END TERM EXAMINATION (2015)

1st SEMESTER (B.TECH)

FOC (ETCS-111)

TIME: 3 Hours MAXIMUM MARKS: 30

Question-1 (5x5)

(i) Differentiate between Internal and External Command.

INTERNAL	EXTERNAL
These are the commands that are already loaded in the computer system.	These are the commands that are loaded as per the user's requests.
These are directly executed by the shell.	These commands are executed by the kernel.
These are user independent commands.	These are user dependent commands.
They do not require a separate process/path to get executed.	They require an individual process/path for their execution.
E.g.- DATE command which is used to set the system date.	E.g.- SYS command which is used to copy system files to a disk.

(ii) LAN, MAN, WAN.

PARAMETERS	LAN	MAN	WAN
Definition	Local Area	Metropolitan Area	Wide Area

	Network	Network	Network
Geographical reach	Small area usually within a building.	Larger than LAN such as a city or town.	Wider area such as a country or continent.
Maintenance	easy	difficult	difficult
Network ownership	private	Public or private	Public or private
Speed	high	average	low
Device allowance	Single pair of devices.	Simultaneous communication of multiple devices.	A large group of communicating devices.
Transmission devices or examples	WIFI, Ethernet cables	Modem, wire/cable	Satellites, optic wires.

(iii) File System and database management system.

DATABASE MANAGEMENT SYSTEM	FILE SYSTEM
It coordinates both physical and logical access to the data.	It coordinates only physical access to the data.
It is designed to allow flexible access to data.	It is designed to allow predetermined access to data.
Redundancy can be controlled by this system.	Redundancy can't be controlled by this system.
It restricts unauthorized access.	It doesn't restrict unauthorized access.
The system provides multiple user interface.	The data is isolated in this system.
E.g.- MYSQL, Oracle	E.g.- NTFS, Ext

(iv) PROM, EPROM, EEPROM and UVEPROM.

PROM	EPROM	EEPROM	UVEPROM
Programmable Read Only Memory	Erasable Programmable Read Only Memory	Electrically Erasable Programmable Read Only Memory	Ultra-Violet Erasable Programmable Read Only Memory
It is a ROM that can be modified only once by the user.	It is a programmable ROM that can be erased by exposing it to UV light.	It is a programmable ROM that can be erased by exposing it to an electric charge.	It is a programmable ROM that can be erased by exposing it to UV light and reprogrammed with new data.
It can't be reprogrammed.	It can be reprogrammed.	It can be reprogrammed.	It can be reprogrammed.
It was developed by Wen Tsing Chow in 1956.	It was developed by Dov Frohman in 1971.	It was developed by George Perlegos in 1978.	-

(v) DOS and WINDOWS operating system.

DOS	WINDOWS OS
This is a single tasking OS.	This is a multi-tasking OS.
It does not support networking.	It supports networking.
It does not promote time sharing.	It promotes time sharing.
It works on Character User	It works on Graphical User

Interface (CUI).	Interface (GUI).
It consumes less memory and power.	It consumes high memory and power when compared to DOS.
It is a free Operating System.	The original system is quite expensive.

Question-2 (12.5)

(i) What is the role of windows registry? Explain its structure of file Management. Also explain the various limitations and precautions, while using windows registry.

Ans. The Windows NT store all its configurations and low-level settings in a hierarchical database called as registry. It contains information, hardware, user, settings, application and other values for programs installed on all versions of the windows operating systems.

Structure of registry-

The registry is a hierarchical database where the data is structured in a tree format having five main branches.

- Each node in the tree is called a root key. There exists five root or main keys in the registry database.
- Each key contains multiple sub-keys with each sub-key having one or more than one sub-key under it as well; similar to the process of nesting.
- The registry data is contained in the value entry having three pieces of information namely; the name, the data type and the value.

