Explore More

Subcription : Premium CDAC NOTES & MATERIAL @99

Contact to Join

Premium Group

Click to Join

Telegram Group

For More E-Notes

Join Our Community to stay Updated

TAP ON THE ICONS TO JOIN!

SR.NO	Project NAME	Technology
	codewitharrays.in freelance project available to buy contact on 8007592194	
1	Online E-Learning Platform Hub	React+Springboot+MySql
2	PG Mates / RoomSharing / Flat Mates	React+Springboot+MySql
3	Tour and Travel management System	React+Springboot+MySql
4	Election commition of India (online Voting System)	React+Springboot+MySql
5	HomeRental Booking System	React+Springboot+MySql
6	Event Management System	React+Springboot+MySql
7	Hotel Management System	React+Springboot+MySql
8	Agriculture web Project	React+Springboot+MySql
9	AirLine Reservation System / Flight booking System	React+Springboot+MySql
10	E-commerce web Project	React+Springboot+MySql
11	Hospital Management System	React+Springboot+MySql
12	E-RTO Driving licence portal	React+Springboot+MySql
13	Transpotation Services portal	React+Springboot+MySql
14	Courier Services Portal / Courier Management System	React+Springboot+MySql
15	Online Food Delivery Portal	React+Springboot+MySql
16	Muncipal Corporation Management	React+Springboot+MySql
17	Gym Management System	React+Springboot+MySql
18	Bike/Car ental System Portal	React+Springboot+MySql
19	CharityDonation web project	React+Springboot+MySql
20	Movie Booking System	React+Springboot+MySql

	freelance_Project available to buy contact on 8007592194	
21	Job Portal web project	React+Springboot+MySql
22	LIC Insurance Portal	React+Springboot+MySql
23	Employee Management System	React+Springboot+MySql
24	Payroll Management System	React+Springboot+MySql
25	RealEstate Property Project	React+Springboot+MySql
26	Marriage Hall Booking Project	React+Springboot+MySql
27	Online Student Management portal	React+Springboot+MySql
28	Resturant management System	React+Springboot+MySql
29	Solar Management Project	React+Springboot+MySql
30	OneStepService LinkLabourContractor	React+Springboot+MySql
31	Vehical Service Center Portal	React+Springboot+MySql
32	E-wallet Banking Project	React+Springboot+MySql
33	Blogg Application Project	React+Springboot+MySql
34	Car Parking booking Project	React+Springboot+MySql
35	OLA Cab Booking Portal	React+NextJs+Springboot+MySql
36	Society management Portal	React+Springboot+MySql
37	E-College Portal	React+Springboot+MySql
38	FoodWaste Management Donate System	React+Springboot+MySql
39	Sports Ground Booking	React+Springboot+MySql
40	BloodBank mangement System	React+Springboot+MySql

41	Bus Tickit Booking Project	React+Springboot+MySql
42	Fruite Delivery Project	React+Springboot+MySql
43	Woodworks Bed Shop	React+Springboot+MySql
44	Online Dairy Product sell Project	React+Springboot+MySql
45	Online E-Pharma medicine sell Project	React+Springboot+MySql
46	FarmerMarketplace Web Project	React+Springboot+MySql
47	Online Cloth Store Project	React+Springboot+MySql
48	Train Ticket Booking Project	React+Springboot+MySql
49	Quizz Application Project	JSP+Springboot+MySql
50	Hotel Room Booking Project	React+Springboot+MySql
51	Online Crime Reporting Portal Project	React+Springboot+MySql
52	Online Child Adoption Portal Project	React+Springboot+MySql
53	online Pizza Delivery System Project	React+Springboot+MySql
54	Online Social Complaint Portal Project	React+Springboot+MySql
55	Electric Vehical management system Project	React+Springboot+MySql
56	Online mess / Tiffin management System Project	React+Springboot+MySql
57		React+Springboot+MySql
58		React+Springboot+MySql
59		React+Springboot+MySql
60		React+Springboot+MySql

Spring Boot + React JS + MySQL Project List

Sr.No	Project Name	YouTube Link
1	Online E-Learning Hub Platform Project	https://youtu.be/KMjyBaWmgzg?si=YckHuNzs7eC84-IW
2	PG Mate / Room sharing/Flat sharing	https://youtu.be/4P9clHg3wvk?si=4uEsi0962CG6Xodp
3	Tour and Travel System Project Version 1.0	https://youtu.be/-UHOBywHaP8?si=KHHfE_A0uv725f12
4	Marriage Hall Booking	https://youtu.be/VXz0kZQj5to?si=llOS-QG3TpAFP5k7
5	Ecommerce Shopping project	https://youtu.be/vJ_C6LkhrZ0?si=YhcBylSErvdn7paq
6	Bike Rental System Project	https://youtu.be/FIzsAmIBCbk?si=7ujQTJqEgkQ8ju2H
7	Multi-Restaurant management system	https://youtu.be/pvV-pM2Jf3s?si=PgvnT-yFc8ktrDxB
8	Hospital management system Project	https://youtu.be/IynIouBZvY4?si=CXzQs3BsRkjKhZCw
9	Municipal Corporation system Project	https://youtu.be/cVMx9NVyI4I?si=qX0oQt-GT-LR_5jF
10	Tour and Travel System Project version 2.0	https://youtu.be/_4u0mB9mHXE?si=gDiAhKBowi2gNUKZ

Sr.No	Project Name	YouTube Link
11	Tour and Travel System Project version 3.0	https://youtu.be/Dm7nOdpasWg?si=P_Lh2gcOFhlyudug
12	Gym Management system Project	https://youtu.be/J8_7Zrkg7ag?si=LcxV51ynfUB7OptX
13	Online Driving License system Project	https://youtu.be/3yRzsMs8TLE?si=JRI_z4FDx4Gmt7fn
14	Online Flight Booking system Project	https://youtu.be/m755rOwdk8U?si=HURvAY2VnizlyJlh
15	Employee management system project	https://youtu.be/lD1iE3W_GRw?si=Y_jv1xV_BljhrD0H
16	Online student school or college portal	https://youtu.be/4A25aEKfei0?si=RoVgZtxMk9TPdQvD
17	Online movie booking system project	https://youtu.be/Lfjv_U74SC4?si=fiDvrhhrjb4KSlSm
18	Online Pizza Delivery system project	https://youtu.be/Tp3izreZ458?si=8eWAOzA8SVdNwlyM
19	Online Crime Reporting system Project	https://youtu.be/0UlzReSk9tQ?si=6vN0e70TVY1GOwPO
20	Online Children Adoption Project	https://youtu.be/3T5HC2HKyT4?si=bntP78niYH802I7N

Operating System MCQ

CPU Scheduling

Q.1 There are five jobs, A, B, C, D, and E, waiting in the ready queue. Their expected runtimes are 80, 60, 10, x, and 40. Suppose all the jobs are entered in the ready queue at the same time. Find the order of the jobs scheduled by the scheduler such that the average response time is minimized if 40 > x > 10.

