

**Department of Computer Science**  
*Gujarat University*



**Certificate**

Roll No: 06

Seat No: \_\_\_\_\_

This is to certify that Ms. CHOTALIYA SHIVANGI DILIPBHAI student of MCA Semester – III has duly completed her term work for the semester ending in December 2020, in the subject of OPERATING SYSTEM towards partial fulfillment of her Degree of Masters in Computer Applications.

10/12/2020  
Date of Submission

Internal Faculty

Head of Department

Department Of Computer Science  
Rollwala Computer Centre  
Gujarat University

MCA -III

## **Subject: - OPERATING SYSTEM**

**Name :-** CHOTALIYA SHIVANGI DILIPBHAI

**Roll No.: - 06**

**Exam Seat No.: -** \_\_\_\_\_

## Assignment -1

### 1. base address

An address that is used as the origin in the calculation of address in the execution of a computer program.

### 2. batch processing

Pertaining to the technique of executing a set of computer programs such that the next program of the set is started.

### 3. binary semaphore

A binary semaphore that takes on only the values 0 and 1. A binary semaphore allows only one process or thread to have access to a shared critical resource at a time.

### 4. block

- A collection of contiguous records that are recorded as a unit, the units are separated by interblock gaps.

- A group of bits that are transmitted as a unit.

## 5. busy waiting

The repeated execution of a loop of code while waiting for an event to occur.

## 6. cache memory

A memory that is smaller and faster than main memory and that is interposed between the processor and main memory. The cache acts as a buffer for recently used memory locations.

## 7. Central processing Unit (CPU)

That portion of a computer that fetches and executes instructions. It consists of an Arithmetic and logical Unit (ALU), a control Unit, and registers, often simply referred to as a processor.

## 8. cluster

A group of interconnected, whole computers working together as a unified computing resource that can create the illusion of being one machine. The term whole computer means a

system that can run on its own, apart from the cluster.

9.

### Concurrent

Pertaining to processes or threads that take place within a common interval of time during which they may have to alternately share common resources.

10

### Consumable resource

- A resource that can be created and destroyed. When a resource is acquired by a process, the resource ceases to exist.  
Example of consumable resource are, interrupts, signals, messages and information in I/O buffers.

11

### Deadlock

- An impasse that occurs when multiple processes are waiting for the availability of a resource that will not become available because it is being held by another process that is in a similar wait state.
- An impasse that occurs when multiple processes are waiting for an action by or a response from another process that

is in a similar wait state

## 12. deadlock avoidance

A dynamic technique that examines each new resource request for deadlock. If the new request could lead to a deadlock, then the request is denied.

## 13. deadlock detection

A technique in which requested resources are always granted when available. periodically, the operating system tests for deadlock

## 14. Deadlock Prevention

A technique that guarantees that a deadlock will not occur. Prevention is achieved by assuring that one of the necessary conditions for deadlock is not met.

## 15. Device Driver

An operating system module that deals directly with device or I/O module

## 16. Direct access

The capability to obtain data from a storage device or to enter data into a storage device, in a sequence independent of their relative position, by means of addresses that indicate the physical location of the data.

## 17. Direct memory Access (DMA).

A form of I/O in which a special module, called a DMA module, controls the exchange of data between main memory and an I/O device. The processor sends a request for the transfer of a block of data to the DMA module and is interrupted only after the entire block has been transferred.

## 18. Disable interrupt:-

A condition, usually created by the operating system, during which the processor will ignore interrupt request signals of a specific class.

## 19. Disk allocation table

- A table that indicates which blocks on secondary storage are free and available for allocation to files.

## 20. Distributed operating System

A common operating system shared by a network of computers. The distributed operating system provides support for interprocess communication, process migration, mutual exclusion, and the prevention or detection of deadlock.

## 21. Dispatch

To allocate time on a processor to jobs or tasks that are ready for execution.

## 22. Dynamic Relocation.

A process that assigns new absolute addresses to a computer program during execution so that the program may be executed from a different area of main memory storage.

23. enabled interrupt.

A condition, usually created by the Operating System, during which the processor will respond to interrupt request signals of a specified class.

24. external fragmentation

Occurs when memory is divided into variable-size partitions corresponding to the block of data assigned to the memory; gaps will occur between the occupied portions of memory.

25. file field.

Defined logical data that are part of a record. The elementary unit of a record that may contains a character item, a data aggregate, a pointer, or a link.

