

Multi-Threading

- ↳ multithreading is the process of executing multiple task 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 task can be executed simultaneously on separate cores of a processor or separate processors.

How multi-threading works in the operating system

- ↳ multithreading in operating system is implemented through the use of threading libraries.
- ↳ These libraries provide the programmers with API that make it easy to create multithreaded programs. the threading library take care of all the low-level coordination required to keep the thread running in a synchronized fashion. this synchronization is necessary

Advantage of multi-threading

- ↳ multithreading allows the CPU to execute multiple task simultaneously which can boost performance.
- ↳ multithreading reduces the amount of time that is spend waiting for a task to finish.

- ↳ multithreading can help to improve the Scalability of a program.
- ↳ Interactive application may allow a program to continue running even if part of it is blocked or is performing a lengthy operation, thereby increasing responsiveness.

Disadvantage

- 1) multithreading can be complex and challenging to implement
- 2) multithreading can increase the complexity of a program.
- 3) multithreading can be error-prone
- 4) programmers must carefully design their code to utilize multithreading capabilities without introducing unwanted delays or fragmentation into their program execution.