

Computer Organization Questions and Answers – Addressing Modes

This set of Computer Organization and Architecture Multiple Choice Questions & Answers (MCQs) focuses on “Addressing Modes”.

1. The instruction, Add #45,R1 does _____
 - a) Adds the value of 45 to the address of R1 and stores 45 in that address
 - b) Adds 45 to the value of R1 and stores it in R1
 - c) Finds the memory location 45 and adds that content to that of R1
 - d) None of the mentioned

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Answer: b

Explanation: The instruction is using immediate addressing mode hence the value is stored in the location 45 is added.

2. In the case of, Zero-address instruction method the operands are stored in _____
 - a) Registers
 - b) Accumulators
 - c) Push down stack
 - d) Cache

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Answer: c

Explanation: In this case, the operands are implicitly loaded onto the ALU.

3. Add #45, when this instruction is executed the following happen/s _____
 - a) The processor raises an error and requests for one more operand
 - b) The value stored in memory location 45 is retrieved and one more operand is requested
 - c) The value 45 gets added to the value on the stack and is pushed onto the stack
 - d) None of the mentioned

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Answer: b

Explanation: None.

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4. The addressing mode which makes use of in-direction pointers is _____
- a) Indirect addressing mode
 - b) Index addressing mode
 - c) Relative addressing mode
 - d) Offset addressing mode

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Answer: a

Explanation: In this addressing mode, the value of the register serves as another memory location and hence we use pointers to get the data.

5. In the following indexed addressing mode instruction, $MOV 5(R1), LOC$ the effective address is _____
- a) $EA = 5+R1$
 - b) $EA = R1$
 - c) $EA = [R1]$
 - d) $EA = 5+[R1]$

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Answer: d

Explanation: This instruction is in Base with offset addressing mode.

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6. The addressing mode/s, which uses the PC instead of a general purpose register is _____
- a) Indexed with offset
 - b) Relative
 - c) Direct

d) Both Indexed with offset and direct

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Answer: b

Explanation: In this, the contents of the PC are directly incremented.

7. When we use auto increment or auto decrements, which of the following is/are true?

- 1) In both, the address is used to retrieve the operand and then the address gets altered
 - 2) In auto increment, the operand is retrieved first and then the address altered
 - 3) Both of them can be used on general purpose registers as well as memory locations
- a) 1, 2, 3
 - b) 2
 - c) 1, 3
 - d) 2, 3

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Answer: d

Explanation: In the case of, auto increment the increment is done afterward and in auto decrement the decrement is done first.

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8. The addressing mode, where you directly specify the operand value is _____

- a) Immediate
- b) Direct
- c) Definite
- d) Relative

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Answer: a

Explanation: None.

9. The effective address of the following instruction is MUL 5(R1,R2).

- a) 5+R1+R2

- b) $5+(R1 \times R2)$
- c) $5+[R1]+[R2]$
- d) $5^*([R1]+[R2])$

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Answer: c

Explanation: The addressing mode used is base with offset and index.

10. _____ addressing mode is most suitable to change the normal sequence of execution of instructions.

- a) Relative
- b) Indirect
- c) Index with Offset
- d) Immediate

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Answer: a

Explanation: The relative addressing mode is used for this since it directly updates the PC.

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Computer Organization Questions and Answers – Memory Locations and Addresses

This set of Computer Organization and Architecture Multiple Choice Questions & Answers (MCQs) focuses on “Memory Locations and Addresses”.

1. The smallest entity of memory is called _____
 - a) Cell
 - b) Block
 - c) Instance

d) Unit

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Answer: a

Explanation: Each data is made up of a number of units.

2. The collection of the above mentioned entities where data is stored is called _____

- a) Block
- b) Set
- c) Word
- d) Byte

[View Answer](#)

Answer: a

Explanation: Each readable part of the data is called blocks.

3. An 24 bit address generates an address space of _____ locations.

- a) 1024
- b) 4096
- c) 248
- d) 16,777,216

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Answer: d

Explanation: The number of addressable locations in the system is called as address space.

