PROCESS MANAGEMENT

* In the previous lectures, we have been studying about different aspects of operating system and what we have mostly seen was the introduction to operating system and operating system structures.
* Now we are moving on the most important parts of the operating system, which is **process management**.
* So you must have heard this tale many times **processes** and **threads**.
* In this lecture we will be trying to get an introductory idea and understanding of what are processes and what are threads and usually people are confussed many times between the differences.
* But first before we understand processes, let us first try to understand how a program is developed.
* So whenever you want to make a program, first write the program in some high level languages like for example C,C++,Java or something like that.
* And that program is written in a high level language, now we noted that at basic level, computers does not understand the high level language but it understands only binary codes which are zeros (0) and ones (1).
* So the program has to be converted to binary code. So for that, using a compiler, you compile your program and it helps to convert that program into a machine code which is

understandable by your machine.

* After that, you have your program which is converted into a binary executable code and it is ready for execution, but it is not enough to just have the binary code for a program to execute or to tell a computer what it wants to do.
* So what it has to do is, it has to be loaded into the memory, and for a program to execute,it needs some resources of the computer system. This will be done by the **operating system** which acts as the brain of the computer.
* The operating system will help in loading that executable program into the memory and allocate its resources and then the program will begin its execution.
* So we first have a program which is written and is ready for execusion but until that time it is just a passive entity. But the moment it begins execusion, at that instance, we call that program as a **process**. **So a process** **can be thought of as a program in execusion.**
* When a program starts execution, at that time we call it process. The early computers supported only program or process at one time but in today`s computers, it supports multi programs multi processes running at the same time. And even one single program can have many processes associated with it.
* **Threads, a thread is the unit of execution within a process. A process can have anywhere from just one thread to many threads.** In earlier systems, one process had only one thread but now a single process can have many threads or many units of execution within it.

If you want to see the processes which are in execution in your system, you can see it using your task manager in windows, you can open the task manager and you can see which are the programs that are loaded and what are the processes which are executing. But you won`t see the threads. So if you want to see the threads that are also there in your system, you can use a program known as process explorer. You can download the program and it will show you even the threads that are running for each program and for each processes. You can have a more clear understanding when you have a visual display.

* In conclusion this was just a basic introduction of what are processes and what are threads and how we can differentiate between a process and a thread. This is an important topic in operating system and we will be studying this in more details and many topics are there in this which we will be dicussing in the coming lectures.