Assignment 17

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**1. Difference between multitasking and multithreading**?

Multitasking is a process of executing multiple tasks simultaneously. We use multitasking to utilize the CPU. Multitasking can be achieved by two ways:

1. Process-based Multitasking(Multiprocessing)
2. Thread-based Multitasking(Multithreading)

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| **Process-based Multitasking (Multiprocessing)** | **Thread-based Multitasking (Multithreading)** |
| Each process have its own address in memory i.e. each process allocates separate memory area. | Threads share the same address space. |
| Process is heavyweight. | Thread is lightweight. |
| Cost of communication between the process is high. | Cost of communication between the thread is low. |
| Switching from one process to another require some time for saving and loading registers, memory maps, updating lists etc. |  |
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**Multithreading in java**  is a process of executing multiple threads simultaneously.

Thread is basically a lightweight sub-process, a smallest unit of processing. Multiprocessing and multithreading, both are used to achieve multitasking.

But we use multithreading than multiprocessing because threads share a common memory area. They don't allocate separate memory area so saves memory, and context-switching between the threads takes less time than process.

**Advantages of Java Multithreading**

1) It doesn't block the user because threads are independent and you can perform multiple operations at same time.

2) You can perform many operations together so it saves time.

3) Threads are independent so it doesn't affect other threads if exception occur in a single thread.