A key precaution to be kept in mind while using windows registry is that any invalid changes made to the registry can result in total failure of the operating system to boot. Even though there is no need for a user to make changes in the registry; as a system administrator, one needs to edit the registry occasionally to keep the system working.

OR

Question-3 (12.5)

Define the steps to install rpm package and deb-based package in detail.

Ans. **Steps to install rpm package**

We usually receive a single file when we get a packaged application in RPM format. We use the command rpm to work with the RPM package.

To install a RPM package file, we use the syntax:

rpm –i [options] package.

Where package is the name of the RPM archived file.

Steps to install deb package

It is preferred by many end users for its powerful and friendly wrapper programs like tasksel. The packages are stored in a specific directory structure, accessible solely by FTP or IITTP that includes index files to aid in package processing by remote systems.

Package can be installed with dpkg using the –i or ~ ~ uninstall flags and the path to the deb file containing the package.

Package installing command:

#dpkg….install/home/wayne/1s of -4.71~1-i386.deb.

Package can be removed with ~r or ~ ~ remove command.

Package removal syntax:

#dpkg ~ ~ remove 1sof

Or #dpkg ~ ~ purge 1sof

Question-4 (12.5)

Discuss in detail about various network topologies and their utility.

Ans. Network topology refers to the physical or logical layout of the network which defines the placement and interconnection of different nodes with each other.

- Bus topology: It is a network topology where all the devices are connected to a

main hub or a switch. This topology requires the least amount of cable and is cost effective. It is easy to set-up and is used mostly in small networks such as LAN. However, a major drawback in this topology can be witnessed in the dependency of nodes on the central cable or hub. If the main cable encounters any problem, then the whole networks break down without any warning.

- Star topology: It is a network topology where all the devices are connected to a central hub with a point-to-point connection. In this network, every computer is connected indirectly to every node by the help of the central hub. Due to this indirect interconnection, failure of one node or a system doesn't affect the other devices present in the system in any manner. It is also an easy task to detect and troubleshoot the failure.
- Ring topology: In this network, all the devices are connected to a closed loop cable forming a ring as each device connected to another device, with the last device connected to the first one. This promotes the transfer of data in a sequential manner, that too in one direction. However, it faces difficulty while detecting failure as a single failed node can disrupt the whole network.
- Tree topology: Also called as the hierarchical topology, this network consists of a root node with all the other nodes connected to them in a hierarchical manner. It should have at least three levels of hierarchy and is suitable to be used in a WAN. This network is easy to manage and maintain with easy error detections when required.
- Hybrid topology: A mixture of two or more topologies is termed as a hybrid topology inheriting the features and failures of the included topologies. Even though it has a complex deign, it is quite a reliable network with east error detection and trouble shooting. It is flexible as well as a scalable network.
- Mesh topology: It is a point-to-point connection having interconnected node system. It can be differentiated in two types;
    - Full mesh topology: A system where every single node is interconnected.
    - Partial mesh topology: A system where most of the nodes are interconnected, excluding a few which are connected to two-three nodes only.

The interconnectivity of this network makes it resistant to failures and extremely

reliable.

OR

Question-5 (12.5)

(i) Explain the features and disadvantages of open office impress.

Ans. Open office impress helps us to create a slideshow containing elements such as texts, bulletins, numbered lists, charts, tables, etc.

Features:

- It provides the Autopilot wizard that helps in creating and Impressing presentations effectively.
- It helps in inserting animations and special effects to multimedia presentations.
- It helps in adding a 2-D as well as a 3-D image to the presentations.
- It supports different file formats such as (.ppt) or (+pdf).

Disadvantages:

- The open office impress users do not have the direct one-to-one tech support when compared to the other commercial products.
- Due to the absence of an immediate barrier between the users and the designers, the process of bug fixing takes a comparatively longer time than other products.

(ii) Explain advantages and disadvantages of open office writer.

Ans. Open office writer is a tool used for creation of documents, newsletters, repots and brochures.