26. file

A set of related records treated as a Unit.

## 27 File allocation table (FAT)

A table that indicates the physical location on secondary storage of the space allocated to a file. There is one file allocation table for each file.

## 28 File Management System

A set of system software that provides services to users and applications in the use of files, including file access, directory maintenance, and access control.

## 29. File organization.

The physical order of records in a file, as determined by the access method used to store and retrieve them.

## 30 First come First served (FCFS)

Same as FIFO.

### 31. first in first out (FIFO)

A queueing technique in which the next item to be retrieved is the item that has been in the queue for the longest time.

### 32. hash file

A file in which records are accessed according to the values of a key field. Hashing is used to locate a record on the basis of its key value.

### 33. hashing

The selection of a storage location for an item of data by calculating the address as a function of the contents of the data. This technique complicates the storage allocation function but result in rapid random retrieval.

### 34. hit Ratio

In a two-level memory, the fraction of all memory accesses that are found in the faster memory.

### 35. indexed address access:

pertaining to the organization and accessing of the records of a storage structure through a separate index to the locations of the stored records.

### 36. index file

A file in which record are accessed according to the value of key fields. An index is required that indicates the location of each record on the basis of each key value.

### 37. index sequential file

A file in which records are ordered according to the values of a key field. The main file is supplemented with an index file that contains a partial list of key values, the index provides a lookup capability to quickly reach the vicinity of a desired record.

38 instruction cycle.

The time period during which one instruction is fetched from memory and executed when computer is given an instruction in machine language.

39 Internal fragmentation

Occurs when memory is divided into fixed-size partitions. If a block of data is assigned to one or more partitions, then the last partition. There may be wasted space in the last partitions. This will occur if the last portion of data is smaller than the last partition.

40. Interrupt

A suspension of a process such as the execution of a computer program, caused by an event external to that process and performed in such a way that the process can be resumed.

#### 41. Interrupt handler

A routine, generally part of the operating system. When an interrupt occurs, control is transferred to the corresponding interrupt handler, which takes some action in response to the condition that caused the interrupt.

#### 42. job

A set of computational steps packaged to run as a unit.

#### 43. Kernel

A portion of the operating system that includes the most heavily used portions of software, generally in main memory. The kernel runs in a privileged mode and responds to calls from processes and interrupts from devices.

#### 44. Kernel mode

A privileged mode of execution reserved for the kernel of the operating system. Typically, kernel mode allows access to regions of main memory that are unavailable to processes executing in a

less-privileged mode, and also enables execution of certain machine instructions that are restricted to the kernel mode. Also referred to as system mode or privileged mode.

45

45. LIFO :- Last in first out

A queuing technique in which the next item to be retrieved is the item most recently placed in the queue.

46

live lock

A condition in which two or more processes continuously change their state in response to changes in the other processes without doing any useful work. This is similar to deadlock in that no progress is made, but it differs in that neither process is blocked or waiting for anything.

ION

7. livelock

A condition in which two or more processes continuously change their state in response to changes in the other processes without doing any useful work. This is similar to deadlock in that no progress is made, but it differs in that neither process is blocked or waiting for anything.

8. logical Address

A reference to memory location independent of the current assignment of data to memory. A translation must be made to a physical address before the memory access can be achieved.

19. logical Record

A record independent of its physical environment. Portions of one logical record may be located in different physical records or several logical records or parts of logical records may be located in one physical record.

## 50. Main memory

Memory that is internal to the computer system is program addressable and can be loaded into registers for subsequent execution or processing.

## 51. Malicious software

Any software designed to cause damage to or use up the resources of a target computer. Malicious software is frequently concealed within or masquerades as legitimate software.

## 52. Memory cycle time

The time it takes read one word from or write one word to memory. This is the inverse of the rate at which words can be read from or written to memory.

## 53. Memory partitioning

The subdividing of storage into independent sections.

#### 54. microkernel

A small privileged operating System core that provides process scheduling, memory management, and communication services and relies on other processes to perform some of the functions traditionally associated with the operating System kernel.

#### 55. multiprocessing

A computer mode of operation that provides for parallel processing by two or more processors of a multiprocessor.

#### 56. multiprogramming

A mode of operation that provides for the interleaved execution of two or more computer programs by a single processor. The same as multitasking, using different terminology.

#### 57. multiprogramming level

The number of processes that are partially or fully resident in main memory.

