

CMPE 310 Systems Design and Programming

L17: Chapter 2 – *The Microprocessor and Its Architecture*

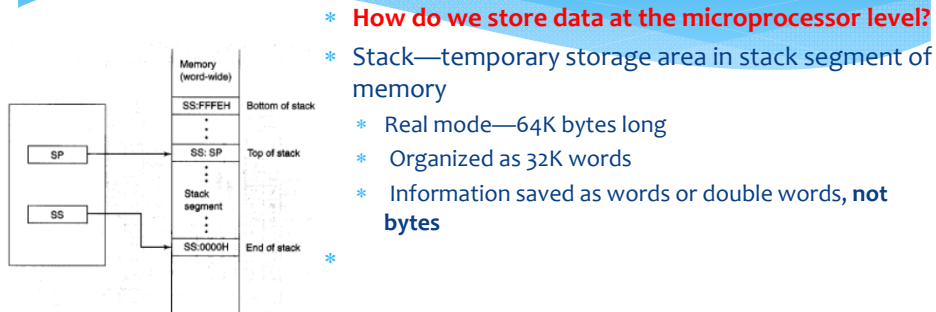
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L17 Objectives

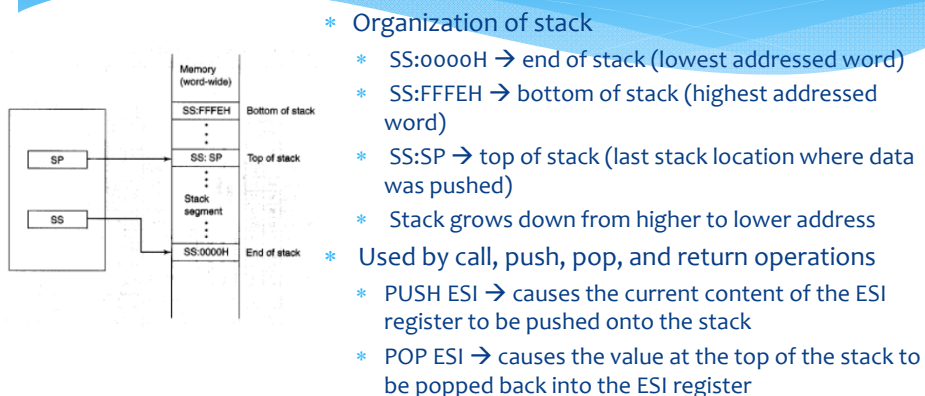
- * Describe the stack
- * Explain the PUSH and POP Instructions

The Stack



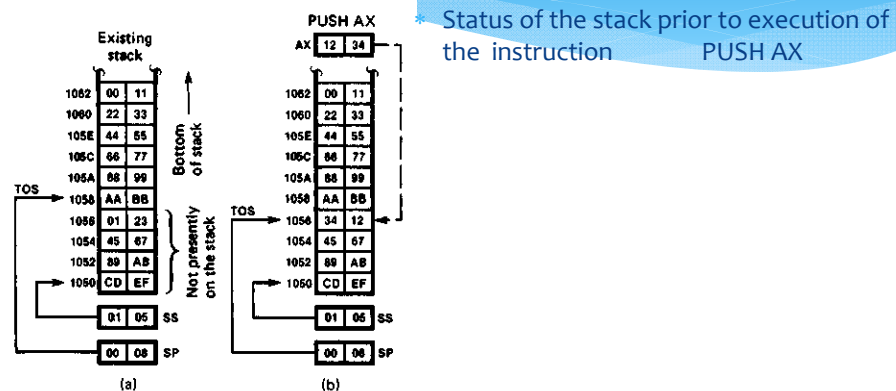
- * **How do we store data at the microprocessor level?**
- * Stack—temporary storage area in stack segment of memory
 - * Real mode—64K bytes long
 - * Organized as 32K words
 - * Information saved as words or double words, **not bytes**

The Stack



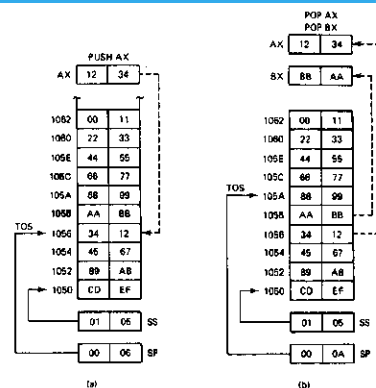
- * Organization of stack
 - * SS:0000H → end of stack (lowest addressed word)
 - * SS:FFFEH → bottom of stack (highest addressed word)
 - * SS:SP → top of stack (last stack location where data was pushed)
 - * Stack grows down from higher to lower address
- * Used by call, push, pop, and return operations
 - * PUSH ESI → causes the current content of the ESI register to be pushed onto the stack
 - * POP ESI → causes the value at the top of the stack to be popped back into the ESI register

Push Stack Operation



Pop Stack Operation

Status of the stack prior to execution of the instruction **POP AX**



Next time

- * Addressing Modes