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4. If a system is 64 bit machine, then the length of each word will be _____

- a) 4 bytes
- b) 8 bytes
- c) 16 bytes

d) 12 bytes

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Answer: b

Explanation: A 64 bit system means, that at a time 64 bit instruction can be executed.

5. The type of memory assignment used in Intel processors is _____

- a) Little Endian
- b) Big Endian
- c) Medium Endian
- d) None of the mentioned

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Answer: a

Explanation: The method of address allocation to data to be stored is called as memory assignment.

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6. When using the Big Endian assignment to store a number, the sign bit of the number is stored in _____

- a) The higher order byte of the word
- b) The lower order byte of the word
- c) Can't say
- d) None of the mentioned

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Answer: a

Explanation: None.

7. To get the physical address from the logical address generated by CPU we use

-
- a) MAR

- b) MMU
- c) Overlays
- d) TLB

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Answer: b

Explanation: Memory Management Unit, is used to add the offset to the logical address generated by the CPU to get the physical address.

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8. _____ method is used to map logical addresses of variable length onto physical memory.
- a) Paging
 - b) Overlays
 - c) Segmentation
 - d) Paging with segmentation

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Answer: c

Explanation: Segmentation is a process in which memory is divided into groups of variable length called segments.

9. During the transfer of data between the processor and memory we use _____
- a) Cache
 - b) TLB
 - c) Buffers
 - d) Registers

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Answer: d

Explanation: None.

10. Physical memory is divided into sets of finite size called as _____
- a) Frames

- b) Pages
- c) Blocks
- d) Vectors

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Answer: a

Explanation: None.

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Computer Organization Questions and Answers – Memory Operations and Management

This set of Computer Organization and Architecture Multiple Choice Questions & Answers (MCQs) focuses on “Memory Operations and Management”.

1. Add #01011101,R1 , when this instruction is executed then _____
- a) The binary addition between the operands takes place
 - b) The Numerical value represented by the binary value is added to the value of R1
 - c) The addition doesn't take place, whereas this is similar to a MOV instruction
 - d) None of the mentioned

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Answer: a

Explanation: This performs operations in binary mode directly.

2. If we want to perform memory or arithmetic operations on data in Hexa-decimal mode then we use _____ symbol before the operand.
- a) ~
 - b) !
 - c) \$

d) *

[View Answer](#)

Answer: c

Explanation: None.

3. When generating physical addresses from a logical address the offset is stored in _____

- a) Translation look-aside buffer
- b) Relocation register
- c) Page table
- d) Shift register

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Answer: b

Explanation: In the MMU the relocation register stores the offset address.

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4. The technique used to store programs larger than the memory is _____

- a) Overlays
- b) Extension registers
- c) Buffers
- d) Both Extension registers and Buffers

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Answer: a

Explanation: In this, only a part of the program getting executed is stored on the memory and later swapped in for the other part.

5. The unit which acts as an intermediate agent between memory and backing store to reduce process time is _____

- a) TLB's
- b) Registers

c) Page tables

d) Cache

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Answer: d

Explanation: The cache's help in data transfers by storing most recently used memory pages.



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6. Does the Load instruction do the following operation/s?

- a) Loads the contents of a disc onto a memory location
- b) Loads the contents of a location onto the accumulators
- c) Load the contents of the PCB onto the register
- d) None of the mentioned

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Answer: b

Explanation: The load instruction is basically used to load the contents of a memory location onto a register.

7. Complete the following analogy:- Registers are to RAM's as Cache's are to _____

a) System stacks

b) Overlays

c) Page Table

d) TLB

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Answer: d

Explanation: None.

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8. The BOOT sector files of the system are stored in _____

- a) Harddisk
- b) ROM
- c) RAM
- d) Fast solid state chips in the motherboard

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Answer: b

Explanation: The files which are required for the starting up of a system are stored on the ROM.