C, E, D, B, A

B, A, E, C, D

C, D, E, B, A

C, B, A, D, E

Show Answer | Workspace

Ans. (c)

Explanation – The average response time is the average of the difference between the arrival time and the time when the job gets the CPU for the first time.

Average response time = $\sum$ (Arrival time of each job – The time when they get the CPU for the first time) / Number of jobs

The shortest job first algorithm is the way to minimize the average response time:

Suppose all the possible values of x

If $0 < x <= 10$, then the order of the jobs will be D, C, E, B, A

If $10 < x <= 40$, then the order of the jobs will be C, D, E, B, A

If $40 < x <= 60$, then the order will be C, E, D, B, A

If $60 < x <= 80$, then the order will be C, E, B, D, A

If $x > 80$, then the order will be C, E, B, A, D

Hence, the answer is C, D, E, B, A

Q.2 Consider the following data:

Process	Arrival Time	Burst Time
P1	1	3
P2	2	1
P3	3	2
P4	4	6
P5	5	4

The round-robin scheduling algorithm is applied on the given with time quantum = 2 units. The time taken in context switching is 1 unit. What are the completion time and turnaround time of process P5?

24 units and 18 units

22 units and 17 units

23 units and 17 units

23 units and 18 units

Show Answer | Workspace

Ans. (d)

Explanation: Given, Time quantum (TQ) = 2 units,

Time in context switching = 1 unit

The Gant chart will be like this:

	P1		P2		P3		P4		P1		P5		P4		P5		P4
0-1	1-2	2-4	4-5	5-6	6-7	7-9	9-10	10-12	12-13	13-14	14-15	15-17	17-18	18-20	20-21	21-23	23-24	24-26

Here, ⬜ represents the context switch.

Completion Time of P5 = 23 units

Turnaround time of P5 = CT – AT = 23 – 5 = 18 units

Hence, the correct answer is 23 units and 18 units.

Q.3 Match the following options

Group 1	Group 2
1. First come first serve	A. Minimizes the average waiting time
2. Round Robin	B. Every Process gets a chance to execute
3. Priority Scheduler	C. Processes are run in the order they arrive
4. Shortest Remaining time first	D. Important process gets executed first

1-C, 2-B, 3-D, 4-A

1-C, 2-D, 3-B, 4-A

1-C, 2-B, 3-A, 4-D

1-B, 2-C, 3-D, 4-A

Show Answer   Workspace

Ans. (a)

Types of CPU Scheduling algorithms

SRTF (Shortest remaining time first) – It minimizes the average waiting time and average turnaround time.

Round Robin – Each process is executed after another for a fixed interval of time called time quantum.

Priority Scheduler – The process of higher priority gets executed first.

First come first serve – As the name suggests, the process that arrives first gets executed first.

Hence, the correct answer is 1-C, 2-B, 3-D, 4-A.

Q.4 Consider the following data,

Process	Arrival Time (AT)	Burst Time (BT)
P1	0	7
P2	1	4
P3	2	10
P4	3	5

Assume that the shortest remaining time first (SRTF) is used. Calculate the average waiting time.

6.50 units

7.00 units

6.25 units

7.50 units

Show Answer   Workspace

Ans. (c)

Explanation: The shortest remaining time first algorithm is used, the Gant chart will look like this

P1	P2	P4	P1	P3
0-1	1-5	5-10	10-16	16-26

From the above Gant chart, we can find the completion time (CT), turnaround time (TAT), and waiting time (WT).

Process	AT	BT	CT	TAT	WT
P1	0	7	16	16	9

P2	1	4	5	4	0
P3	2	10	26	24	14
P4	3	5	10	7	2

Average waiting time = (9+0+14+2)/4 = 6.25 units

Q.5 A system has 20 processes, assume that they all spend 80%time waiting in the system. Find the CPU utilization (in percentage).

99

97

96

98

Show Answer Workspace

Ans. (a)

Explanation: The CPU utilization is equal to 1-p^N, where N is the number of processes and p is the waiting fraction.

Here, N = 10 and p = 0.80

CPU utilization = 1 – (0.80)^ 20 = 1 – 0.01 = 0.99

Hence, the correct answer is 99 percent.

Q.6 Which of the CPU scheduling algorithms ensures the least average waiting time.

Longest remaining time first (LRTF)

Round Robin

Shortest Job First (SJF)

Priority Scheduling

Show Answer Workspace

And. (c)

Explanation: Shortest job first has the least average waiting time as it is the optimal scheduling algorithm.

Q.7 Which of the statement is False:

SRTF may cause starvation

Preemptive scheduling algorithm may cause starvation

Longest remaining time first does not cause starvation

Response time is better in the First come first serve algorithm than in the Round Robin

Show Answer Workspace

Ans. (d)

Explanation:a) SRTF may cause starvation for the processes with high burst time

b) Preemptive may also cause starvation for the processes with low priority

c) Longest remaining time first does not cause starvation

d) Round-robin is better than the FCFS in terms of response time.

Q.8 Assume three processes start at the same time. The first 30% of the time was spent on the input-output process, and the rest 80% of the time was spent on computing. Each process takes 40, 60, and 80 units from start to end. The first come first serve algorithm is used. How long does the CPU remain idle if all the input-output processes are overlapped?