## 58. Multitasking

A mode of operation that provides for the concurrent performance or interleaved execution of two or more computer tasks. The same as multiprogramming, using different terminology.

## 59. Mutual exclusion

A condition in which there is a set of processes, only one of which is able to access a given resource or program a given function at any time. See critical section.

## 60. Operating System

Software that controls the execution of programs and that provides services such as resource allocation, scheduling, input/output control, and data management.

## 61. Page

In virtual storage, a fixed-length block that has a virtual address and that is transferred as a unit between main memory and secondary memory.

62

## page fault

Occurs when the page containing a referenced word is not in main memory. This causes an interrupt and requires that the proper page be brought into main memory.

63

## page frame

A fixed-size contiguous block of main memory used to hold a page.

64. paging

The transfer of pages between main memory and secondary memory.

65 physical address

The absolute location of a unit of data in memory byte in main memory block or second.

66. pipe

A circular buffer allowing two processes to communicate on the producer-consumer model.

## 67 preemption

Reclaiming a resource from a process before the process has finished using it.

## 68. prepaging

The retrieval of pages other than the one demanded by a page fault. The hope is that the additional pages will be needed in the near future, conserving disk I/O. compare demand paging -

## 69 process

A program in execution. A process is controlled and scheduled by the operating system. same as task.

## 70. process control block

The manifestation of a process in an OS. It is a data structure containing info about the characteristics and state of the process.

## 7.1. process state

All of the info that the OS needs to manage a process and that the processor needs to properly execute the process.

## 2. processor

In a Computer, a functional Unit that interprets and executes instructions. A processor consists of at least an instruction control unit and arithmetic Unit.

## 3 program Counter

Instruction address register

## 4 programmed I/O

A form of I/O in which the CPU issues a I/O command to an I/O module and must then wait for the operation to be complete before proceeding.

## 5. real time system

An OS that must schedule and manage real time tasks.

### 75. Real time task

A task that is executed in connection with some process or function or set of events external to the computer system.

### 76. Registers

High-speed memory internal to the CPU. Some registers are user visible that is, available to the programmer via the machine instruction set.

### 77. relative address

An address calculated as a displacement from a ~~basic~~ base address.

### 78. remote procedure call. (RPC)

A technique by which two programs on different machine interact using procedure call / return syntax and semantics.

### 79. response time

In a data system, the elapsed time between the end of transmission of an enquiry message and the beginning

of the receipt of a response message measured at the enquiry terminal.

#### 80. Round Robin

A scheduling algo in which processes are activated in a fixed cyclic order. that is all processes are in a circular queue.

#### 81. scheduling

To select jobs or tasks that are to be dispatched ..

#### 82. Secondary memory

memory located outside the computer system itself.

#### 83. Segment

In virtual memory, a block that has a virtual address. The blocks of a program may be of unequal length and may even be of dynamically varying lengths.

## 84. Segmentation

The division of a program or application into segments as part of a virtual memory scheme.

## 85. Semaphore

An integer value used for signaling among processes

## 86. sequential file

A file in which records are ordered according to the values of one or more key fields and processed in the same sequence from the beginning of the file.

## 87. Shell

The portion of the OS that interacts interactive user commands and job control language commands. It

## 88. Stack

Stack is LIFO.

89

## starvation

A condition in which a process is indefinitely delayed because other processes are always given preference

90.

## Strong Semaphore

A semaphore in which all processes waiting on the same semaphore are queued and will eventually be processed in the same order as they executed the wait operations

91

## Symmetric multiprocessing (Smp)

A form of multiprocessing that allows the operating system to execute on any available processor or on several available processors simultaneously,

92.

## synchronous operation

An operation that occurs regularly or predictably with respect to occurrence of a specified event in another process

### 93. Synchronization

Situation in which two or more processes coordinate their activities based on a condition.

### 94 System bus

A bus used to interconnect major computer components

### 95 thread

A dispatchable unit of work. It includes a processor context.

### 96 thread switch

The act of switching processor control from one thread to another within the same process.

### 97 time sharing

The concurrent use of a device by a number of users.

### 98. time slice

The maximum amount of time that a process can execute before being interrupted.

99

trap

An unprogrammed conditional jump to a specified address that is automatically activated by hardware

100.

trojan horse

Secret undocumented routine embedded within a useful program

101. virtual address

The address of a storage location in virtual memory.

