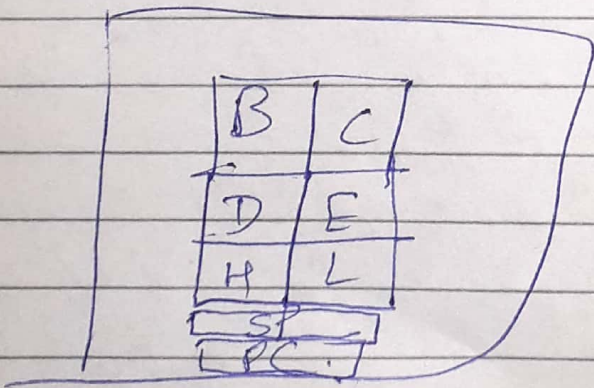


Q1. The stack is a LIFO (Last In First Out) data structure implemented in the RAM area and is used to store address & data when the microprocessor branches to sub-routine. It is used to store the return address (by pushing it onto the stack). It is also used in situation when two values of registers or register pair need to be swapped.

In case of PUSH operation, the stack pointer register gets decreased by 2 and new data item used to insert on the top of the stack.

In case of POP operation, the data item will have ~~been~~ to be deleted from the top of the stack and stack pointer register will get increased by the value of 2.



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The CALL instruction is used to redirect the program execution to the subroutine and the RET (return) instruction used to return from the execution of the execution to the calling routine.

So for eg CALL 4000H, It pushes the address of the instruction immediately following the CALL onto the stack. and immediately load 4000H to program counter.

Whereas the RET instruction retrieves the return address from the top of the stack and loads the program counter with the return address.

Q1 ~~In~~ A subroutine is a sequence of program instructions that perform a specific task, packaged as a unit. This unit can then be used in programs wherever that particular task have to be performed. It is often coded so that it can be called several times and from several places during one execution of the program, including from other sub routines, and then return to the next instruction after the call, once the subroutine's task is done. It is implemented by CALL & RET instructions.

Types of subroutines

- (1) Unconditional Call Instruction
- (2) Conditional Call Instruction
- (3) Unconditional Return Instruction
- (4) Conditional Return Instruction