ☐ 16Hz
- ☐ 100MHz
- ☒ 4GHz
- ☐ 300GHz



✓ What doesn't affect the performance of the computer (1-4)

- ☐ Clock Speed
- ☐ Number of Cores
- ☐ Cache Size
- ☒ The number of instructions in the program



✓ If the number of cores goes up from 2 to 4 – what is the exact effect on performance? (1-4)

- ☐ Performance decreases
- ☒ The maximum number of instructions executed per second doubles
- ☐ The maximum number of instructions executed per second quadruples
- ☐ The maximum number of instructions executed per second is halved



✓ If the processing speed goes up from 1GHZ to 4GHZ – what is the exact effect on the performance of the computer? (1-4)

- ☐ The maximum number of instructions executed per second doubles
- ☒ The maximum number of instructions executed per second quadruples ✓
- ☐ The maximum number of instructions executed per second is halved
- ☐ The maximum number of instructions executed per second is quartered

✓ If the processing speed goes up from 2GHZ to 4GHZ and the number of cores goes from 2 to 4 – what is the exact effect on the performance of the computer? (5-6)

- ☐ The maximum number of instructions executed per second doubles
- ☒ The maximum number of instructions executed per second quadruples ✓
- ☐ The maximum number of instructions executed per second is halved
- ☐ The maximum number of instructions executed per second is quartered

✓ If the processing speed goes from 1GHZ to 4GHZ and the processor is changed from an 8 core to a dual core processor – what is the exact effect on the performance of the computer? (5-6)

- ☐ The number of instructions executed per second doubles
- ☐ The number of instructions executed per second quadruples
- ☐ The number of instructions executed per second is halved
- ☒ The number of instructions executed per second stays the same ✓



✓ Firmware in which software and hardware are integrated on a circuit board is often used in what type of system? (5-6)

- ☐ Desktop System
- ☒ Embedded System
- ☐ Operating System
- ☐ Point of Sales System

✓ Which is an example of an Embedded System: (1-4)

- ☐ Laptops
- ☐ Tablets
- ☐ PCs
- ☒ Washing Machine

CPU & Performance - Section B

✓ Processors don't do the following (1-4)

- ☐ Process Data
- ☐ Execute Instructions
- ☒ Execute Data
- ☐ Operate in Hz



✓ The part of a processor in which instructions are executed is known as? (1-4)

- ☒ Core ✓
- ☐ Centre
- ☐ Execution
- ☐ Instruction Centre

✗ What acts as an intermediary between the processor and the Main Memory? (6-9)

- ☒ Bus ✗
- ☐ User
- ☐ Cache
- ☐ Clock

Correct answer

- ☒ Cache

✓ What is held in cache? (5-6)

- ☐ All of the programming instructions
- ☒ Commonly used instructions and data ✓
- ☐ Instructions that have been processed
- ☐ Data that hasn't been used for a long time



✓ If the processing speed goes up from 2GHZ to 4GHZ and the number of cores goes from 1 to 2 – what is the exact effect on the performance of the computer? (5-6)

☐ Doubled

☒ Quadrupled ✓

☐ Eight Times faster

☐ Sixteen times faster

✓ If the processing speed goes up from 2GHZ to 4GHZ and the number of cores goes from 1 to 4 – what is the exact effect on the performance of the computer? (5-6)

☐ Doubled

☐ Quadrupled

☒ Eight Times faster ✓

☐ Sixteen times faster

✓ If the processing speed goes up from 1GHZ to 4GHZ and the number of cores goes from 1 to 2 – what is the exact effect on the performance of the computer?(5-6)

☐ Doubled

☐ Quadrupled

☒ Eight Times faster ✓

☐ Sixteen times faster



✓ If the processing speed goes up from 1GHZ to 4GHZ and the number of cores goes from 1 to 8 – what is the exact effect on the performance of the computer? (5-6)

- ☐ Eight Times faster
- ☐ Sixteen times faster
- ☒ Thirty Two times faster
- ☐ Sixty Four times faster



CPU & Performance - Section C

✗ What component holds the address of the next instruction (7-9)

- ☒ Memory Address Register
- ☐ Memory Data Register
- ☐ Program Counter
- ☐ Accumulator



Correct answer

- ☒ Program Counter

✓ Results of calculations are held in this register: (7-9)

- ☐ Memory Address Register
- ☐ Memory Data Register
- ☐ Program Counter
- ☒ Accumulator



✓ This holds the instruction/data temporarily after it is brought to the processor from the main memory (7-9)

☐ Memory Address Register

☒ Memory Data Register ✓

☐ Program Counter

☐ Accumulator

✗ This holds the number of the current instruction being worked on (7-9)

☐ CIR

☐ Memory Data Register

☒ Program Counter ✗

☐ Accumulator

Correct answer

☒ CIR

✓ This would perform an operation including the word “And” (5-7)

☒ Arithmetic Logic Unit ✓

☐ Accumulator

☐ Cache

☐ Control Unit



✓ This would send a signal such as “Memory Read” (5-7)

- ☐ Arithmetic Logic Unit
- ☐ Accumulator
- ☐ Cache
- ☒ Control Unit



✓ This would perform an operation such as $5+8$ (1-4)

- ☒ Arithmetic Logic Unit
- ☐ Accumulator
- ☐ Cache
- ☐ Control Unit



✓ This would reduce the number of memory/processor transfers (5-7)

- ☐ Arithmetic Logic Unit
- ☐ Accumulator
- ☒ Cache
- ☐ Control Unit



✓ This sends signals such as “I/O Read” (5-7)

