CO 327 : ASSIGNMENT 02

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1.) The purpose of system calls is to allow processors on user level to get services from the operating system.

2.) Command interpreter is there to read, execute commands from user or from a file of commands, generally by making them system calls. Command interpreter is prone to changes and hence it is not a part of the kernel and usually kept separate from the kernel.

3.) System programs purpose is to provide users basic functionalities so that they don't have to write programs for common problems. Users can make use of system programs for that.

4.) Main advantage of the layered approach to a system design is that it makes the system easier to debug and modify by allowing changes to only limited sections of the operating system. Main drawback is designing the layers and managing them properly.

5.) Operating system is stored in firmware in instances like mobile phones, as there's no disk with a file system in them.

6.)
Main services and functions provided by an operating system can be divided into two categories.

Enforcing protection between different concurrently running processors in the system is one main category. Process is only allowed to be in its address space and restricted to access devices directly without the going through the operating system.

The other main category is on providing new functionalities which are not directly supported by hardware in the system.

7.) Three main ways of passing parameters to the operating system,

- Passing parameter with storing in registers
- Keeping starting address of blocks of parameters in registers
- Keeping it ,popping, pushing from stack

8.) Using the same system call interface for manipulating both files and devices

Can be advantageous as, every device can be thought as if it is a file in the file system and because kernel deals with file interface for devices as well, it becomes easier to add new devices to the system.

Only drawback of using the same interface is that some functionality of devices may be difficult to be handled with a file system interface. This may lead to reduction in performance

9.) Message passing model and shared memory model.

Message passing model is easier to implement for inter computer communication and good for exchanging smaller chunks of data.

Even though Shared memory model is a bit difficult to implement compared to message passing model, it has faster and convenient communication capabilities.

10.) They should be separated as it will make it easier to modify the system. Keeping them separate provides a more flexible system as well.

11.)

Micro kernel approach to system design lets you add new services without modifying the kernel and it is also secure and reliable as well.

Main drawbacks are the overheads occurring with inter process communication and the frequent use of messaging function in the operating system.

12.) Loadable kernel modules lets you add or remove functionality from the kernel when it is running and the kernel shouldn't be either rebooted or recompiles to do this.

13.) Google has developed a separate API and a virtual machine for mobile devices and the standalone java API and virtual machine is designed for only desktop and server systems and that is why java programs running on mobile devices do not use the stand alone java API and virtual machine.