10

8

12

6

Show Answer Workspace

Ans. (b)

Explanation: Consider the three processes, P1, P2, and P3, and their BT is 32, 48, and 64 units, respectively.

Time spent by P1, P2, and P3 on input-output is 8, 12, and 16 units, respectively.

Hence, the correct answer is 8 units.

Q. 9Which of the combination of scheduling algorithms may cause starvation:

Round Robin and First Come First Serve

FCFS and Multilevel feedback queue

LRTF and RR

Priority and SJF

Show Answer | Workspace

Ans. (d)

Explanation: Starvation is caused by SJF, SRTF, LJF, Priority, and Multilevel feedback queue.

Hence, the correct answer is Priority and Shortest Job First (SJF).

Q. 10 Consider the following data:

Process	Arrival Time	Burst Time
P1	0	7
P2	1	5
P3	2	3
P4	3	1
P5	4	2
P6	5	1

If the shortest remaining time first is used, calculate the average waiting time and average turnaround time.

4 units and 7 units

3 units and 8.1 units

4 units and 6 units

4 units and 7.1 units

Show Answer | Workspace

Ans. (d)

Explanation: Shortest remaining time first is used, the Gant chart will look like this:

P1	P2	P3	P4	P3	P6	P5	P2	P1
0-1	1-2	2-3	3-4	4-6	6-7	7-9	9-13	13-19

Form the above Gant chart, we can find the CT, TAT, and WT.

Process	AT	BT	CT	TAT	WT
P1	0	7	19	19	12
P2	1	5	13	12	7
P3	2	3	6	4	1
P4	3	1	4	1	0
P5	4	2	9	5	3
P6	5	1	7	2	1

Average Turnaround time = (19 + 12 + 4 + 1 + 5 + 2)/6 = 7.1

Average Waiting Time = (12 + 7 + 1 + 0 + 3 + 1)/6 = 4

Hence, the correct answer is 4 units and 7.1 units.

Q. 11 Consider the following data of three processes arrive at the same time.

Process	BT

P1	250
P2	110
P3	150

Find the average waiting time if the Round Robin is used with a time quantum of 50 units.

258

260

256

257

Show Answer Workspace

Ans. (d)

Explanation: Round Robin with a time quantum of 50 units is used, The Gant chart will look like this:

P1	P2	P3	P1	P2	P3	P1	P2	P3	P1
0-50	50-100	100-150	150-200	200-250	250-300	300-350	350-360	360-410	410-510

We can find the completion time and waiting time from the above Gant chart.

CT of P1 = 510,   Waiting time of P1 = CT – BT = 510 – 250 = 260

CT of P2 = 360,   Waiting time of P2 = CT – BT = 360–110 = 250

CT of P3 = 410,   Waiting time of P3 = CT – BT = 410 – 150 = 260

Average Waiting Time = (260+250+260)/3 = 256.66667 = 257

Q.12   Which of the following algorithm is a non-preemptive CPU scheduling algorithm?

Round Robin

First Come First Serve

Multilevel Queue Scheduling

Multilevel Queue Scheduling with Feedback

Show Answer Workspace

Ans. (b)

Explanation: a) In Round-Robin, Preemption occurs when the time quantum expires.

b) In the First come first server, preemption does not occur; context switching happens only when a process completes its execution.

c) In the Multilevel Queue Scheduling, preemption occurs when a process with higher priority arrives.

d) In the Multilevel Queue Scheduling with feedback, preemption occurs when a process with higher priority arrives or when the quantum of the high priority queue expires

Q. 13 Four processes arrive at time zero. Their burst times are given below:

Process	Burst Time
A	20
B	4
C	16
D	4

If the shortest job first is used, what is the response ratio of process C?

16

0.25

0.5

1

Show Answer Workspace

Ans. (b)

Explanation: Response ratio = Burst time / Turnaround time

The Gant chart for the following will look like this:

B	D	C	A
0-4	4-8	8-24	24-44

We can find the completion and turnaround time for process C from the above Gant Chart.

CT = 24

TAT = CT – AT = 24 – 0 = 24

Response ratio = 8/24 = 0.25

Hence, the correct answer is 0.25.

Q. 14 Consider the following data of four processes arrive at time zero.

Process ID	Priority ID	Burst Time
P1	3	7
P2	1	2
P3	4	3
P4	2	4

Priority scheduling is used, and a higher priority ID means higher priority for that process. Calculate the average waiting time and average turnaround time.

8, 12

6.75, 10.75

6.25, 10.25

7.50, 8.25

Show Answer   Workspace

Ans. (b)

Explanation: Given, priority scheduling is used. The Gant Chart for the same will look like this.

P3	P1	P4	P2
0-3	3-10	10-14	14-16

We can find the completion and turnaround time from the above Gant chart:

Process ID	Priority ID	AT	BT	CT	TAT	WT
P1	3	0	7	10	10	3
P2	1	0	2	16	16	14
P3	4	0	3	3	3	0
P4	2	0	4	14	14	10

Average TAT = (10+16+3+14)/4 = 10.75

Average WT = (3+14+0+10)/4 = 6.75

Hence, the correct answer is 6.75 and 10.75.

Q. 15 Round Robin is used on the given data. What is the completion time of process C if the time quantum is 2 units?

Process	AT	BT
A	4	6
B	3	8
C	2	5

D	1	4

17

18

19

24

[Show Answer] [Workspace]

Ans. (b)

Explanation: Given that, Round robin is used with a time quantum of 2 units. The Gant chart for the following will look like this.

D	C	B	D	A	C	B	A	C	B	A	B
1-3	3-5	5-7	7-9	9-11	11-13	13-15	15-17	17-18	18-20	20-22	22-24

The completion time of process C is 18.

Deadlock

Q. 16 Which the following statement is/are False:

Starvation could not occur on an OS with non-preemptive scheduling

Starvation could occur on an OS with preemptive scheduling

The deadlock could not occur on an OS with non-preemptive scheduling

1 and 2

1 and 3

Only 1

Only 3

[Show Answer] [Workspace]

Ans. (b)

Explanation: 1. Starvation could not occur on an OS with no-preemptive scheduling. (False)

2. Starvation could occur on an OS with preemptive scheduling (True)

3. The deadlock could not occur on an OS with non-preemptive scheduling (False)

Q. 17 Consider a system with four processes and four resources of the same type available. If each process requires a maximum of two resources. Which of the statement is correct?