- ☐ Arithmetic Logic Unit
- ☐ Accumulator
- ☐ Cache
- ☒ Control Unit



✓ This sends signals such as “Memory write” (5-7)

- ☐ Arithmetic Logic Unit
- ☐ Accumulator
- ☐ Cache
- ☒ Control Unit



CPU & Performance - Section D

✓ This doesn't happen during the Fetch part of the cycle: (7-9)

- ☐ Address Bus is used
- ☐ Program Counter increments by one
- ☒ Arithmetic operations are performed
- ☐ Main Memory is addressed



✓ This doesn't happen during the Decode / Execute part of the cycle: (7-9)

- ☐ Current Instruction is held in the CIR
- ☐ Results are held in the Accumulator
- ☐ Status Register updated
- ☒ Instructions are transferred from Main Memory ✓

✓ Carries address of the next instruction that will be fetched (4-6)

- ☒ Address Bus ✓
- ☐ Data Bus
- ☐ Control Bus
- ☐ System Bus

✓ What is transferred down the data bus? (4-6)

- ☐ Data only
- ☐ Addresses only
- ☒ Data and Instructions ✓
- ☐ Data, Instructions and Addresses

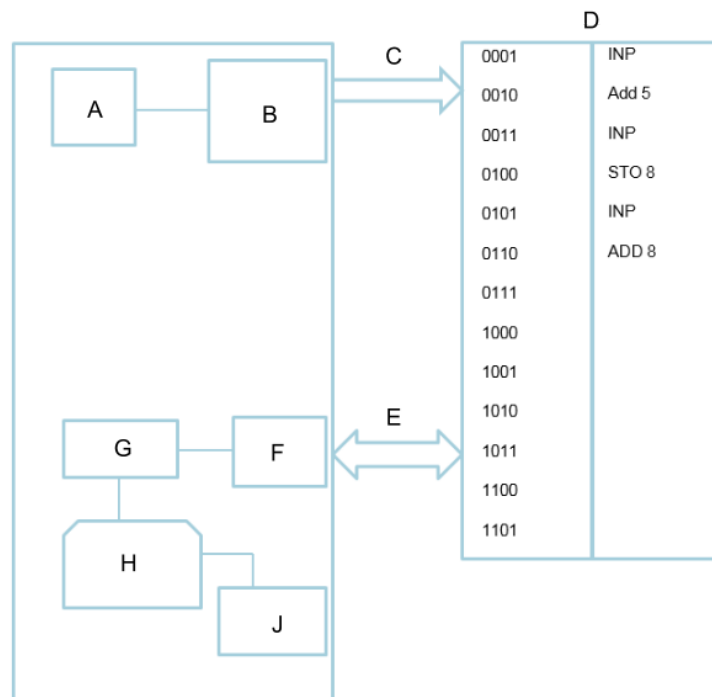


✓ What is the purpose of the accumulator? (4-6)

- ☐ To perform arithmetic operations
- ☒ To hold the results of a calculation ✓
- ☐ To hold the accumulation of instructions that have happened
- ☐ To hold the accumulation of instructions that are about to happen

CPU & Performance - Section F

You will require this image for the next set of questions.



✓ Label A represents (5-9)

1. Program Counter



2. Memory Address Register

3. Memory Data Register

4. Main Memory

5. Address Bus

6. Data Bus

7. Current Instruction Register

8. Accumulator

9. Arithmetic Logic Unit

✓ Label B represents (5-9)

1. Program Counter

2. Memory Address Register



3. Memory Data Register

4. Main Memory

5. Address Bus

6. Data Bus

7. Current Instruction Register

8. Accumulator

9. Arithmetic Logic Unit



✓ Label C represents (5-9)

1. Program Counter
2. Memory Address Register
3. Memory Data Register
4. Main Memory
5. Address Bus
6. Data Bus
7. Current Instruction Register
8. Accumulator
9. Arithmetic Logic Unit



✓ Label D represents (5-9)

1. Program Counter
2. Memory Address Register
3. Memory Data Register
4. Main Memory
5. Address Bus
6. Data Bus
7. Current Instruction Register
8. Accumulator
9. Arithmetic Logic Unit



✓ Label E represents (5-9)

1. Program Counter
2. Memory Address Register
3. Memory Data Register
4. Main Memory
5. Address Bus
6. Data Bus ✓
7. Current Instruction Register
8. Accumulator
9. Arithmetic Logic Unit

✓ Label F represents (5-9)

1. Program Counter
2. Memory Address Register
3. Memory Data Register ✓
4. Main Memory
5. Address Bus
6. Data Bus
7. Current Instruction Register
8. Accumulator
9. Arithmetic Logic Unit



✗ Label G represents (5-9)

1. Program Counter
2. Memory Address Register
3. Memory Data Register
4. Main Memory
5. Address Bus
6. Data Bus
7. Current Instruction Register

8. Accumulator



9. Arithmetic Logic Unit

Correct answer

Current Instruction Register

✓ Label H represents (5-9)

1. Program Counter
2. Memory Address Register
3. Memory Data Register
4. Main Memory
5. Address Bus
6. Data Bus
7. Current Instruction Register
8. Accumulator

9. Arithmetic Logic Unit



✗ Label J represents (5-9)

1. Program Counter
2. Memory Address Register
3. Memory Data Register
4. Main Memory
5. Address Bus
6. Data Bus
7. Current Instruction Register
8. Accumulator
9. Arithmetic Logic Unit



Correct answer

Accumulator

This content is neither created nor endorsed by Google. - [Terms of Service](#) - [Privacy Policy](#)

Google Forms