9. The transfer of large chunks of data with the involvement of the processor is done by _____

- a) DMA controller
- b) Arbitrator
- c) User system programs
- d) None of the mentioned

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Answer: a

Explanation: This mode of transfer involves the transfer of a large block of data from the memory.

10. Which of the following techniques used to effectively utilize main memory?

- a) Address binding
- b) Dynamic linking
- c) Dynamic loading
- d) Both Dynamic linking and loading

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Answer: c

Explanation: In this method only when the routine is required is loaded and hence saves memory.

Computer Organization Questions and Answers – Instructions and Instruction Sequencing

This set of Computer Organization and Architecture Multiple Choice Questions & Answers (MCQs) focuses on “Instructions and Instruction Sequencing”.

1. RTN stands for _____

- a) Register Transfer Notation
- b) Register Transmission Notation
- c) Regular Transmission Notation
- d) Regular Transfer Notation

[View Answer](#)

Answer: a

Explanation: This is the way of writing the assembly language code with the help of register notations.

2. The instruction, Add Loc,R1 in RTN is _____

- a) AddSetCC Loc+R1
- b) R1=Loc+R1
- c) Not possible to write in RTN
- d) R1<-[Loc]+[R1]

[View Answer](#)

Answer: d

Explanation: None.

3. Can you perform an addition on three operands simultaneously in ALN using Add instruction?

- a) Yes
- b) Not possible using Add, we've to use AddSetCC
- c) Not permitted
- d) None of the mentioned

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Answer: c

Explanation: You cannot perform an addition on three operands simultaneously because the third operand is where the result is stored.

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4. The instruction, Add R1,R2,R3 in RTN is _____

- a) $R3=R1+R2+R3$
- b) $R3<-[R1]+[R2]+[R3]$
- c) $R3=[R1]+[R2]$
- d) $R3<-[R1]+[R2]$

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Answer: d

Explanation: In RTN the first operand is the destination and the second operand is the source.

5. In a system, which has 32 registers the register id is _____ long.

- a) 16 bit
- b) 8 bits
- c) 5 bits
- d) 6 bits

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Answer: c

Explanation: The ID is the name tag given to each of the registers and used to identify them.



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6. The two phases of executing an instruction are _____

- a) Instruction decoding and storage
- b) Instruction fetch and instruction execution
- c) Instruction execution and storage
- d) Instruction fetch and Instruction processing

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Answer: b

Explanation: First, the instructions are fetched and decoded and then they're executed and stored.

7. The Instruction fetch phase ends with _____

- a) Placing the data from the address in MAR into MDR
- b) Placing the address of the data into MAR
- c) Completing the execution of the data and placing its storage address into MAR

d) Decoding the data in MDR and placing it in IR

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Answer: d

Explanation: The fetch ends with the instruction getting decoded and being placed in the IR and the PC getting incremented.

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8. While using the iterative construct (Branching) in execution _____ instruction is used to check the condition.

- a) TestAndSet
- b) Branch
- c) TestCondn
- d) None of the mentioned

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Answer: b

Explanation: Branch instruction is used to check the test condition and to perform the memory jump with the help of offset.

9. When using Branching, the usual sequencing of the PC is altered. A new instruction is loaded which is called as _____

- a) Branch target
- b) Loop target
- c) Forward target
- d) Jump instruction

[View Answer](#)

Answer: a

Explanation: None.

10. The condition flag Z is set to 1 to indicate _____

- a) The operation has resulted in an error
- b) The operation requires an interrupt call
- c) The result is zero
- d) There is no empty register available

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Answer: c

Explanation: This condition flag is used to check if the arithmetic operation yields a zero output.

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Computer Organization Questions and Answers – Assembly Language

This set of Computer Organization and Architecture Multiple Choice Questions & Answers (MCQs) focuses on “Assembly Language”.

1. _____ converts the programs written in assembly language into machine instructions.

- a) Machine compiler

- b) Interpreter
 - c) Assembler
 - d) Converter
- [View Answer](#)

Answer: c

Explanation: An assembler is a software used to convert the programs into machine instructions.