Deadlock may occur

Thrashing

Starvation may occur

Deadlock never occurs in the system

[Show Answer] [Workspace]

Ans. (a)

Explanation: Given that, the system has four processes and three resources. Each process requires a maximum of 2 resources. Assume that each process holds one resource and request for the other one to start processing. Hence, the circular wait condition is satisfied, and the system turns to deadlock. Let P1, P2, P3, and P4 be the four processes.
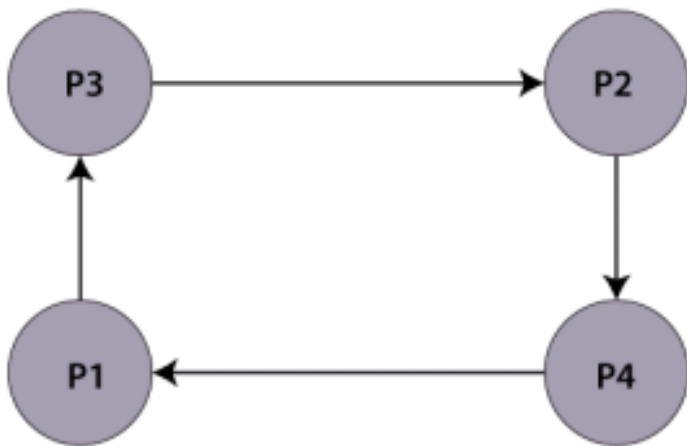
Q. 18 Dissatisfying hold and wait to prevent deadlock causes

Both deadlock and Starvation

Both Deadlock and Starvation free

Starvation may occur but deadlock-free

Deadlock may happen, but starvation free

Show Answer Workspace

Ans. (c)

Explanation: By dissatisfying hold and wait, the process must get all the resources before execution and must release all the resources after completion. This causes starvation for other processes.

Q. 19 Two Concurrent processes A and B wants to use resource R1 and R2 in a mutually exclusive manner. Initially R1 and R2 are free. The statements of the processes are given below.

	Process A	Process B
S1	While (R1 == Busy);	While (R1 == Busy);
S2	Set R1 = Busy;	Set R1 = Busy;
S3	While (R2 == Busy);	While (R2 == Busy);
S4	Set R2 = Busy;	Set R2 = Busy;
S5	Use R1 and R2	Use R1 and R2
S6	Set R1 = Free	Set R1 = Free
S7	Set R2 = Free	Set R2 = Free

Is mutual exclusion guaranteed for R1 and R2? If not then show a possible interleaving of the statements of P1 and P2 such that mutual exclusion is violated.

Mutual Exclusion is not guaranteed

Mutual Exclusion is guaranteed

Can't say

None of the above

Show Answer Workspace

Ans. (a)

Explanation: Given that initially R1 and R2 are free. Now, consider process A run the statement 1 and context switch occur process B run the statement S1 and S2 and set the R1 = Busy and again context switch occurs. Now, Process A run the statement S2 and set the R1 = Busy which was already set by the process B. Following the same steps for the statements S3 and S4 for both the processes. After this, both the process tries to run S5 i.e., use R1 and R2 at the same time. Hence, Mutual Exclusion is not guaranteed.

Hence, the correct answer is option a.

Q. 20 Consider a system having n resources of the same type. These resources are shared by four processes P1, P2, P3, and P4 and they need a maximum of 4, 5, 3, and 7 resources, respectively. For what value of n the deadlock will never occur.

8

15

19

16

Ans. (d)

Explanation: Maximum requirements of each process are 4, 5, 3, and 7. Allocate the resources one less than the maximum requirement for each process.

Resources allocated to process

P1 = 3

P2 = 4

P3 = 2

P4 = 6 Allocated resource = 15, this may lead to deadlock. To prevent deadlock, we need to full fill the requirement of at least one process. For that, we need one more resource. Hence the value of n will be 16.

Q. 21 Consider a system having15 processes, and each process requires a maximum of 4 resources. If P is the maximum number of resources for the system to be in deadlock and Q is the minimum number of resources for the system to be free from deadlock.

Calculate the value of P and Q.

P = 60 and Q = 61

P = 45 and Q = 46

P = 44 and Q = 46

P = 46 and P = 45

Ans. (b)

Explanation: Given that there are 15 processes and each requires a maximum of 4 resources.

For the system to be in deadlock, we need to allocate resources one less than the maximum requirements.

P = no. of processes * (maximum requirement – 1)

P = 15 * 3 = 45

For the system to be deadlock-free, we need to full fill the requirement of at least one process.

Q = P + 1 = 46

Hence, b is the correct answer.

Q. 22 Consider a system having 5 processes sharing 16 instances of a resource. The maximum need and current allocation of the resource are given below: (Question Type MSQ, i.e., more than one option can be correct)

Process	Maximum Requirement	Allocated
A	10	2
B	14	2
C	12	4
D	6	2
E	8	2

With reference to the current allocation, is the system safe? And if yes,then what is/are the correct sequences for the safe system?

No

Yes, D, E, C, B, and A

Yes, D, E, A, C, and B

Yes, D, E, C, A, and B

Ans. (b, c, and d)

Explanation: From the given data, we can find the current need and instances available

Process	Maximum Requirement	Allocated	Current Need

A	10	2	8
B	14	2	12
C	12	4	8
D	6	2	4
E	8	2	6

Total instances = 16

Allocated = 12

Available = 16 – 12 = 4

At this stage, we can only full fill the requirement of process D. Allocating the available resources to process D after completing the execution it will release all the instances and we will have 6 instances. Here, we allocate it to process E and it will release all the instances after execution and we will have 8 instances. Here, we can allocate it to processes C and A both. On allocating the resources to process A, there will one safe sequence which is D, E, A, C, and B. On the other hand, when we allocate the resource to the process C, we will have two safe sequences which are D, E, C, A, and B and D, E, C, B, and A.

Hence, option b, c and d are correct.