102. virtual memory

The storage space that may be regarded as addressable main storage by the user of a computer system in which virtual addresses are mapped into 'the real address'

103. virus

Secret undocumented routine embedded within a useful program

104. word

An ordered set of bytes or bits that is the normal unit in which info available.

# Assignment-2.

(27)

## Banerjee's Algorithm

(work) (max-allocation)

process	Allocation			max A B C	Available A B C	Need A B C
	A	B	C			
P <sub>0</sub>	0	1	0	7 5 3	3 3 2	
P <sub>1</sub>	2	0	0	3 2 2		
P <sub>2</sub>	3	0	2	9 0 2		
P <sub>3</sub>	2	1	1	2 2 2		
P <sub>4</sub>	0	0	2	4 3 3		

(max-allocation)

→ process	Allocation	max	Available	Need
	A B C	A B C	A B C	A B C
P <sub>0</sub>	0 1 0	7 5 3	3 3 2	7 4 3
P <sub>1</sub>	2 0 0	3 2 2		1 2 2
P <sub>2</sub>	3 0 2	9 0 2		6 0 0
P <sub>3</sub>	2 1 1	2 2 2		0 1 1
P <sub>4</sub> .	0 0 2	4 3 3		4 3 1.

$$\Rightarrow \text{Need} \leq \text{work} \Rightarrow \text{work} = \text{work} + \text{Allocation}$$

$$P_0 \quad 743 \leq 332 \quad \leftarrow \times \text{ Condition fails.}$$

$$P_1 \quad 122 \leq 332 \quad \text{Condition true.}$$

$$w = \text{work} + \text{Allocation}$$

$$= 332 + 200 \\ = 532$$

$$P_2 \quad \text{Need} \leq \text{work}$$

$$600 \leq 532 \quad \text{condition false}$$

$$P_3 \quad \text{Need} \leq \text{work}$$

$$041 \leq 532 \quad \text{Condition true} \quad w = w + \text{Allocation}$$

$$= 532 + 211$$

$$\Rightarrow p_4 \quad \text{Need} \leq \text{work} \quad \Rightarrow w = \text{work allocation} \\ \Rightarrow p_4 \quad 631 \leq 743 \quad = 743 + 002 \\ = 745$$

$$\Rightarrow p_0 \quad \text{Need} \leq \text{work} \quad \Rightarrow \text{work} = \text{work allocation} \\ 763 \leq 745 \quad = 745 + 10 \\ = 755$$

$$\Rightarrow p_2 \quad \text{Need} \leq \text{work} \quad \Rightarrow \text{work} = \text{work allocation} \\ 600 \leq 755 \quad = 755 + 302 \\ = 1057$$

Safe Sequence is  $\rightarrow (p_1, p_3, p_4, p_0, p_2)$

\* FIFO.

7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0

7	0	1	2	0	3	0	4	2	3	0	3	0	3	2
7	7	7	2	2	2	4	4	4	4	0				
0	0	0		3	3	3	2	2	2	2				
	1	1	1	1	0	0	0	0	3	3				

1	2	0	1	7	0	1
0	0			7	7	7
1	1			1	0	0
3	2			2	2	1

page fault = 15 no of frames = 3

\* LRU

7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1

7	0	1	2	0	3	0	4	2	3	0	3	0	3	2	1
7	7	7	2		2		4	4	4	0					1
0	0	0			0		0	0	3	3					3
	1	1			3		3	2	2	2					2

2	0	1	7	0	1
1		1			
0		0			
2		7			

no of frames = 3

page fault = 12

\* Optimal

7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 0, 3, 2, 1, 2, 0, 1, 7,  
0, 1

7	0	1	2	0	3	0	4	2	3	0	3	0	3	2	1
7	7	7	2		2		2		2						2
0	0	0			0		4		0						0
	1	1			3		3		3						1

2	0	1	7	0	1
			7		
			6		
			1		

no. of frames = 3

page fault = 9

$\Rightarrow$  FIFO

1, 3, 0, 3, 5, 6, 3

1	3	0	3	5	6	3
1	1	1	5	5	5	
3	3	3	3	6	6	
	0	0	0	0	3	

page fault = 6

no of frame = 3

$\Rightarrow$  optional

7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 3.