2. The instructions like MOV or ADD are called as _____
- a) OP-Code
 - b) Operators
 - c) Commands
 - d) None of the mentioned

[View Answer](#)

Answer: a

Explanation: This OP – codes tell the system what operation to perform on the operands.

3. The alternate way of writing the instruction, ADD #5,R1 is _____
- a) ADD [5],[R1];
 - b) ADDI 5,R1;
 - c) ADDIME 5,[R1];
 - d) There is no other way

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Answer: b

Explanation: The ADDI instruction, means the addition is in immediate addressing mode.

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4. Instructions which won't appear in the object program are called as _____
- a) Redundant instructions
 - b) Exceptions

- c) Comments
- d) Assembler Directives

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Answer: d

Explanation: The directives help the program in getting compiled and hence won't be there in the object code.

5. The assembler directive EQU, when used in the instruction: Sum EQU 200 does _____

- a) Finds the first occurrence of Sum and assigns value 200 to it
- b) Replaces every occurrence of Sum with 200
- c) Re-assigns the address of Sum by adding 200 to its original address
- d) Assigns 200 bytes of memory starting the location of Sum

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Answer: b

Explanation: This basically is used to replace the variable with a constant value.

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6. The purpose of the ORIGIN directive is _____

- a) To indicate the starting position in memory, where the program block is to be stored
- b) To indicate the starting of the computation code
- c) To indicate the purpose of the code
- d) To list the locations of all the registers used

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Answer: a

Explanation: This does the function similar to the main statement.

7. The directive used to perform initialization before the execution of the code is _____

- a) Reserve

- b) Store
- c) Dataword
- d) EQU

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Answer: c

Explanation: None.

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8. _____ directive is used to specify and assign the memory required for the block of code.
- a) Allocate
 - b) Assign
 - c) Set
 - d) Reserve

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Answer: d

Explanation: This instruction is used to allocate a block of memory and to store the object code of the program there.

9. _____ directive specifies the end of execution of a program.
- a) End
 - b) Return
 - c) Stop
 - d) Terminate

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Answer: b

Explanation: This instruction directive is used to terminate the program execution.

10. The last statement of the source program should be _____
- a) Stop
 - b) Return

- c) OP
- d) End

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Answer: d

Explanation: This enables the processor to load some other process.

11. When dealing with the branching code the assembler _____
- a) Replaces the target with its address
 - b) Does not replace until the test condition is satisfied
 - c) Finds the Branch offset and replaces the Branch target with it
 - d) Replaces the target with the value specified by the DATAWORD directive

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Answer: c

Explanation: When the assembler comes across the branch code, it immediately finds the branch offset and replaces it with it.

12. The assembler stores all the names and their corresponding values in _____
- a) Special purpose Register
 - b) Symbol Table
 - c) Value map Set
 - d) None of the mentioned

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Answer: b

Explanation: The table where the assembler stores the variable names along with their corresponding memory locations and values.

13. The assembler stores the object code in _____
- a) Main memory
 - b) Cache
 - c) RAM
 - d) Magnetic disk

[View Answer](#)

Answer: d

Explanation: After compiling the object code, the assembler stores it in the magnetic disk and waits for further execution.

14. The utility program used to bring the object code into memory for execution is _____

- a) Loader
- b) Fetcher
- c) Extractor
- d) Linker

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Answer: a

Explanation: The program is used to load the program into memory.

15. To overcome the problems of the assembler in dealing with branching code we use _____

- a) Interpreter
- b) Debugger
- c) Op-Assembler
- d) Two-pass assembler

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Answer: d

Explanation: This creates entries into the symbol table first and then creates the object code.

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Computer Organization Questions and Answers – Subroutines and Nesting

This set of Computer Organization and Architecture Multiple Choice Questions & Answers (MCQs) focuses on “Subroutines and Nesting”.

1. The return address of the Sub-routine is pointed to by _____

- a) IR
- b) PC
- c) MAR
- d) Special memory registers

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Answer: b

Explanation: The return address from the subroutine is pointed to by the PC.

