TYPES OF OS

Classification of types of OS

■ Classified in terms of:

– Hardware, they run

– Number of programs that can be active

– The type of interaction provided

Microcomputer

■ OS needs to:

– Initialize the system

– Transfer data between memory and peripheral devices

– Provide filing system

Modern PC is evolved from microcomputer. It is more powerful

Minicomputer

■ Originally not much more powerful than microcomputer

■ OS needs to:

– Support resource sharing

– Error protection

– Multi-user system

Mainframe Computer

■ Late sixties

■ OS needs to:

– Provide for many programs to be active

– I/O performed by separate controller box

– Terminals treated as block devices

– Terminal controller echoes commands

Single-programmed OS

■ Single process operating – MS-DOS running on stand-alone computer

Multi-programmed OS

■ More than one process in memory – Switches execution between programs

■ Share system resources – Protect user

■ Windows

Batch Processing System

■ User jobs submitted sequentially in batches

■ No interaction between running processes and the user

■ Input provided on a backing store device – Single-programmed or multi-programmed OS

Interactive system

■ Users can interact with running program

■ Can be: – Single-user, single-programmed

■ Or: – Allow time-sharing among many user-programs

■ Each user appears to have sole use of the system,

■ Although CPU, memory and peripheral devices are, in fact, shared

Real Time Systems

■ Time critical applications – Response to a device must be handled within certain time span or data would be lost.

■ Telecommunications

■ Air traffic control

■ Manufacturing control process

FUNCTIONS OF THE OS

File Management

■ Files: collection of related data

■ Filename – Regardless of physical storage

■ Directory structure – Containing information about file

■ More details next week

Process Management

■ Create and control processes

■ Scheduling of processes

■ Switching between processes

■ Communication between processes

■ Handling interruptions of processes

■ Termination of processes

Memory Management

■ Allocate and de-allocate

■ Protect between users

■ Share use of devices

■ Avoid conflict & corruption

Input/Output Functionality

■ Normally invoked by OS itself

■ Managing physical input / output of devices – So that simple request from filing system can be converted to codes to:

■ initiate I/O transfer

■ Perform transfer

■ Terminate transfer

General Purpose Functions to Provide System Information

■ Process queues

■ Disk quotas

■ Time & Date

Additional Functions

■ OS are software like any other

■ Developed to include more functionality – Anti-virus