7	0	1	2	0	3	0	4	2	3	0	3	2	3
7	7	7	7	7	3		3						
0	0	0	0	0	0		0						
1	1	1	1	1	1		4						
	2		2		2		2						

page fault = 6.

no of frames = 4

**DEPARTMENT OF COMPUTER SCIENCE  
ROLLWALA COMPUTER CENTRE  
GUJARAT UNIVERSITY  
M.C.A. -3**

**ROLL NO : 06**

**NAME : Chotaliya Shivangi Dilipbhai**

**SUBJECT : Operating System**

<b>NO.</b>	<b>TITLE</b>	<b>PAGE NO.</b>	<b>DATE</b>	<b>SIGN</b>
<b>1</b>	<b>Basic salary of a person is input through the keyboard. His dearness allowance is 40% of basic salary and house rent is 20% of basic salary. Write a program to calculate the gross pay.</b>	<b>1</b>	<b>10/12/2020</b>	
<b>2</b>	<b>The distance between two cities is input through the keyboard. (in km). Write a program to convert this distance into metres, feet, inches and centimeters and display the results.</b>	<b>2</b>	<b>10/12/2020</b>	
<b>3</b>	<b>The length and breadth of a rectangle and radius of a circle are entered through the keyboard, calculate the perimeter and area of rectangle and area and circumference of the circle.</b>	<b>3</b>	<b>10/12/2020</b>	
<b>4</b>	<b>If a five digit number is entered through the keyboard, calculate the sum of its digits.</b>	<b>4</b>	<b>10/12/2020</b>	
<b>5</b>	<b>The file /etc/passwd contains info about all users. Write a program which would receive the logname during execution, obtain information about it from the file and display the information on screen in some appropriate format. (Hint : use cut) eg. Logname : , UID : , GID : , Default working directory : , Default working shell :</b>	<b>5</b>	<b>10/12/2020</b>	
<b>6</b>	<b>The script will receive the filename or filename with its full path, the script should obtain information about this file as given by "ls -l" and display it in proper format. eg. Filename : , File access permissions : , Number of links : , Owner of the file : , Group to which belongs : Size of file : , File modification date : , File modification time :</b>	<b>6</b>	<b>10/12/2020</b>	
<b>7</b>	<b>If cost price and selling price of an item are entered through the keyboard, write a program to determine whether the seller has made profit or loss. Also determine how much profit/loss is made.</b>	<b>7</b>	<b>10/12/2020</b>	
<b>8</b>	<b>Check whether the entered no. is odd or even.</b>	<b>8</b>	<b>10/12/2020</b>	
<b>9</b>	<b>Check whether the entered no. is prime or not.</b>	<b>9</b>	<b>10/12/2020</b>	
<b>10</b>	<b>Check whether the entered year is a leap year or not.</b>	<b>10</b>	<b>10/12/2020</b>	
<b>11</b>	<b>The script receives two file names as arguments, the script must</b>	<b>11</b>	<b>10/12/2020</b>	

**D E P A R T M E N T O F C O M P U T E R S C I E N C E**  
**ROLLWALA COMPUTER CENTRE**  
**G U J A R A T U N I V E R S I T Y**  
**M.C.A. -3**

R O L L N O : 06

N A M E : Chotaliya Shivangi Dilipbhai

S U B J E C T : Operating System

	check whether the files are same or not, if they are similar then delete the second file.			
14	Write a shell script to display the date with the format :- 25th October 2005 is a Tuesday.	12	10/12/2020	
15	Write a shell script to display the appropriate message like : Good Morning / Good Afternoon / Good Evening	13	10/12/2020	
16	Write a shell script to display the menu driven interface :- 1) list all files of the current directory 2) print the current directory 3) print the date 4) print the users otherwise display "Invalid Option".	14	10/12/2020	
17	Create a menu driven calculator which asks for two integers and perform basic arithmetic operations.	15	10/12/2020	
18	Find the factorial of any number.	16	10/12/2020	
19	Display the fibonacci series upto some number.	17	10/12/2020	
20	Two numbers are entered through the keyboard, find the power, one number raised to another.	18	10/12/2020	
21	Write a script which has the functionality similar to head and tail commands.	19	10/12/2020	
22	Write a script which reports name and size of all files in a directory. whose sizes exceed 1000. The filenames should be printed in the descending order of their sizes. The total no. of files must be reported.	20	10/12/2020	
24	Print the prime nos. from 1 to 300.	21	10/12/2020	
25	Program must display all the combinations of 1, 2, and 3.	22	10/12/2020	
26	Write a script for renaming each file in the directory such that it will have the current shell PID as an extension. The shell script should ensure that the directories do not get renamed.	23	10/12/2020	
27	A file called wordfile consists of several words. Write a shell script which will receive a list of filenames, the first of which would be wordfile. The shell script should report all occurrences of each word in wordfile in the rest of the files supplied as arguments.	24	10/12/2020	
28	Write a shell script which deletes all the lines containing the word "unix" in the files supplied as arguments to it.	25	10/12/2020	
29	The word "unix" is present in only some of the files supplied as arguments to the shell script. You script should search each of these files in turn and stop at the first file that it encounters containing the word unix. The filename should be displayed on the screen.	26	10/12/2020	
30	The word "unix" is present in only some of the files supplied as	27	10/12/2020	

