All about Cdac Hyderabad - DESD

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Operating System VS Kernal

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Ok..!! Lets start with some of the basic questions
1)What is Linux
You may answer that it is a Operating system
ok then !! WHAT IS UBUNTOO THEN ??
2)Do you know there is something called "Linux System" ..what is that ??
3) Lets do some practical...
Open our terminal(linux - ALT+T)
Type uname -r
you will find a name and some numbers etc etc (what is this ?)
Ok we will see all these things one by one...
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1)What is a operating System
An operating system (OS) is system software that manages computer hardware and software resources and provides common services for computer programs. An operating system is a software which performs all the basic tasks like file management, memory management, process management, handling input and output, and controlling peripheral devices such as disk drives and printers.
check this line- Os---- as sytem software(A program that run on hardware directly (Something same as you were doing in AVR ..dumping the code to avr board and that code was directly using the cpu(microprocessor or controller)
-----manages hardware and software resources means ??
(Support you are a software(Just assume for a while....man...) and you need a pen(hardware) to write .. you will ask your parents(OS) for this ..your parents have one one pen which is also required by your brother(Some other software) ..what will your parents(OS) do .. they will MANAGE the pen by sharing it ..
(in technical terms this will be managed by the OS using the scheduler /scheduling algorithm (We will come to know about scheduler in RTOS module or other chapter)
PS - OS is actually a whole stack of software which includes kernel also.
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2) What is kernel ?
Kernel is the lowest level of software stack of OS (I repeat, kernel is a part of OS) which does all the dirty work of talking to the hardware of your machine. Kernel exposes the functionality of the hardware of the machine in the form of system calls(read write open close clone getppid lseek fstat dup etc...
consider the above example(you and your parents and pen)
Add something in that example ... consider that your parents have a assistant (Kernel) when ever you ask for a pen your parent tell the assistant to bring the pen ..they take it from the assistant and give it to you.. you return it ..then they return it to the assistant(kernel)
Look here ..you can't talk to the assistant directly and the same way assistant cant give the pen to u directly. Kernel is basically the heart of the OS

PS -
*Windows NT is the kernel used in Windows
*Linux is the kernel used in Ubuntu and Kubuntu
*XNU (a fork of Unix) is the kernel of Mac OSX
*Solaris-kernel (again a fork of Unix) is the kernel of Solaris
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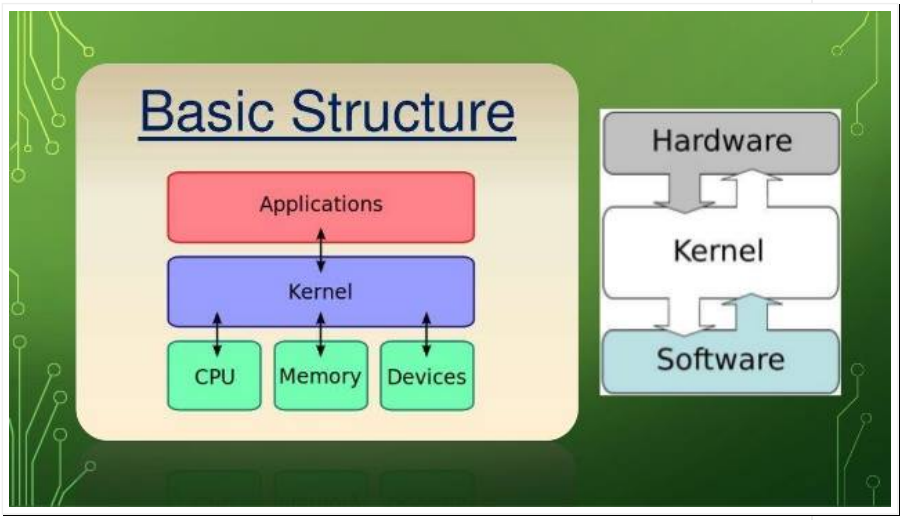
Let me try in another way :
Consider a car with all the functions in place but without any exteriors or seats or anything.
.....Just working assembly
This assembly is responsible for the movement of car and various other functions but we cannot travel in it as it has no seats or exteriors. So what should we do ??
So we make exteriors and seats so that we can interact with the car(this is extra things done by us for our comfort)
Now the assembly without exteriors is analogous to our OPERATING SYSTEM.
An operating system in a computer performs all the base task and we interact to it through application software (Exteriors) built over it.
(Example of Application Software - Ms office , paint , notepad, vlc player etc)
Now coming back to our example. Let us say we are going on a trip (okk !!! Long drive with Gf happy !!!) and we are trying to start the car
OMG it is not starting....(ijjaat ka faluda)
We open the bonnet and find someone stole our ENGINE...(Call CID from Sony TV)
We have everything else in place but still car cannot be operated.

This engine is analogous to KERNEL. Without it operating system is nothing. More formallywe can also call kernel a type of micro OS that handles all the very important functions like.
##########################
memory management
network management
device driver # (five works on five fingers)
file management
process management
##########################



While the main OS contains various other functions and kernel in the same way the car has shafts and tyres for rotations.
Just like two cars can use the same engine but may be entirely different, two operating systems may also use same kernel and be entirely different.
we could also build your own operating system using the Linux kernel -- its foundation -- as the basis for your OS. That brings us to Ubuntu.Ubuntu is a distribution -- or distro -- of Linux. In Linux lingo, a distribution is a version of the operating system that has the Linux kernel as its foundation.
Long story short.
Kernel is like a mini OS(heart of OS) that performs all the basic and important functions and may be used standalone while OS uses kernel as a base to provide an environment or interface to the hardware adding many other things like GUI etc along with it.
Answers to the above questions -
Linux is a Kernel
Linux system is Called OS .(Actually you can obtain the sources(codes) for the kernel to compile and install it on a machine and then obtain and install many other freely distributed software programs to make a complete Linux installation. These installations are usually referred to as linux systems.
Uname -r command will give you the name of the kernal you are using in your linux system.
Hope this will help you all.. Feel free to ask any doubt.
Next post will be on Dynamic and Static libraries...
Stay tuned ...
Happy Coding
(If you people are making a google group (mahesh sir wil tell you to do so) kindly add me there also..

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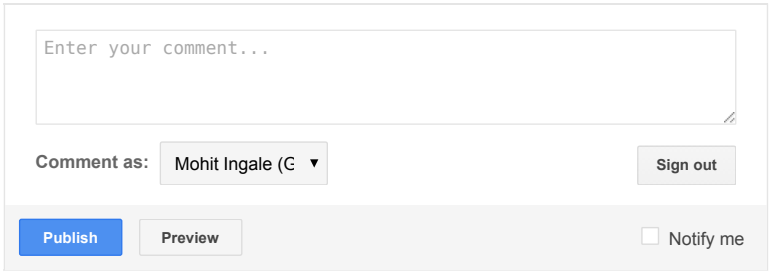

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