Q.23 Consider a system having nine processes from P1 to P9 and seven resources from R1 to R7. The allocation of resources and requests are given below in the table.

Processes	Allocated	Request
P1	R4	R3, R2
P2	R5	R4
P3	-	R2
P4	R1	R3
P5	R6	R2
P6	R3	R5
P7	-	R3
P8	-	R1
P9	R7	R6

With reference to the above data, which processes are deadlocked?
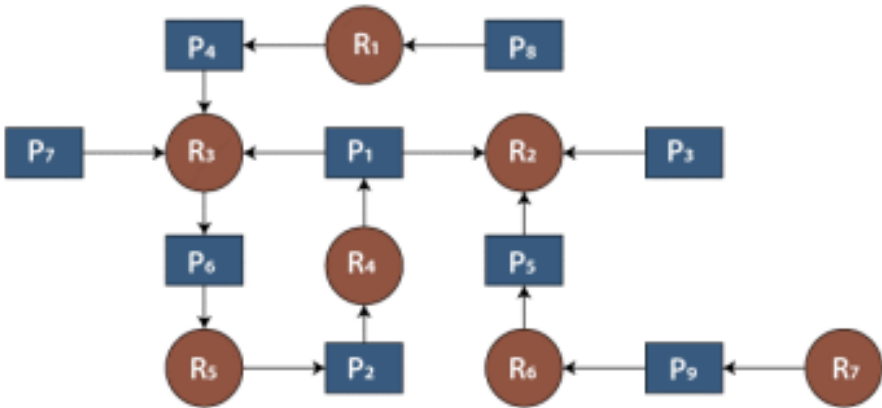
P1, P2, and P3

P3, P5, and P9

P1, P2, and P6

P1, P2, and P5

Show Answer   Workspace

Ans. (c)

Explanation: We can clearly see this in the resource allocation graph given below. Processes P2, P2, and P6 form a circular graph. Here, the condition of circular wait is satisfied. Hence, c is the correct answer.

Q. 24 A system having four processes and 200 instances of a resource. The maximum demand and allocated instances are given below in the table.

Process	Maximum need	Allocated
A	100	60
B	80	40
C	80	x
D	60	y

For what value/s of x and y the system will be in deadlock? (Question type MSQs)

x = 80 and y = 20

x = 40 and y 30

x = 60 and y = 20

x = 50 and y = 30

Show Answer | Workspace
Ans. (d)

Explanation: Taking the value of x = 50 and y = 30. Now, calculating the current need of each process and instances available.

Process	Maximum need	Allocated	Current need
A	100	60	40
B	80	40	40
C	80	50	30
D	60	30	30

Instances allocated = 60+40+50+30 = 180

Instances available = 200-180 = 20

Here, We can full fill the demand of any process for x = 50 and y = 30. Hence, d is the correct answer.

Q. 25 Banker's Algorithm is applied in a system for

Deadlock Prevention

Deadlock Avoidance

Deadlock Resolution

Deadlock Recovery

Show Answer | Workspace
Ans. (b)

Explanation: The Banker's algorithm is used for deadlock avoidance

Q. 26 Consider a system having four processes sharing N instances of a resource. The maximum requirements of each process are 7, 5, 9, and 12. What is the minimum value of N for which system will never be in deadlock?

32

29

30

Show Answer | Workspace
Ans. (d)

Explanation: The minimum value of N = (7-1) + (5-1) + (9-1) + (12-1) + 1 = 30. Hence, the correct answer is option d.

Q. 27 Consider a system having four processes sharing three resources R1, R2 and R3. R1 has 6 instances, R2 has 11 instances and R3 has 8 instances. Suppose at time zero, following snapshot of the system has been taken.

Process	Allocated			Max. Need			Available		
	R1	R2	R3	R1	R2	R3	R1	R2	R3
P1	1	0	1	9	4	3	2	3	3
P2	2	1	0	3	2	2			
P3	2	0	3	10	0	4			
P4	4	2	1	6	2	3			

With reference to above data. What are the possible safe sequences of processes? (Question type MSQs)

P2, P4, P1, P3 and P2, P4, P3, P1

P1, P4, P3, P2 and P1, P2, P3, P4

P4, P2, P1, P3 and P4, P2, P3, P1

None

Show Answer | Workspace
Ans. (a) and (c)

Explanation: We can find the current need of each process from the above data by subtracting the allocated instances from maximum need.

Process	Current Need			Available		
	R1	R2	R3	R1	R2	R3
P1	8	4	2	2	3	3
P2	1	1	2			
P3	8	0	1			
P4	2	0	2			

Here, We can full fill the demand of both P2 and P4 processes. So, there will be two orders P2, P4 and P4, P2. We can allocate either to P2 first or P4 first.

On allocating the resource to P2:

After complete execution of process P2 it will release all the instances.

Available Resources would be:

R1	R2	R3
4	4	3

Here we can only full fill the demand of process P4

After complete execution of P4. It will also release all the instances. And

Available resources would be

R1	R2	R3
8	6	4

Here, We can full fill the demand of process p1 and P3 both. So, it will depend on us to which process we are allocating the resources. And we will have two orders here to P1, P3 and P3, P1.

The possible safe sequences are (P2, P4, P1, P3), (P2, P4, P3, P1), (P4, P2, P1, P3), and (P4, P2, P3, P1). Hence, options a and c both are correct.

Q. 28 Consider a system with 4 processes P1, P2, P3, and P4 and 3 resources R1, R2, and R3. The maximum need and current allocation are given below in the table.

Process	Allocated			Maximum Need			Available		
	R1	R2	R3	R1	R2	R3	R1	R2	R3
P1	1	1	2	4	3	6	a	b	c
P2	0	1	1	2	1	3			
P3	1	0	1	3	0	4			
P4	1	1	1	4	1	2			

Let X = a + b + c. What is the minimum value of X for which the system is safe?

4

5

3

9

[Show Answer] [Workspace]

Ans. (a)

Explanation: Calculating the current need of each process:

Process	Current Need		
	R1	R2	R3
P1	3	2	4
P2	2	0	2

P3	2	0	3			
P4	3	0	1			

Possible values of a, b, and c are (3, 0, 1), (2, 0, 2), (2, 0, 3) and (3, 2, 4).