**D E P A R T M E N T O F C O M P U T E R S C I E N C E**  
**ROLLWALA COMPUTER CENTRE**  
**G U J A R A T U N I V E R S I T Y**  
**M.C.A. -3**

**R O L L N O : 06**

**N A M E :** Chotaliya Shivangi Dilipbhai

**S U B J E C T :** Operating System

	arguments to the shell script. You script should search each of these files in turn and stop at the first file that it encounters containing the word unix. The filename should be displayed on the screen.			
<b>31</b>	The script displays a list of all files in the current directory to which you have read, write and execute permissions.	<b>28</b>	<b>10/12/2020</b>	
<b>32</b>	The script receives any number of filenames as arguments. It should check whether every argument supplied is a file or directory. If it is a directory it should be reported. If it is a filename then name of the file as well as the number of lines present in it should be reported.	<b>29</b>	<b>10/12/2020</b>	
<b>33</b>	A script will receive any number of filenames as arguments. It should check whether such files already exist. If they do, then it should be reported, if not then check if a subdirectory "mydir" exists or not in the current directory, if it doesn't exist then it should be created and in it the files supplied as arguments should be created.	<b>30</b>	<b>10/12/2020</b>	
<b>34</b>	Accept the marks of 5 subjects and calculate the percentage and grade.	<b>31</b>	<b>10/12/2020</b>	
<b>35</b>	Print armstrong nos. from 1 to 500.	<b>32</b>	<b>10/12/2020</b>	
<b>36</b>	Accept the measure (angles) of a triangle and display the type of triangle. (eg. acute, right, obtuse)	<b>33</b>	<b>10/12/2020</b>	
<b>37</b>	Display all the numbers from 1 to 100 which are divisible by 7.	<b>34</b>	<b>10/12/2020</b>	
<b>38</b>	Find the largest and smallest of 3 different numbers.	<b>35</b>	<b>10/12/2020</b>	
<b>39</b>	Find HCF and LCM of a given no.	<b>36</b>	<b>10/12/2020</b>	
<b>40</b>	Display the dates falling on Sundays of the current month.	<b>37</b>	<b>10/12/2020</b>	
<b>41</b>	Write a shell script to list the students according to their choice of games ...  Eg. Cricket : Aamir Football : Ajay Tennis : Sharukh, Salman	<b>38</b>	<b>10/12/2020</b>	
<b>42</b>	Write a shell script to generate summary from the sales.dat file. Sales made by 3 salesman by selling 3 products are entered in a file. Add atleast 10 records. The format is as shown below:  Salesman:Product1:Product2:Product3  Sample data: Mr. Abhishek Sharma:21:29:12 Mr. Akash Srivastava:11:15:28 Mr. Abhilash Dwivedi:31:04:13	<b>39</b>	<b>10/12/2020</b>	

**D E P A R T M E N T O F C O M P U T E R S C I E N C E**  
**ROLLWALA COMPUTER CENTRE**  
**GUJARAT UNIVERSITY**  
**M.C.A. -3**

