31 October 2021

Stack memory segment

What is stack segment in memory?

The Stack Segment is a segment that holds a stack. It's **a stack implementation of memory locations**. As the stack is a segment, it is a contiguous array of memory locations.

The arrangement of data is called the stack.

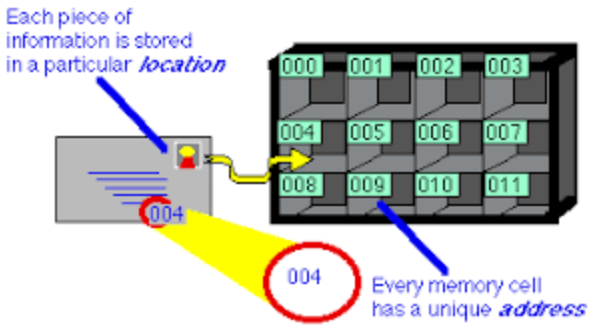
Monolithic Operating System Architecture

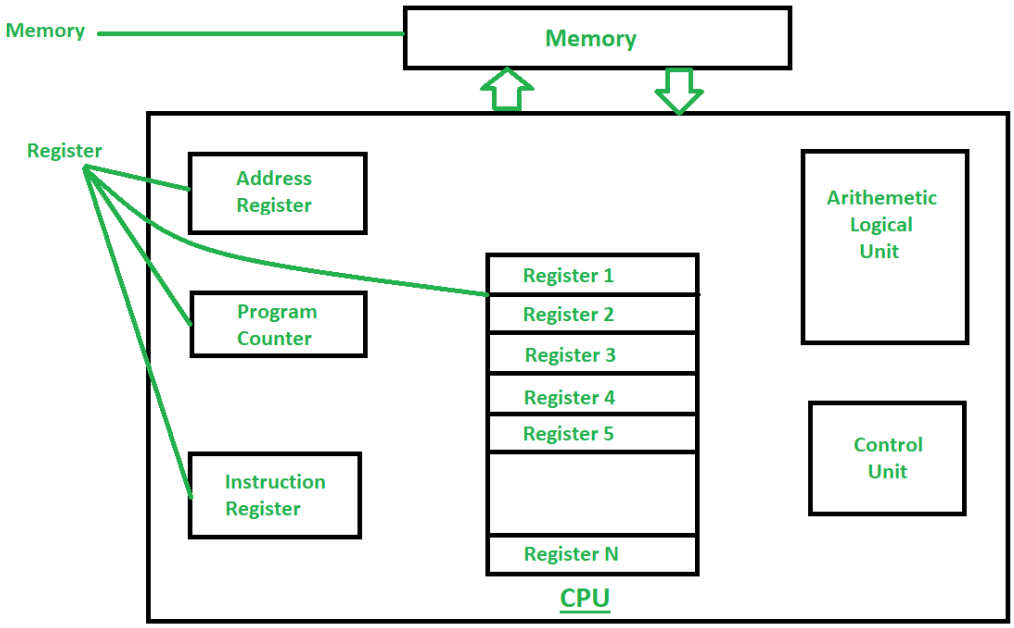
A monolithic kernel is an **operating system architecture where the entire operating system is working in kernel space**. A set of primitives or system calls implement all operating system services such as process management, concurrency, and memory management. Device drivers can be added to the kernel as modules.

Memory Addressing

Addressing Modes– The term addressing modes refers to the way in which the operand of an instruction is specified. The addressing mode specifies a rule for interpreting or modifying the address field of the instruction before the operand is actually executed.

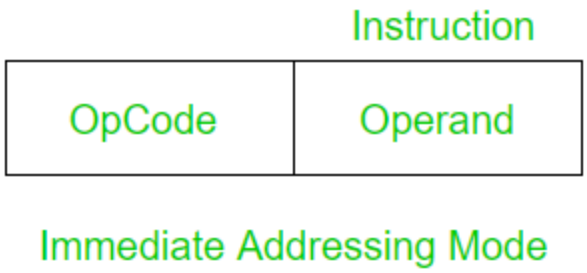
Register Addressing





Immediate Addressing

Immediate—Immediate addressing is not really an addressing mode into memory; rather, it is **an instruction format that directly includes the data to be acted on as part of the instruction**. This form of operand access simplifies the instruction execution cycle since no additional fetches are required.



Direct Addressing

> Each assembly language statement is split into an opcode and an operand. The opcode is **the instruction that is executed by the**

> **CPU** and the operand is the data or memory location used to execute that instruction.

> In computing, an opcode (abbreviated from operation code, also known as instruction machine code, instruction code, instruction syllable, instruction parcel, or string) is **the portion of a machine language instruction that specifies the operation to be performed**

Direct addressing is **a scheme in which the address specifies which memory word or register contains the operand**. For example, 1) LOAD R1, 100 Load the content of memory address 100 to register R1.

Indirect Addressing

indirect addressing A method of addressing in which the contents of the address specified in the instruction (which may itself be an effective address) are **themselves an address to be used to provide the desired memory reference**. Two memory references are thus needed to obtain the data.

Base + Offset Addressing

An addressing scheme that uses a **value stored in one of the CPU's registers** as the base location from which to begin counting. The CPU then adds the offset supplied with the instruction to that base address and retrieves the operand from the computed memory location.