Taking a = 3, b = 0, c = 1.

We can full fill the need of process P4.

After execution it will release all the resources.

Current Available: a = 3+1 = 4, b = 0+1 = 1, c = 1+1 = 2.

Now, we can full fill the demand of process P2.

After execution P2 will release all the resources.

Current available: a = 4+0 = 4, b = 1+1 = 2, c = 2+1 = 3

Here, we can full fill the demand of process P3.

After execution P3 will release all the resources.

Current available: a = 4+1 = 5, b = 2+0 = 2, c = 3+1 = 4

Now, we can full fill the demand of process P4.

Hence the minimum value of X = 3+0+1 = 4.

Q. 29 Consider a system with four processes P1, P2, P3, and P4 are sharing three resources R1, R2, and R3. The maximum need and current allocation is given below in the table:

Process	Allocated			Maximum Need			Available		
	R1	R2	R3	R1	R2	R3	R1	R2	R3
P1	2	1	1	6	3	4	a	b	c
P2	1	1	0	3	1	2			
P3	1	0	1	4	0	3			
P4	1	1	1	2	1	4			

Which of the following options is/are correct? [Question Type MSQ]

a = 2, b = 0, and c = 2, only one possible safe sequence

a = 2, b = 1, and c = 2, only two possible safe sequences

a = 1, b = 1, and c = 3, only two possible safe sequences

None of the above

Show Answer   Workspace
Ans. (a) and (b)

Explanation: Calculating the current need of each process

Process	Current Need		
	R1	R2	R3
P1	4	2	3

P2	2	0	2
P3	3	0	2
P4	1	0	3

Option (a) will give only one possible safe sequence which is P2, P3, P4, P1.

Option (b) will give only two possible safe sequences which are P2, P3, P1, P4 and P2, P3, P4, P1.

Option (c) will give only one possible safe sequence which is P4, P2, P3, P1.

Hence the correct answer is (a) and (b).

Q. 30 Consider a system with four processes and each process can maximum demands k instances of a resource to complete their execution. What is the minimum number of resources required to prevent the deadlock?

$4k - 1$

$4k + 1$

$4k - 4$

$4k - 3$

Show Answer | Workspace

Ans. (d)

Explanation: To prevent deadlock allocate resources to each process one less than their maximum demand. After this full fill the demand of at least one process.

Minimum no. of resources required = (k-1) + (k-1) + (k-1) + (k-1) + 1 = $4k - 3$. Hence, d is the correct answer.

Q. 31 The wait for graph is a deadlock detection algorithm that is applicable when _____

All resources have multiple instances

All resources have a single instance

A few resources have multiple instances

None of the above

Show Answer | Workspace

Ans. (b)

Explanation: The wait for graph algorithm is only applicable when all the resources have only single instances and it can not work when the resources have multiple instances.

Q. 32 Which of the following is not involved in preventing the deadlock?

No Mutual exclusion

No "hold and wait"

No circular wait

No preemption

Show Answer | Workspace

Ans. (d)

Explanation: To prevent deadlock, following are the necessary condition for deadlock:

Mutual Exclusion

Hold and Wait

Circular wait

No preemption

"No Preemption" not occurs to prevent deadlock.

Hence, d is the correct answer.

Process Synchronization

Q. 33 Consider two programs P1 and P2

| S no. | Process P1 | Process P2 |

1	Void P1()	Void P2()
2	{	{
3	Wait(x1);	Wait(x2);
4	p = p+1;	q = q+1;
5	Wait(x2);	Wait(x1);
6	Signal(x2);	Signal(x1);
7	p = p-q;	q = p+q;
8	Signal(x1);	Signal(x2);
	}	}

Here, x1 and x2 are two semaphore initially initialized to one and p and q are two shared variable. Which of the following option is correct for the above given data?

Deadlock occurs

Mutual Exclusion

Progress

No deadlock

Show Answer Workspace

Ans. (a)

Explanation:

Both the process will start running concurrently

On line number 3, process p1 will wait on x1, and will change the value of x1 = 0. Also process p2 will wait on x2, and will change the value of x2 = 0.

Both the process will enter in their critical section

On line number 4, both the processes p1 and p2 will infinitely wait on x2 and x1 respectively. Hence, the deadlock will occur.

Q. 34 Consider two programs A and B

Program A	Program B
While (a);	While (b);
{	{
b = 1;	a = 1;
// Critical Section	// critical section
a = 0;	b = 0;
}	}

Assume that the both the a and b were initialized to zero. Which of the given option is true for the above given Snippet?

It satisfies Mutual exclusion but not progress

It satisfies Progress but not Mutual exclusion

It does not satisfy both mutual exclusion and progress

It satisfies both mutual exclusion and progress

Show Answer Workspace

Ans. (b)

Explanation: As the a and b both are initialized to zero, both the processes can enter in the critical section at the same time hence, there is no mutual exclusion but it satisfies the progress.

Q. 35 Consider two processes A and B, their code snippet if given below

Process A	Process B
Do {	Do {
Flag[i] = true;	Flag[j] = true;
Turn = B;	Turn = A;
While(flag[j] and turn == B);	While(flag[i] and turn == A);
// Critical section	// Critical section
Flag[i] = false;	Flag[j] = false;
// Remaining part	// Remaining part
} while(1)	} while(1)

If initially flag[i] = false and flag[j] = false, which of the following option is/are correct? [Question types MSQ]

Achieves Mutual Exclusion

Achieves Progress

Involves busy waiting

Do not achieve bounded waiting

[Show Answer] [Workspace]
Ans. (a), (b), and (c)

Explanation: The above question is based on the Peterson's solution, where Mutual exclusion, bounded wait and progress is achieved but it involved busy waiting. Hence, option a, b and c are correct.

Q. 36 Peterson's solution of process synchronization satisfies which of the following condition/s?

Mutual Exclusion

Progress

Bounded wait

All of the above

[Show Answer] [Workspace]
Ans. (d)

Explanation: The Peterson's Solution of process synchronization satisfies mutual exclusion, progress and bounded wait but also involves busy wait.

