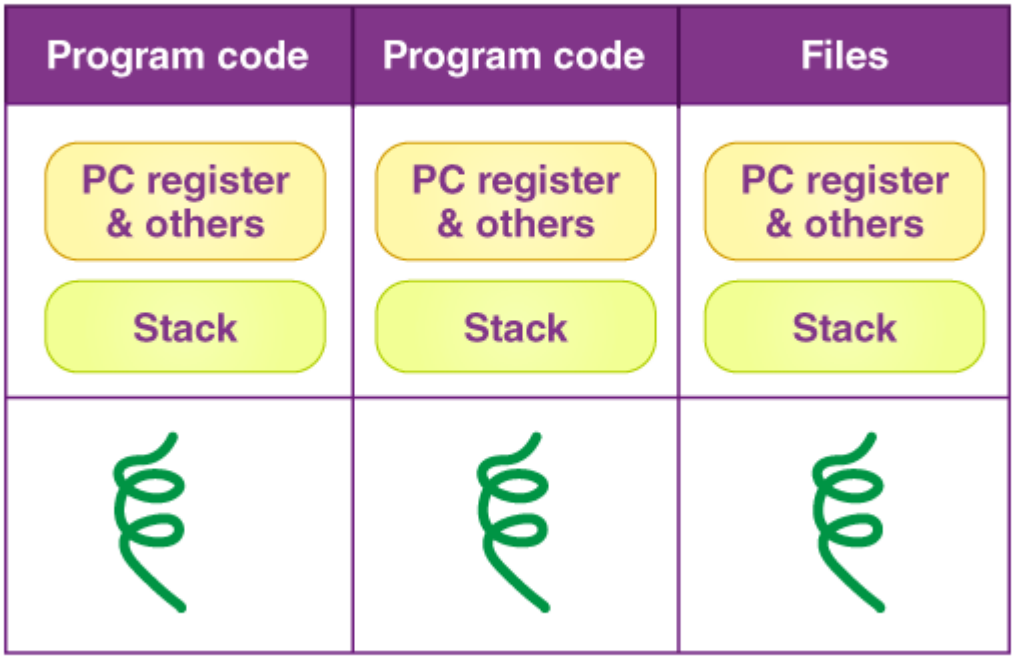
Thread

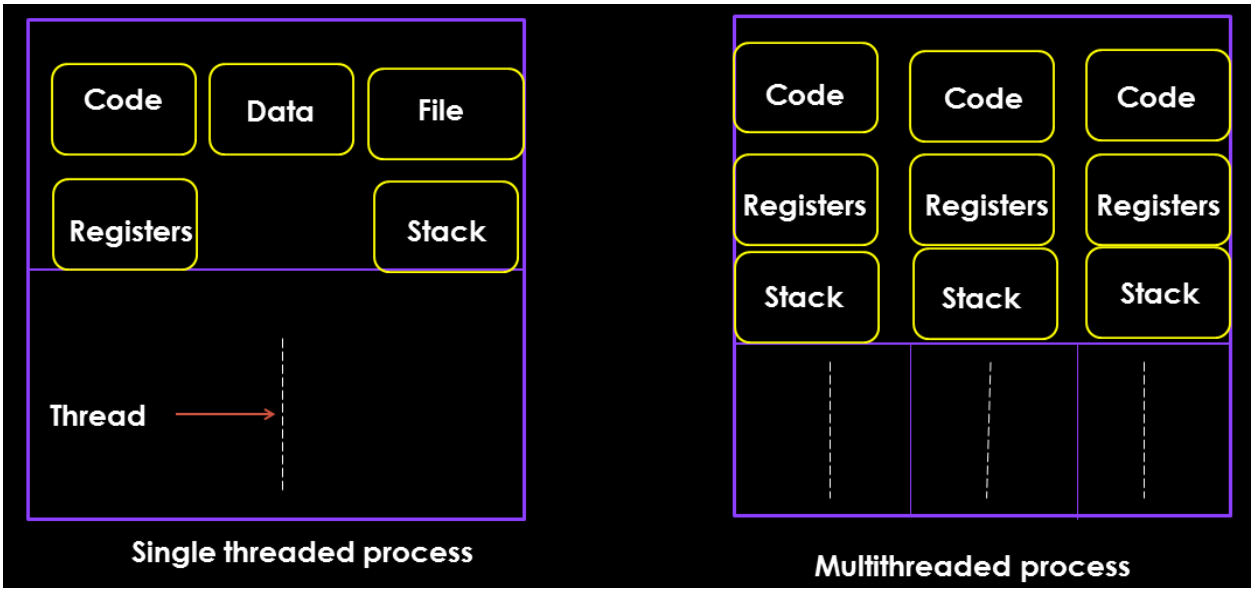
A thread refers to a single sequential flow of activities being executed in a process; it is also known as the thread of execution or the thread of control. Now, thread execution is possible within any OS's process. Apart from that, a process can have several threads. A distinct programme counter, a stack of activation records as well as control blocks are used by each thread of the same process. Thread is frequently described as a light technique.



Three threads of same process

The procedure can be easily broken down into numerous different threads. Multiple tabs in a browser, for example, can be considered threads. MS Word employs many threads to prepare the text in one thread, receive input in another thread, and so on.

Multithreading is the process of executing multiple tasks simultaneously. In computer science, multithreading refers to a program running in parallel with another program. This means that the two programs are executing at the same time, on separate threads of execution. Multiple tasks can be executed simultaneously on separate cores of a processor or separate processors.



Example of Multi-Threading in real-life scenarios

- If you're trying to open a file in your program, you might want to be able to do it without waiting for the program that you're running in the back.
- If you are processing data in a database, you can use a thread to process the data cooperatively. In this scenario, the data is written to the database in parallel, and then the threads read the data back.

Hyper-threading is a trick used by the CPU to force an operating system to recognise the existence of an additional processor or core (referred to as the logical core) that exists alongside the physical core. That is, a processor with two cores appears to the operating system to have four cores or threads; four physical cores appear to have eight cores or threads, and so on.

Hyper-threading allows your PC's CPU to save time between tasks by dividing it into multiple threads. When hyper-threading technology is enabled, no processor must remain idle. This allows your PC to run faster and more smoothly.

Multitasking term used in a modern computer system. Multitasking is a logical extension of multiprogramming system that supports multiple programs to run concurrently. In multitasking more than one task are executed at the same time. In this technique the multiple tasks, also known as processes, share common processing resources such as a CPU. In the case of a computer with single CPU, only one job can be processed at a time. Multitasking solves the problem by scheduling and deciding which task should be the running task and when a waiting task should get turn.

Multiprocessing Operating system

In operating systems, to improve the performance of more than one CPU can be used within one computer system called Multiprocessor operating system.

Multiple CPUs are interconnected so that a job can be divided among them for faster execution. When a job finishes, results from all CPUs are collected and compiled to give the final output. Jobs needed to share main memory and they may also share other system resources among themselves. Multiple CPUs can also be used to run multiple jobs simultaneously.

For Example: UNIX Operating system is one of the most widely used multiprocessing systems.