

# CS2028-unix internals

## Part –A

1. Define shell?

A shell is a program that provides the traditional, text only user interface for linux and other unix like os. primary function is to read the commands that are typed into a console

2. Mention the use of command “pwd”?

The pwd command sets and changes pwd for users. Use this command to change your own pwd.

3. define exception?

An exception is a runtime error or warning condition, which can be predefined or user defined. predefined exception are raised implicitly by the runtime system

4. define swapping?

Swapping is a useful technique that enables a computer to execute program and manipulate data files larger than main memory

5. characteristic of unix file system?

Hierarchical structure

Consistent treatment of file data

Ability to create and delete files

Dynamics growth of files

6. define kernel mode?

When the cpu is in kernel it is assumed to be executing trusted sw and thus it can execute any instruction and reference any memory addresses

7. define buffer?

A buffer is a region of a physical memory storage used to temporarily hold data while it is being moved from one place to another.

8. what are the Important fields in u area?

Pointer to the process table

Parameter of the current sys call

File descriptors for all open file

Internal i/o parameters

9.define various lifetime of a process?

Process is currently executing in user mode

Process is currently executing in kernel mode

Process is sleeping

10.define system call?

The mechanism used by an application program to request service from the os . os contain sets of routines for performing various low-level operations.

## **Unit-2**

1.define pipes?

Pipe is a technique for passing information from one program process to another unlike other forms of interprocess communication a pipe is one-way communication.

2.define buffer cache?

When a process wants to access data from a file ,the kernel bring the data into main memory,alters it and then req to save in the file system

3.mention use of LSEEK syscall?

Lseek is a system call that is used to change the location of the read/write pointer of a file descriptor

4.define inode?

An inode is a data structure on a file system in unix that stores all the information about a file except its name and its actual data

5.define various fields in disk inode?

File owner identifier

File type

File access time

File size

6. write the formula to compute the byte offset?

Byte offset = ((inode number - 1) modulo (number of inodes per blocks)) \* size of disk inode

7. write the formula to compute the block number?

Block number = ((inode number - 1) / number of inodes per blocks) + start block of inode list

8. what are the fields in super blocks?

A list of free blocks

Index of next free block

Size of inode list

Number of free inode list

9. write the syntax of open system call?

`Fd = open(pathname, flags, modes);`

Pathname is a file name, flag indicates the type of open, modes gives the permissions

10. what is the output of bmap algorithm?

Block number in file system

Byte offset into block

Bytes of i/o in blocks

Read ahead block number

### Unit-3

1. What the syntax of read system call?

`Number = read(fd, buffer, count)`

Where fd is file descriptor, buffer is the address of data structure, count is the number of bytes that the user wants to read

2. what are the inputs of read algorithm?

User file descriptor

Address of buffer in user process

Number of bytes to read

3. what are the i/o parameters saved in U area?

Mode

Count

Offset

Address

Flag

4. write the syntax for lseek algorithm?

Position=lseek(fd,offset,reference);

5. write the syntax for file creation?

Fd=create(pathname,modes);

6. what are the i/p for making the new node?

Node

File type

Permission

Major,minor device number

7. write the syntax for change owner and change mode?

Chown(pathname,owner,group);

Chmod(pathname,mode);

8. what are the types of pipes?

Named pipe

Unnamed pipe

9. what are the fields in mount table entry?

Device number

Pointer to a buffer

Pointer to the inode

Pointer to root inode

10. what are the i/p of mount algorithm?

File name of block special file

Directory name of mount point

Options(RO)

#### **Unit-4**

1. define signal?

Asignal is an asynchronous event which is delivered to a process

2. define init process?

The init process is otherwise known as zombie process. in which the process will be in the mainmemory even the exit() sys call occur

3. what are the fields of process table?

Process stste

Several user identifier

Process identifier

4. what are the various process state?

Process is executing in user mode

Process is executing in kernel mode

Process is sleeping and resides in mainmemory

5. what are the logical sections present in unix?

Unix sys consists of 3 logical sections

Data

Text

Stack

6. what are the steps for a context switch?

Decide whether to do a context switch and permission now

Save the context of old process

Find the best process to schedule

Restore its context

7. what are the entries present in region table?

Pointer to the inode of the file

Region type

Size of region

Location of the region in physical memory

Status of register

Reference count

8. what are the operations that manipulate region?

Lock a region

Unlock a region

Allocate a region

Free a region

Load

Detect

Attach

9. what are the inputs for exec syscall?

File name

Parameter list

Environment variable list

10. write the syntax for signal system call?

Oldfunction=signal(signum,function)

Where signum is the signal number the process is specifying the action,function is the address of the user function

### Unit-5

1. what are the types of devices in unix sys?

Block devices

Raw or character devices

2. what are the functions of the clock interrupt handler?

Function of the clock interrupt handler

Restart the clock

Gather system and process accounting statistics

Keep track of time

Control process scheduling

Sent signals to processes on req

3. what all the bit fields that are used to support demand paging?

Valid

Reference

Modify

Copy on write

Age

4. what are the type of page fault?

Validity fault

Protection fault

5. write the states for the cause of page fault?

Page is on a swap device and not in memory

Page is on the free page list in memory

Page in an executable file

Marked "demand zero"

Marked "demand fill"

6. what are the types of devices?

Block devices

Character devices

7. write the system call for terminal polling?

Select(nfds, rfds, wfds, efds, timeout)

Where,

Nfds gives the number of file descriptor

Rfds, wfds, efds points to bit mask

8. what are the inputs for msgsnd algm?

Msg queue descriptor

Addr of msg structure

Size of msg

Flags

9. write the syntax for shmget sys call?

Shmid = shmget(keys, size, flags);

Where, size is number of bytes in the region

10. explain kernel and shell?

Kernel: it carries out basic OS functions such as allocating memory, accessing files and handling communication

Shell: a shell provides the user interface to the kernel



3major shells:

c-shell

bourne shell

korn shell

<http://www.pdf-tools.com>