2. The location to return to, from the subroutine is stored in _____

- a) TLB
- b) PC
- c) MAR
- d) Link registers

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Answer: d

Explanation: The registers store the return address of the routine and is pointed to by the PC.

3. What is subroutine nesting?

- a) Having multiple subroutines in a program
- b) Using a linking nest statement to put many subroutines under the same name
- c) Having one routine call the other
- d) None of the mentioned

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Answer: c

Explanation: None.

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4. The order in which the return addresses are generated and used is _____

- a) LIFO
- b) FIFO
- c) Random
- d) Highest priority

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Answer: a

Explanation: That is the routine called first is returned first.

5. In case of nested subroutines the return addresses are stored in _____

- a) System heap
- b) Special memory buffers
- c) Processor stack
- d) Registers

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Answer: c

Explanation: In this case, there will be more number of return addresses it is stored on the processor stack.

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6. The appropriate return addresses are obtained with the help of ____ in case of nested routines.

- a) MAR
- b) MDR
- c) Buffers
- d) Stack-pointers

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Answer: d

Explanation: The pointers are used to point to the location on the stack where the address is stored.

7. When parameters are being passed on to the subroutines they are stored in _____

- a) Registers
- b) Memory locations
- c) Processor stacks
- d) All of the mentioned

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Answer: d

Explanation: In the case of, parameter passing the data can be stored on any of the storage space.

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8. The most efficient way of handling parameter passing is by using _____

- a) General purpose registers
- b) Stacks
- c) Memory locations
- d) None of the mentioned

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Answer: a

Explanation: By using general purpose registers for the parameter passing we make the process more efficient.

9. The most Flexible way of logging the return addresses of the subroutines is by using _____

- a) Registers
- b) Stacks
- c) Memory locations

d) None of the mentioned

[View Answer](#)

Answer: b

Explanation: The stacks are used as Logs for return addresses of the subroutines.

10. The wrong statement/s regarding interrupts and subroutines among the following is/are

- i) The sub-routine and interrupts have a return statement
 - ii) Both of them alter the content of the PC
 - iii) Both are software oriented
 - iv) Both can be initiated by the user
- a) i, ii and iv
 - b) ii and iii
 - c) iv
 - d) iii and iv

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Answer: d

Explanation: None.

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Computer Organization Questions and Answers – Parameter Passing and Stack Frame

This set of Computer Organization and Architecture Multiple Choice Questions & Answers (MCQs) focuses on “Parameter Passing and Stack Frame”.

1. The private work space dedicated to a subroutine is called as _____

- a) System heap
- b) Reserve
- c) Stack frame
- d) Allocation

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Answer: c

Explanation: This work space is where the intermediate values of the subroutines are stored.

2. If the subroutine exceeds the private space allocated to it then the values are pushed onto _____

- a) Stack
- b) System heap
- c) Reserve Space
- d) Stack frame

[View Answer](#)

Answer: a

Explanation: If the allocated work space is exceeded then the data is pushed onto the system stack.

3. _____ pointer is used to point to parameters passed or local parameters of the subroutine.

- a) Stack pointer
- b) Frame pointer
- c) Parameter register
- d) Log register

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Answer: b

Explanation: This pointer is used to track the current position of the stack being used.

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4. The reserved memory or private space of the subroutine gets deallocated when _____

- a) The stop instruction is executed by the routine
- b) The pointer reaches the end of the space
- c) When the routine's return statement is executed
- d) None of the mentioned

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Answer: c

Explanation: The work space allocated to a subroutine gets deallocated when the routine is completed.

5. The private space gets allocated to each subroutine when _____

- a) The first statement of the routine is executed
- b) When the context switch takes place
- c) When the routine gets called
- d) When the Allocate instruction is executed

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Answer: c

Explanation: When the call statement is executed, simultaneously space also gets allocated.

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6. _____ the most suitable data structure used to store the return addresses in the case of nested subroutines.

- a) Heap
- b) Stack
- c) Queue
- d) List

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Answer: b

Explanation: None.

