ASSIGNMENT-(MULTITHREADING)

Q. What do you mean by Multithreading? Why is it important?

Ans- Multithreading is the ability of a computer program to perform multiple threads of execution concurrently within a single process. In other words, it is the ability of a program to execute multiple parts (or Threads) of the program at the same time, each performing a different tasks.

Multithreading is important because it can improve the performance and responsiveness of a program. By executing multiple threads concurrently, a program can make better use of available computing resources, such as multiple processor cores. This can lead to faster execution times and better overall performance.

Q. What are the benefits of using Multithreading?

Ans- There are various benefits of multithreading as given below:-

- Allow the program to run continuously even a part of it is Blocked.
- Improve performance as compared to traditional parallel programs that use multiple processes.
- Allow to write effective programs that utilize maximum CPU time.
- Improves the responsiveness of complex applications or programs.
- Increase use of CPU resources and reduce costs of maintenance.
- Saves time and parallelism task.
- If an exception occurs in a single Thread, it will not affect other threads as threads are independent.
- Less resource-intensive than executing multiple processes at the same time.

Q. What is Thread in Java?

Ans-Threads are basically lightweight and smallest unit of processing that can be managed independently by a scheduler. Threads are referred to as part of a process that simply let a program execute efficiently with other parts of thread of the process at the same time. Using threads, one can perform complicated tasks in the easiest way. It is considered the simplest way to take advantage of multiple CPUs available in a machine.

Q. What are the two ways of implementing threads in java?

Ans- There are basically two ways of implementing thread in java as given below:-

- By Extending the Thread Class
- By implementing Runnable interface in java

Q. What's the difference between thread and process?

Ans- Thread: It simply refers to the smallest unit of the particular processes. It has the ability to execute different parts(referred to as thread) of the program at the same time.

Process: It simply refers to a program that is in execution i.e., an active program. A process can be handled using PCB(Process Control Back).

Q. How can we create Daemon threads?

Ans- We can create Daemon Threads in java using the thread class setDaemon(True). It is used to mark the current thread as Daemon thread or user thread.isDaemon() method is generally used to check whether the current thread is Daemon or not. If the thread is Daemon, it will return true Otherwise False.

Q. What are wait() and sleep() method?

Ans- **wait()**- As the name suggest, it is a non-static method that causes the current thread to wait and go to sleep until some other threads call the notify() or notifyAll() method for the objects monitor (lock).

Sleep(): As the name suggest, it is a static method that pauses or stops the execution of the current thread for some specified time.