**R O L L N O : 06**

**N A M E : Chotaliya Shivangi Dilipbhai**

**S U B J E C T : Operating System**

	<b>Calculate the followings :</b> <ul style="list-style-type: none"> <li>• Total sales of the company</li> <li>• Highest sold product</li> <li>• Best salesman (who sold the most)</li> <li>• Worst salesman (who sold the least)</li> </ul>																				
<b>43</b>	<p>Create a file “medals.dat” which contains the details of medals won by each country in Olympics. The data in the file may be as given below : (Country name is Primary key.)</p> <p><b>Country Gold Silver Bronze</b></p> <hr/> <p><b>India 21 12 15</b>  <b>Pakistan 12 10 08</b>  <b>USA 10 14 19</b>  <b>Srilanka 00 09 07</b>  .....and so on.....</p> <ul style="list-style-type: none"> <li>• Write a shell script which will ask the user to enter the Country name, further modify the no. of medals for that country.</li> <li>• Delete all the countries who get zero Gold medals.</li> <li>• Calculate the total no. of medals won by each country.</li> <li>• Find the country with highest Gold medals.</li> </ul>	<b>40</b>	<b>10/12/2020</b>																		
<b>44</b>	<p>Write a shell script to generate summary from a file : “student.dat” with following format :</p> <p><b>Student_no : student_name : gender : marks1 : marks2 :marks3</b>  Each field must be separated by a delimiter ‘-’</p> <p><b>Process the following queries:</b></p> <ul style="list-style-type: none"> <li>• Calculate the total marks of each student</li> <li>• Calculate the percentage of marks for each student</li> <li>• Count the total number of male and female students</li> <li>• Count the total number of students who pass and those who fail.</li> </ul>	<b>41</b>	<b>10/12/2020</b>																		
<b>45</b>	<p>A reputed MCA institute of Gujarat has students from various states. A sample file “students.dat” is shown as under :</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; width: 15%;">State</th> <th style="text-align: left; width: 15%;">M</th> <th style="text-align: left; width: 15%;">F</th> </tr> </thead> <tbody> <tr> <td>Gujarat</td> <td>18</td> <td>12</td> </tr> <tr> <td>Maharashtra</td> <td>12</td> <td>04</td> </tr> <tr> <td>M.P.</td> <td>08</td> <td>04</td> </tr> <tr> <td>U.P.</td> <td>05</td> <td>00</td> </tr> <tr> <td>Rajasthan</td> <td>07</td> <td>00</td> </tr> </tbody> </table>	State	M	F	Gujarat	18	12	Maharashtra	12	04	M.P.	08	04	U.P.	05	00	Rajasthan	07	00	<b>42</b>	<b>10/12/2020</b>
State	M	F																			
Gujarat	18	12																			
Maharashtra	12	04																			
M.P.	08	04																			
U.P.	05	00																			
Rajasthan	07	00																			

**DEPARTMENT OF COMPUTER SCIENCE  
ROLLWALA COMPUTER CENTRE  
GUJARAT UNIVERSITY  
M.C.A. -3**

**ROLL NO : 06**

**NAME : Chotaliya Shivangi Dilipbhai**

**SUBJECT : Operating System**

**Total Male candidates are 50 and Female are 20. Write a shell script to generate a Statewise Candidate Distribution Report as under :**

**STATEWISE CANDIDATES LISTING**

---



---

%FEMALE	STATE	%MALE	
TOTAL			
GUJARAT	36	60	30
MAHARASHTRA	24	20	

**16**

..... and so on .....

46	<b>Write a Shell script to generate summary from a file “books.dat” which contains the following details :</b>	43	10/12/2020
----	--	----	------------

Field	Description
No	Numeric (4) – uniquely identifies each book.
Title	Alphanumeric(30) – title of the book
Author	Character(20) – Author of the book
Publisher	Character(20) – Publisher (PHI , TMH,BPB...)
Edition	Numeric (2)

**Sample Data:**

**b1001 Programming in Java Balaguruswamy TMH Second  
b1002 Computer Networks Tanenbaum Pearson Fifth  
b1003 Operating Systems Chaudhari Jaico First**

**After creating the file do the followings :**

- Your script must replace all the BPB publisher with TMH.
- List the titles with the name ‘Java’.
- List the books written ‘Balaguruswamy’
- List the books which are not the first edition

47	<b>Create a file “election.dat” which contains the Election details for a specific city.</b>	44	10/12/2020
----	--	----	------------

Field	Description
Idno	Numeric - Unique

**D E P A R T M E N T O F C O M P U T E R S C I E N C E**  
**ROLLWALA COMPUTER CENTRE**  
**G U J A R A T U N I V E R S I T Y**  
**M.C.A. -3**

