

20IT3304

COMPUTER ORGANIZATION

A.Y. 2021-2022

QUESTION BANK

UNIT III

SHORT QUESTIONS

COMPUTER ARITHMETIC

1) What is an algorithm?

- Solution to any problem stated by a finite number of well- defined procedural steps is called an algorithm

2) When a floating point number is said to be normalized?

- A floating number is said to be normalized if the most significant digit of the mantissa is nonzero.

3) What is biased exponent?

- Sign bit is removed from being a separate entity.
- Bias is a positive number that is added to each exponent as the floating point number is formed, so that internally all exponents are positive.

4) What is the advantage of biased exponents?

- They contain only positive numbers and simpler to compare their relative magnitude without considering their signs.

5) What is a floating point number?

- Floating point number in computer registers consists of two parts

Mantissa (m)– it may be a fraction or an integer

Exponent (e) – location of radix point and the value of the radix r is assumed and not included in the registers.

ESSAY QUESTIONS

COMPUTER ARITHMETIC

(ALL QUESTIONS ARE IMPORTANT)

1. Draw Flow Chart for add and subtract operations – Fixed Point Signed Magnitude Representation
2. Draw flow chart for multiplying the two fixed point numbers with signed magnitude representation.
3. Draw Flow Chart for Division Algorithm – Fixed Point Signed Magnitude Representation
4. Draw flow chart for multiplying the binary integers in signed 2's complement representation. (Booth's Multiplication)
5. Draw Flow Chart for add and subtract operations – Floating point numbers
6. Draw Flow chart for multiplication of floating point numbers.
7. Draw the flowchart for division of floating point numbers.

MEMORY ORGANIZATION

1. Give memory hierarchy in a computer system.
2. What is an auxiliary memory?
 - Devices that provide backup storage are called auxiliary memory
3. What is cache memory?
 - A very high speed memory that increases the speed of processing by making current programs and data available to the CPU at a rapid rate.
 - Extremely fast and small memory located between CPU and main memory whose access time is close to processor logic clock cycle time.
- 4 . What is an associate memory?
 - A memory unit accessed by the content is called an associative memory or content addressable memory.
- 7 . What is locality of reference?
 - References to memory at any given interval of time tend to be confined within a few localized areas in memory and this phenomenon is known as locality of reference.
- 8 . What is hit?
 - When the CPU refers to memory and finds the word in cache it is said to produce a hit.
9. What is miss?

- When the CPU refers to memory and if the word is not found in the cache it is said to produce a miss

10. Define hit ratio?

- The performance of the cache memory is frequently measured in terms of a quantity called hit ratio.
- **The ratio of the number of hits divided by the total CPU references to memory is the hit ratio.**

11. What is mapping process?

- The transformation of data from main memory to cache memory is referred to as a mapping process.

12. Give the difference between write-through and write-back method.

- Write through – update the main memory with every memory write operation, with cache memory being updated in parallel if it contains the word at the specified address.
- The main advantage with this is that the main memory always contains the same data as the cache.
- Write-back – only the cache location is updated during a write operation. When the word is removed from the cache, it is copied into main memory.

ESSAY QUESTIONS

MEMORY ORGANIZATION

1. Explain the Memory hierarchy of a basic computer. ***
2. Explain Cache memory organization. ***
3. Explain Associative memory organization. ***

UNIT IV

INPUT OUTPUT ORGANIZATION

1. What are peripherals?

- Input or output devices attached to the computer are called peripherals

2. What is an interface?

- Special hardware components placed between the CPU and peripherals to supervise and synchronize all input and output transfers.
- The interface is referred as a complementary set of signal connection points between two parts of a system

3. What is a control command?

- A command is issued to activate the peripheral and to inform it what to do.

4. What is status command?

- A status command is used to test various status conditions in the interface and the peripheral.

5. What are data output and data input commands?

6. What is isolated I/O?

- Use one common bus for both memory and I / O but have separate control lines for each
- The distinction between memory transfer and I/O transfer is made through separate read and write lines
- I/O read and I/O write control lines are enabled during I/O transfer
- Memory read and memory write control lines are enabled during memory transfer
- The configuration that isolates all I/O interface addresses from the addresses assigned to memory is referred to as isolated I/O method.

7. What is memory mapped I/O?

- Use one common bus for memory and I/O with common control lines
- Same address space is used for both memory and I/O
- One set of read and write signals are used in the computers and do not distinguish between memory and I/O addresses and this configuration is referred to as memory mapped I/O
- In memory mapped I/O organization there are no specific input or output instructions
- Same instructions are used for either input-output transfers or for memory transfers

(* same information can be used to distinguish between memory mapped I/O and Isolated I/O)

8. What is asynchronous data transfer?

- The data transfer between two independent units is said to be asynchronous if each has its own private clock for its internal registers. The two units are said to be asynchronous to each other

9. What is handshaking?

- Asynchronous data transfer between two independent units requires control signals be transmitted between the communicating units to indicate the time at which data is being transmitted.
- The unit receiving the data item responds with another control signal to acknowledge receipt of the data
- This type of agreement between two independent units is referred to as handshaking.

10. What is the difference between vectored interrupt and non-vectored interrupt?

- Vectored Interrupt – the source that interrupts supplies the branch information to the computer
- Non Vectored Interrupt – the branch address is assigned to a fixed location in memory.

11. What is polling?

- In programmed I/O data transfer, the CPU stays in a program loop checking for the readiness of the device for data transfer and this is called polling

12. What is DMA?

- DMA (Direct Memory Access) transfers the data directly between the memory and I/O devices without the intervention of the CPU.
- The CPU is idle during the DMA data transfer and the DMA controller takes over the control of the buses to manage the transfer directly between the I/O devices and memory.
- DMA data transfer is preferred when large amounts of data need to be transferred

13. What is burst transfer?

- Block sequence consisting of number of memory words is transferred in a continuous burst while the DMA controller is master of the memory of the buses
- Data transmission will not be stopped until an entire block is transferred

14. What is cycle stealing?

- Allows the DMA controller to transfer one data word at a time, after which it must return control of the buses to the CPU.

- The CPU delays its operation for one memory cycle to allow the direct memory I/O transfer to steal one memory cycle.

15. What is half duplex transmission?

- A half duplex transmission system is one that is capable of transmitting in both directions but data can be transmitted in only one direction at a time.

16. What is full duplex transmission?

- A full duplex transmission can send and receive data in both directions simultaneously.

17. What is Input-Output Processor?

- Separate processor for handling I/O operations

ESSAY QUESTIONS

INPUT OUTPUT ORGANIZATION

1. Explain Asynchronous data transfer ***

- Strobe
- Handshaking

2. Discuss various Modes of data transfer. ***

3. Priority Interrupt Data Transfer. ***

4. Explain Direct Memory Access data transfer. ***

MULTIPROCESSOR

SHORT QUESTIONS

1. What is multiprocessor?
2. What are loosely coupled system?
3. What are tightly coupled system?

ESSAY QUESTIONS

1. Discuss in brief various interconnection structures of multiprocessors.