Features:

- It can easily integrate images and charts into documents.
- It is cost effective as it is free to download and use.
- It is a user-friendly tool and is easier to learn.

- It is designed in such a manner that the commands performed in one component works throughout the entire suite of the software.

Disadvantages:

- The primary format of this software is ODF format instead of the widely used DOC format.
- It is a less user-friendly software due to its free to install and use system.
- It is prone to the intrusion of malicious bugs and software in the code.
- It has a comparatively less diagram creating and supporting facility.

Question-6 (12.5)

Explain Linux architecture in detail. Define five commands used in Linux O.S.

Ans. Linux architecture consists of the following layers.

- Hardware layer: This layer consists of all the peripheral devices such as RAM, CPU, etc.
- Kernel: This is the core component of the OS which interacts regularly with the hardware to provide low level services to the components of upper layer.
- Shell: It is an interface to the kernel which hides the complexity of kernel's functions from the user. It takes user's commands and then execute the kernel's functions.
- Utilities: Most of the functionalities of the OS is given by the utility programs to the user.

Commands

- bc command for the command line calculator: bc[option]
- clear command for clearing the terminal screen: Clear
- cal command for displaying the calendar: cal[options][month][year]
- date command for printing date and time: date[options][+format][date]
- cd command for changing the directory: cd[directory]

OR

Question-7 (12.5)

(i) Discuss the various features of DBMS in detail.

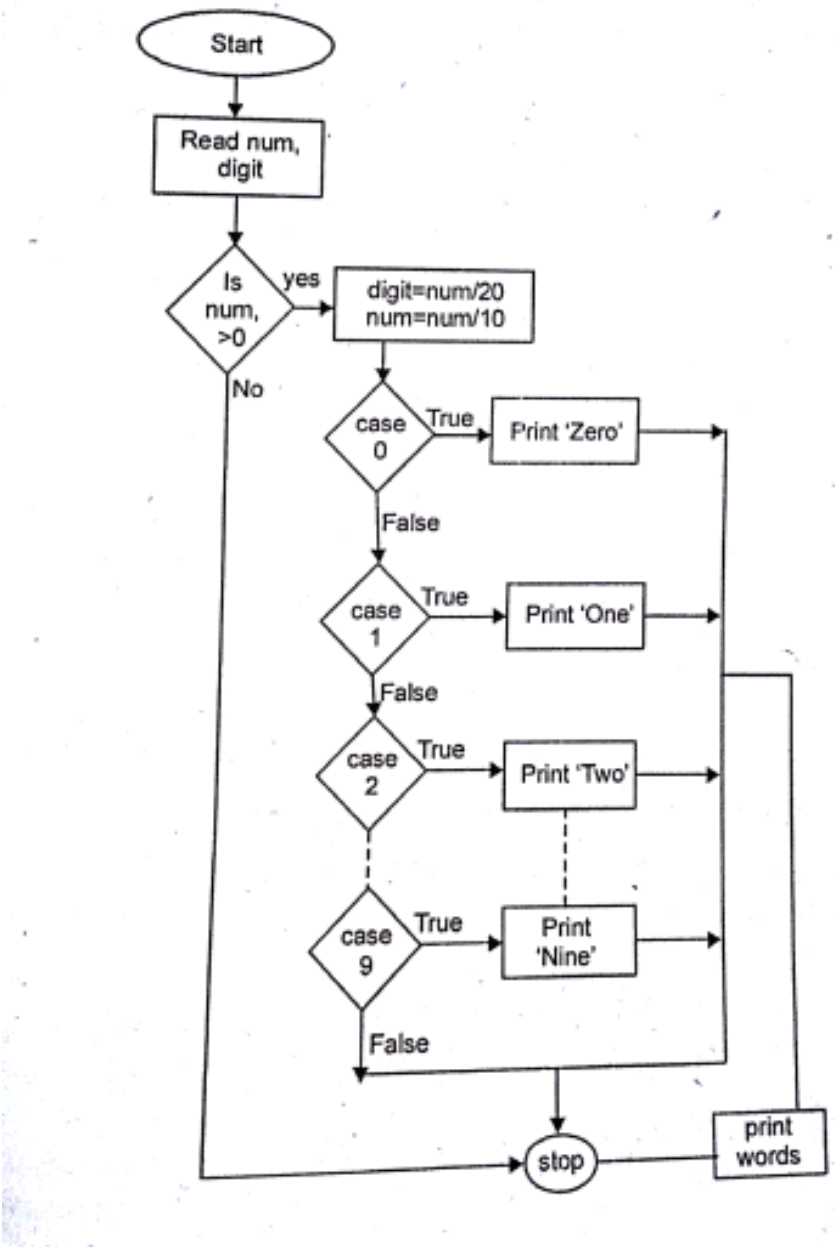
Ans.

