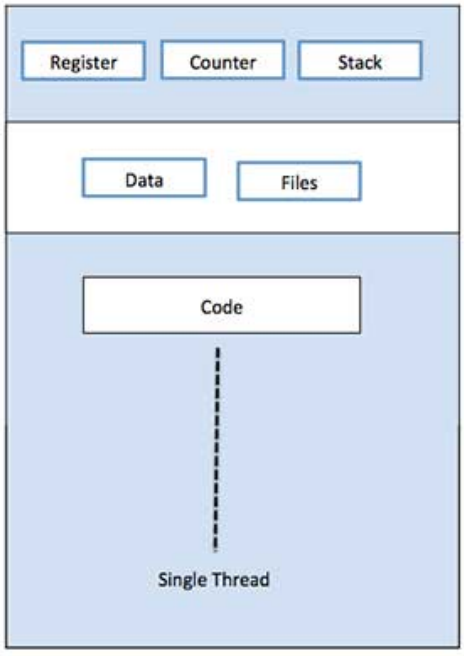
Multitasking

- Multitasking, in an operating system, is allowing a user to perform more than one computer task (such as the operation of an application program) at a time.
- The operating system is able to keep track of where you are in these tasks and go from one to the other without losing information.
- Microsoft Windows 2000, IBM's OS/390, and Linux are examples of operating systems that can do multitasking (almost all of today's operating systems can).
- When you open your Web browser and then open Word at the same time, you are causing the operating system to do multitasking.
- Being able to do multitasking doesn't mean that an unlimited number of tasks can be juggled at the same time.
- Each task consumes system storage and other resources.
- As more tasks are started, the system may slow down or begin to run out of shared storage.
- Multitasking is a process of executing multiple tasks simultaneously.
- We use multitasking to utilise the CPU.

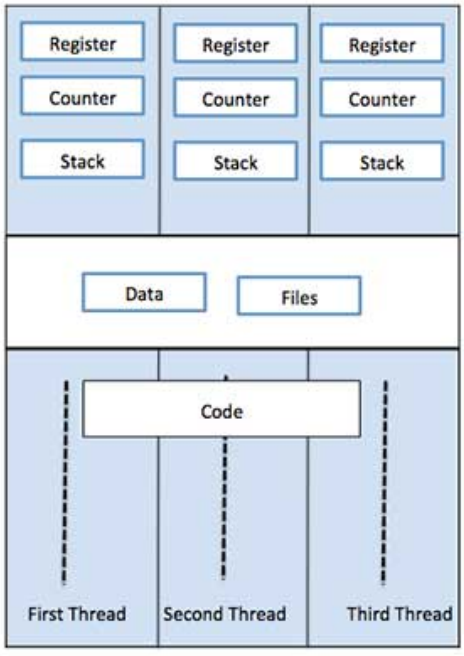
Multitasking can be achieved in two ways:

1. Process-based Multitasking (Multiprocessing)

2. Thread-based Multitasking (Multithreading)



Single Process P with single thread



Single Process P with three threads

Process-based Multitasking (Multiprocessing)

- Each process has an address in memory. In other words, each process allocates a separate memory area.
- A process is heavyweight.
- Cost of communication between the process is high.
- Switching from one process to another requires some time for saving and loading registers, memory maps, updating lists, etc.

Thread-based Multitasking (Multithreading)

- Threads share the same address space.
- A thread is lightweight.
- Cost of communication between the thread is low.