### Why Multithreading.

Before we talk about **multithreading**, let’s discuss threads. A thread is a light-weight smallest part of a process that can run concurrently with the other parts(other threads) of the same process. Threads are independent because they all have separate path of execution that’s the reason if an exception occurs in one thread, it doesn’t affect the execution of other threads. All threads of a process share the common memory. The process of executing multiple threads simultaneously is known as multithreading.

1. The main purpose of multithreading is to provide simultaneous execution of two or more parts of a program to maximum utilize the CPU time. A multithreaded program contains two or more parts that can run concurrently. Each such part of a program called thread.

2. Threads are lightweight sub-processes, they share the common memory space. In Multithreaded environment, programs that are benefited from multithreading, utilize the maximum CPU time so that the idle time can be kept to minimum.

**2. What do you understand by multi-processing.**

Both Multiprocessing and Multithreading are used to increase the computing power of a system.

Multiprocessing:- Multiprocessing is a system that has more than one or two processors. In Multiprocessing, CPUs are added for increasing computing speed of the system. Because of Multiprocessing, There are many processes are executed simultaneously.

1. **Different between Multitasking and Multi threading**

### Multitasking –

As the name itself suggests, multitasking refers to execution of multiple tasks (say processes, programs, threads etc.) at a time. In the modern operating systems, we are able to play MP3 music, edit documents in Microsoft Word, surf the Google Chrome all simultaneously, this is accomplished by means of multitasking.

Multitasking is a logical extension of multi programming. The major way in which multitasking differs from multi programming is that multi programming works solely on the concept of context switching whereas multitasking is based on time sharing alongside the concept of context switching.

* **Multithreading –**

A thread is a basic unit of CPU utilization. Multithreading is an execution model that allows a single process to have multiple code segments (i.e., threads) running concurrently within the “context” of that process.  
e.g. VLC media player, where one thread is used for opening the VLC media player, one thread for playing a particular song and another thread for adding new songs to the playlist.

Multithreading is the ability of a process to manage its use by more than one user at a time and to manage multiple requests by the same user without having to have multiple copies of the program.

1. **What is a Garbage collection**

Java garbage collection is the process by which Java programs perform automatic memory management. Java programs compile to byte code that can be run on a Java Virtual Machine, or JVM for short. When Java programs run on the JVM, objects are created on the heap, which is a portion of memory dedicated to the program. Eventually, some objects will no longer be needed. The garbage collector finds these unused objects and deletes them to free up memory.