R O L L N O : 06

N A M E : Chotaliya Shivangi Dilipbhai

S U B J E C T : Operating System

	<p>Name              Character – Voter's Name      Sex              Character – M / F      Age              Numeric      Ward              Numeric – Ward no. / Division no. of the city.</p> <p><b>Sample data:</b>      e101 - abhishek - M - 35 - 44      e102 - ashutosh - M - 97 - 14      e103 - anamika - F - 21 - 50</p> <p>Suppose the same file is to be modified after 4 years. Write a shell script to simulate this process.      Your program must update the age of all People ( Add 4 years to age). In case if the age exceeds 99 then delete the record from the file, assuming that the person is dead.</p> <p>Display the election.dat and final output of your program.</p>																											
48	<p>In a college, students are allowed to select any one elective subject during his studies. Create two files by entering the data as mentioned below (you may skip the heading line if required) :</p> <p><b>File : elective.dat</b></p> <table> <thead> <tr> <th>Code</th> <th>Game</th> </tr> </thead> <tbody> <tr> <td>101</td> <td>AI</td> </tr> <tr> <td>102</td> <td>Computer Graphics</td> </tr> <tr> <td>103</td> <td>Parallel Processing</td> </tr> <tr> <td>104</td> <td>Data Mining</td> </tr> </tbody> </table> <p><b>File : students.dat</b></p> <table> <thead> <tr> <th>RollNo.</th> <th>Name</th> <th>Code</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Sonal</td> <td>101</td> </tr> <tr> <td>2</td> <td>Madhu</td> <td>101</td> </tr> <tr> <td>3</td> <td>Mahim</td> <td>103</td> </tr> <tr> <td>4</td> <td>Esha</td> <td>104</td> </tr> </tbody> </table> <p>Write a shell script to list the students according to their choice of electives ...</p> <p><b>Eg. AI :- Sonal, Madhu</b></p>	Code	Game	101	AI	102	Computer Graphics	103	Parallel Processing	104	Data Mining	RollNo.	Name	Code	1	Sonal	101	2	Madhu	101	3	Mahim	103	4	Esha	104	45	10/12/2020
Code	Game																											
101	AI																											
102	Computer Graphics																											
103	Parallel Processing																											
104	Data Mining																											
RollNo.	Name	Code																										
1	Sonal	101																										
2	Madhu	101																										
3	Mahim	103																										
4	Esha	104																										

**D E P A R T M E N T O F C O M P U T E R S C I E N C E**  
**ROLLWALA COMPUTER CENTRE**  
**GUJARAT UNIVERSITY**  
**M.C.A. -3**

**R O L L N O : 06**

**N A M E : Chotaliya Shivangi Dilipbhai**

**S U B J E C T : Operating System**

	<b>Computer Graphics: -</b> <b>Parallel Processing :- Mahim</b> <b>Data Mining :- Esha</b>		
<b>49</b>	<p>Create two files: subjects.dat and students.dat containing the subject details and the student details.</p> <p>Sample data is as shown below:</p> <p><b>subjects.dat</b></p> <p>Course_id-Semester_id-Subject_id-Subject_name</p> <p>CS-1-1-FCO CS-1-2-FOP CS-1-3-SL CS-2-1-DS CS-2-2-DBMS CS-3-1-OS CS-3-2-JAVA</p> <p><b>faculty.dat</b></p> <p>Faculty_id:Semester_id:Subject_id</p> <p>F1-2-1 F2-3-2 F3-1-3 F1-1-1</p> <p>Write a shell script to list the faculties and their respective subjects. Sample Output will be :</p> <p><b>F1 : FCO, DS</b> <b>F2 : JAVA</b> <b>F3 : SL</b></p>	<b>46</b>	<b>10/12/2020</b>
<b>50</b>	<p>Create two files employee.dat and departments.dat and add atleast 10 records in the following format :</p> <p><b>employee.dat</b></p> <p>emp_id:department_id:birthdate</p> <p>e101:M1:11-01-1960 e102:C1:21-03-1973 e103:M2:21-03-1973 e104:C1:21-03-1973 e105:B1:08-10-1965 e101:M1:11-11-1964</p>	<b>47</b>	<b>10/12/2020</b>

**DEPARTMENT OF COMPUTER SCIENCE  
ROLLWALA COMPUTER CENTRE  
GUJARAT UNIVERSITY  
M.C.A. -3**

**ROLL NO : 06**

**NAME : Chotaliya Shivangi Dilipbhai**

**SUBJECT : Operating System**

**departments.dat**

**department\_id:department\_name**

**B1:Botany**

**C1:Chemistry**

**M1:Mathematics**

**M2:Management**

**Write a shell script to do the followings:**

- 1) List all the employee\_ids department-wise**
- 2) List the employee\_ids born after 1970**
- 3) List the employee\_ids according to birthdate in sorted order**