Assignment 21

Ans 1 . Multithreading means multiple threads and is considered as one of the most important features of java . It is the ability of a computer to execute multiple threads independently at the same time but share the process resources simultaneously. It saves time of execution.

Ans 2. Benefits of multithreading:

- Improved throughput
- Simultaneous and fully symmetric use of multiple processors for computation and I/O
- Superior application responsiveness
- Improved server responsiveness
- Minimized system resource usage
- Program structure simplification
- Better communication

Ans3. Threads in java : A thread is a thread of execution in a program. The Java Virtual Machine allows an application to have multiple threads of execution

running concurrently. Every thread has a priority. Threads with higher priority are executed in preference to threads with lower priority.

Ans 4. Implementation of thread:

A thread in Java is the direction or path that is taken while a program is being executed. Generally, all the programs have at least one thread, known as the main thread, that is provided by JVM(Java Virtual Machine) at the starting of the program's execution. During this the main method is invoked . Thread is critical in the program because it enables multiple operations to take place within a single method. Each thread in the program has its own program counter, stack, and local variable. The priority of each thread varies. Higher priority threads are executed before lower priority threads.

Thread can be created by two ways:

- By extending thread class.
- By implementing runnable interface.

Ans 5. Difference between thread and process:

Thread: It simply refers to the smallest units of the particular process. It has the ability to execute different parts 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 Block).

Ans 6 .Daemon threads:

Daemon threads are low-priority threads that run in the background to perform tasks such as garbage collection or provide services to user threads. It is executed when all user threads finish their execution, the Java Virtual Machine (JVM) automatically terminates the daemon thread.

Ans 7. wait() method : It is non static method and should be called from synchronized method, it releases lock during synchronization, it belongs to object class.

sleep() method : It is a static method that pauses or stops the execution of the current thread for some specified period. It doesn't release the lock while waiting and is mostly used to introduce pause on execution. It is defined in thread class, and no need to call from a synchronized context.