Q. 37 Decker's Algorithm of process synchronization satisfies the following condition

Mutual Exclusion

Progress

Bounded wait

Both a and c

[Show Answer] [Workspace]
Ans. (d)

Explanation:Decker's Algorithm satisfies mutual exclusion and bounded wait but not progress.

Q. 38 The Lock variable method of process synchronization do not satisfy the following condition

Mutual Exclusion

Progress

Bounded wait

Both a and c

[Show Answer] [Workspace]
Ans. (d)

Explanation: The Lock Variable method only satisfies the condition of progress and do not satisfy mutual exclusion and bounded wait.

Q. 39 The test and set lock method do not satisfy which of the following condition?

Mutual Exclusion

Progress

Bounded wait

None of the above

Show Answer   Workspace
Ans. (c)

Explanation: The test and set lock method satisfies mutual exclusion and progress and do not satisfy bounded wait.

Q. 40 Which of the following synchronization method satisfies mutual exclusion and bounded waiting but not progress?

Peterson's Solution

Decker's Algorithm

Lock Variable

Test and Set Lock Method

Show Answer   Workspace
Ans. (b)

Explanation: a) Peterson's solution satisfies all mutual exclusion, progress and bounded wait.

b) Decker's Algorithm satisfies mutual exclusion and bounded wait but not progress.

c) Lock variable satisfies only progress not mutual exclusion and bounded wait.

d) Test and Set Lock variable satisfies mutual exclusion and progress but not bounded wait. Hence, the correct option is (b).

Q. 41 Starvation occurs in

Binary semaphore

Counting semaphore

None

Both

Show Answer   Workspace
Ans. (a)

Explanation: In binary semaphore, only one process can enter in the critical section and there is not time limit on how long a process can be run. This makes other processes starve.

Q. 42 Consider a semaphore A, initialized with value 50. What should be the value of A when p() and v() functions is called on s for 23 and 11 times respectively.

38

16

-16

None of the above

Show Answer   Workspace
Ans. (a)

Explanation:

P() refers to wait() which reduces the value of semaphore by 1 and v() refers to signal() which increase the value of semaphore by 1.

S = 50 − 23 + 11 = 38

Hence, (d) is the correct answer.

Q. 43 Which of the following process synchronization method is/are implemented in user mode?

Peterson's Solution

Lock variable

Strict Alternation

All the above

Show Answer   Workspace
Ans. (d)

Explanation: All the above methods are implemented in user mode as they do not require hardware support.

Q. 44 Define critical section

A program segment where shared resources are accessed

A program segment which is error free

A program segment which is never executed

None of the above

Show Answer | Workspace

Ans. (a)

Explanation: Critical section is the program segment where the shared resources are accessed.

Q. 45 Consider the following programs

Program P1	Program P2
While (s == 0);	While (s == 1);
{	{
// Critical Section	// Critical Section
s = 0;	s = 1;
}	}

Here, s is the binary semaphore shared by both the processes. If s is initialized to zero, which of the following option is true?

It satisfies Mutual Exclusion

It satisfies Progress

Both (a) and (b)

None of the above

Show Answer | Workspace

Ans. (a)

Explanation: It satisfies the mutual exclusion as only one process can enter in the critical section at a time. But due to strict alternation, it does not satisfy the progress.

Q. 46 Consider the following two process

Process P1	Process P2
While (true) {	While (true) {
S1 = 1;	S2 = 1;
While (S2 == 1) {	While (S1 == 1) {
// Critical Section	// Critical Section
S1 = 0;	S2 = 0;
}	}
}	}

Here, S1 and S2 are two shared variables initially initialized to zero. Which of the following statement is true?

No mutual exclusion and no deadlock

Progress but not mutual exclusion

Deadlock but not progress

Mutual exclusion and no deadlock

Show Answer | Workspace

Ans. (a)

Explanation: As both the processes can enter in their critical section at the same time. Hence, it does not satisfy mutual exclusion.

Q. 47 Assume that at a given instant the value of the semaphore is equal to the -n. Which of the following information can be deduced from the above statement?

The number of processes present in the critical section is equal to n

The number of processes blocked and waiting in the queue to access the critical section is equal to n

The value of semaphore can't be negative, it has only positive values

None of the above

Show Answer   Workspace

Ans. (b)

Explanation: The given statement clearly denotes that the number of blocked processes is equal to n. Hence, (b) is the correct answer.

Q. 48 Consider the two processes given below

Process A	Process B
Wait(s1);	Wait(s2);
Wait(s2);	Wait(s1);
// Critical section	// Critical Section
Signal(s1);	Signal(s2);
Signal(s2);	Signal(s1);

Here s1 and s2 are two binary semaphores initialized to 1. Which of the following options holds true for the execution of the above processes?

Mutual exclusion

Deadlock

Starvation

Multithreading

Show Answer   Workspace

Ans. (b)

Explanation: On line one, process A waits on s1 and make s1 = 0 and preempted. Now, the process B waits on s2 and make s2 = 0. Here, both the semaphores are equal to zero. Hence, no process can enter in their critical section and deadlock occur.

Q. 49 Consider the two concurrent processes

Process P1	Process P2
Repeat forever	Repeat forever
V(x);	P(x);
// Critical Section	// Critical Section
P(x);	V(x);

Here, x is the shared semaphore and initialized to zero. Consider the following options:

It is possible that the P1 can starve

It is possible that the P2 can starve

Which of the option is/are true?

Only I is true

Only II is true

Both I and II are true

Both I and II are false

Show Answer   Workspace

Ans. (c)

Explanation: Here, both the processes can run infinite number of times and make other program starve.

Q. 50 The critical section of other programs should not be executed while the critical section of another is being executed. What is this relation of processes called?

Progress

Mutual Exclusion

Multiprogramming

Multithreading

Show Answer | Workspace

Ans. (b)

Explanation: Mutual exclusion – No two processes should be present in the critical section at the same time, i.e., only one process is allowed to enter in the critical section at a time. Hence, (b) is the correct answer.

Linux Operating System MCQ

Linus Torvalds, a Finnish computer science student, began working on a *Unix-like operating system* kernel as a passion project in *1991*. In *1991*, *Torvalds* released the initial version of the *Linux kernel*, which quickly gained popularity among developers worldwide owing to its open-source nature and ability to run on a range of hardware platforms. The collaborative nature of Linux laid the framework for its rapid growth and adoption.