7. In the case of nested subroutines, the stack top is always _____

- a) The saved contents of the called sub routine
- b) The saved contents of the calling sub routine
- c) The return addresses of the called sub routine
- d) None of the mentioned

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Answer: a

Explanation: None.

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8. The stack frame for each subroutine is present in _____

- a) Main memory
- b) System Heap
- c) Processor Stack
- d) None of the mentioned

[View Answer](#)

Answer: c

Explanation: The memory for the work space is allocated from the processor stack.

9. The data structure suitable for scheduling processes is _____

- a) List
- b) Heap
- c) Queue
- d) Stack

[View Answer](#)

Answer: c

Explanation: The Queue data structure is generally used for scheduling as it is two directional.

10. The sub-routine service procedure is similar to that of the interrupt service routine in _____

- a) Method of context switch
- b) Returning
- c) Process execution
- d) Method of context switch & Process execution

[View Answer](#)

Answer: d

Explanation: The Subroutine service procedure is the same as the interrupt service routine in all aspects, except the fact that interrupt might not be related to the process being executed.

Sanfoundry Global Education & Learning Series – Computer Organization and Architecture.

Computer Organization Questions and Answers – Parameter Passing and Stack Frame

This set of Computer Organization and Architecture Multiple Choice Questions & Answers (MCQs) focuses on “Parameter Passing and Stack Frame”.

1. The private work space dedicated to a subroutine is called as _____

- a) System heap
- b) Reserve
- c) Stack frame
- d) Allocation

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Answer: c

Explanation: This work space is where the intermediate values of the subroutines are stored.

2. If the subroutine exceeds the private space allocated to it then the values are pushed onto _____

- a) Stack
- b) System heap
- c) Reserve Space
- d) Stack frame

[View Answer](#)

Answer: a

Explanation: If the allocated work space is exceeded then the data is pushed onto the system stack.

3. _____ pointer is used to point to parameters passed or local parameters of the subroutine.

- a) Stack pointer
- b) Frame pointer
- c) Parameter register
- d) Log register

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Answer: b

Explanation: This pointer is used to track the current position of the stack being used.

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4. The reserved memory or private space of the subroutine gets deallocated when _____

- a) The stop instruction is executed by the routine
- b) The pointer reaches the end of the space
- c) When the routine's return statement is executed
- d) None of the mentioned

[View Answer](#)

Answer: c

Explanation: The work space allocated to a subroutine gets deallocated when the routine is completed.

5. The private space gets allocated to each subroutine when _____

- a) The first statement of the routine is executed
- b) When the context switch takes place
- c) When the routine gets called
- d) When the Allocate instruction is executed

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Answer: c

Explanation: When the call statement is executed, simultaneously space also gets allocated.

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6. _____ the most suitable data structure used to store the return addresses in the case of nested subroutines.

- a) Heap
- b) Stack
- c) Queue
- d) List

[View Answer](#)

Answer: b

Explanation: None.

7. In the case of nested subroutines, the stack top is always _____

- a) The saved contents of the called sub routine
- b) The saved contents of the calling sub routine
- c) The return addresses of the called sub routine
- d) None of the mentioned

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Answer: a

Explanation: None.

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8. The stack frame for each subroutine is present in _____

- a) Main memory
- b) System Heap
- c) Processor Stack
- d) None of the mentioned

[View Answer](#)

Answer: c

Explanation: The memory for the work space is allocated from the processor stack.

9. The data structure suitable for scheduling processes is _____

- a) List
- b) Heap
- c) Queue
- d) Stack

[View Answer](#)

Answer: c

Explanation: The Queue data structure is generally used for scheduling as it is two directional.

10. The sub-routine service procedure is similar to that of the interrupt service routine in

-
- a) Method of context switch
 - b) Returning
 - c) Process execution
 - d) Method of context switch & Process execution

[View Answer](#)

Answer: d

Explanation: The Subroutine service procedure is the same as the interrupt service routine in all aspects, except the fact that interrupt might not be related to the process being executed.

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