- It coordinates both physical and logical access to the data.
- It is designed to allow flexible access to data as well as data manipulation.
- It maintains the integrity of data by minimizing data duplication and redundancy.
- It gives a sense of security as it restricts unauthorized access.
- The system provides multiple user interface which allows easy data maintenance.

(ii) Draw a flowchart to convert any integer number into words.

(e.g. 123 – One hundred twenty three).

Ans.



Question-8 (12.5)

Write short notes on any two:

(i) Linux file system

Ans. This system operates from a single, unified namespace. On this system, everything is a file and if something is not a file, then it is a process which means that the system makes zero difference between a file and a directory. Most files are called regular files containing regular data such as text files, program files, etc. The files exist under the root directory- "/" and are arranged in a tree-like structure with the branches containing the normal files at the end.

A few exceptions to these files are:

- Directories: these are the files which are the list of other files.
- Special files: these are the mechanisms used for input and output.
- Links: these are the systems used to make certain files visible in multiple parts of the file system.
- Sockets (domains): these are the special types of files which provide inter-process networking.
- Named pipes: these form a communication way for the process to communicate with each other without using a network socket.

(ii) Five component model of a computer system.

Ans.

- Input unit: devices like keyboard act as a link between the external environment and the computer system.
    - It accepts data and instructions from the outside world.
    - It then converts the received data and instructions in a computer readable format.
    - It supplies this converted data to the system for further processing.
- Storage unit: this unit is responsible for storing the processed data supplied by the input unit.
    - It stores the intermediate results of processing
    - It stores the final processed results before supplying them to the output unit.
    - It can be divided into primary and secondary storage on the basis of the stored data requirement by the system.
- Output unit: the processed information is supplied to the outside world by the output devices such as printers by this output.

- It converts the computer coded code to human acceptable format.
- The data is converted using the interfaces by this unit.

- Control unit: this unit is responsible for controlling all the units of the computer system.
    - It controls the data flow from storage unit to the ALU.
    - It controls and synchronizes the working of a computer system.
    - It directs the activities of all the internal and the external devices as well.
- Arithmetic and Logical Unit (ALU): this unit is responsible for performing all the calculations of the computer.
    - It is also responsible for making all the logical comparisons or decisions.
    - It performs all the computations and arithmetic operations on the supplied data.

The control unit and the ALU are together called as the brain of the computer system denoted by the term CPU - Central Processing Unit. This unit is responsible for actual decision making and controlling the system.

(iii) Windows architecture

Ans. Windows NT is a line of OS produced and sold by Microsoft. The architecture of Windows is a layered design consisting of two main components: user mode and kernel mode.

The user mode is made up of subsystems that using the I/O manager can pass the I/O requests to the respective kernel mode drivers. The layer of this mode is made up of the environment subsystem as well as the integral subsystem. In this mode, the applications run at a lower priority level.

The kernel mode has a complete access to the computer's hardware and system resources. It runs the code in a protected memory area and controls the access to memory management, scheduling and hardware interaction. It has the ability to halt

the services and applications of the user mode from accessing critical areas without its granted permission.