Linux increased in popularity throughout the *1990s* as more developers and businesses recognized its potential. *GNU/Linux* has grown in popularity which mixes the Linux kernel with GNU software. The *GNU General Public Licence (GPL)* issued by the *Free Software Foundation* was critical in establishing the open-source ecosystem by allowing the free distribution, modification, and enhancement of Linux.

Linux's dependability, security, and scalability sparked the interest of corporations, leading to increased investment and support. Industry titans like *IBM*, *Oracle*, and *Red Hat embraced Linux*, seeing its potential to deliver cost-effective and dependable solutions. The emergence of the internet and the need for web servers fuelled Linux's expansion even further, with the *LAMP (Linux, Apache, MySQL, PHP)* stack becoming the foundation of numerous websites.

As the new century began, *Linux's popularity* grew even further. The growing popularity of smartphones and embedded devices has created new opportunities for Linux adoption. The *Android operating system*, which is based on the Linux kernel, changed the mobile industry and put Linux in the hands of billions of people worldwide. The growing use of Linux in smart devices, home appliances, and automotive systems has cemented its position as the preferred platform for embedded applications.

Furthermore, *Linux* has established itself as a major force in the server sector, running a sizable amount of the internet's infrastructure. It quickly became the ideal platform for *web hosting, cloud computing*, and *high-performance computing* because of its *dependability, security, and flexibility*. Containerization technologies like *Docker* and *Kubernetes* enhanced Linux's growth even further in these areas, which used Linux's characteristics to enable quick and scalable application deployment.

Linux has undergone an unparalleled growth in popularity and usage in recent years. The emergence of *AI, machine learning*, and *data analytics* has driven Linux to the forefront of these game-changing technologies. Linux provides a solid basis for developing and deploying complicated algorithms, massive data processing frameworks, and deep learning frameworks. Leading technology businesses like *Google*, *Facebook*, and *Amazon* rely significantly on Linux for AI-driven services and infrastructure.

Linux's open-source ideology has also given rise to many successful projects and communities. The Linux desktop environment has advanced tremendously. Its user-friendly editions, like *Ubuntu* and *Fedora*, compete with proprietary alternatives. Linux has evolved into the backbone of the open-source software movement, encouraging innovation and cooperation across all sectors.

Furthermore, the effect of Linux extends beyond traditional computers. The growth of *Internet of Things (IoT)* devices has expanded Linux's domain even more, with many *IoT platforms* and *devices* taking advantage of its lightweight and versatile characteristics. Because of its adaptability, Linux has become a popular choice for upcoming technologies such as *edge computing, 5G networks*, and *driverless cars*.

Linux continues to dominate numerous sectors of the IT industry in the present environment. Several cloud providers, including Am*azon Web Services, Microsoft Azure,* and *Google Cloud Platform*, have selected Linux as their operating system because of the emergence of cloud computing and virtualization. Linux-based solutions such as *Docker* and *Kubernetes* have gained popularity because of the increasing need for containerization and orchestration technologies.

Security and privacy concerns have also benefited Linux's rise. Linux benefits from continuing examination and collaboration as open-source software, making it naturally more secure than closed-source competitors. Businesses are turning to Linux to safeguard their systems and data as cybercrime becomes a serious issue.

Linux's influence is projected to expand because it continues to evolve and adapt to the ever-changing technological environment. Whether it's enabling the next generation of *IoT devices* or driving *artificial intelligence breakthroughs*, Linux is at the forefront of innovation, defining the future of computing and ushering in a new age of possibilities.

Features of Linux:

There are several features of the Linux Operating System. Some main features of Linux OS are as follows:

One of Linux's most remarkable features is its exceptional *stability* and *dependability*. The system's UNIX-like architecture ensures it remains reliable despite high workloads. Linux is well-known for its ability to run eternally without the need for regular reboots. As a result, Linux is a great choice for mission-critical applications and servers.

As *Linux* is open-source, users may tailor the system to their own needs. Its modular design allows users to select and install only the necessary components, maximizing performance and resource usage. Users may tailor their Linux experience to their preferences by choosing from a broad range of desktop environments and window managers.

Linux is well-known for its strong security mechanisms. As an open-source platform, it is supported by a global developer community that is constantly scrutinizing the source code and promptly finding and fixing issues. The strict user authorization mechanism and privilege separation prevent unauthorized access and malicious software. Furthermore, Linux's low desktop market share makes it less interesting to malware developers, improving its security even further.

Linux offers a rich software ecosystem with diverse programs for a wide range of applications. Package management solutions like *APT (Advanced Package Tool)* and *YUM (Yellow dog Updater, Modified)* make installing, updating, and removing programs easier. Linux distributions frequently feature massive software repositories with a wide range of free and paid apps.

In Linux, the *command line interface (CLI)* provides advanced users with powerful tools and unequaled system control. Task execution, scripting, automation, and remote administration are all possible using the CLI. Because of its broad set of command-line utilities and ability to connect them with pipelines and redirections, it is popular among system administrators and developers.

Linux has great interoperability and portability, allowing it to be ported to a wide range of hardware architectures. Linux may be customized to meet the specific needs of the target platform, whether it's a PC, a server, an embedded system, or even a supercomputer. This versatility helps device integration and interoperability in a variety of settings.

Now that we have discussed Linux in detail, let us see the Multiple-choice questions on Linux:

MCQ's on Linux:

Who is the designer of Linux?

a. Bill Gates

b. Steve Jobs

c. **Linus Torvalds**

d. Mark Zuckerberg

Answer: c) Linus Torvalds

Explanation: *Linus Torvalds* is the developer of Linux, which he began developing in *1991*.

2.Which license controls Linux distribution?

a. BSD License

b. MIT License

c. Apache License

d. **GNU General Public License (GPL)**

Answer: d)

Explanation: *Linux distribution* is governed by the GNU General Public Licence (GPL), which allows users to alter and distribute the software freely.

3. What is the importance of the LAMP stack?

a. Popular Linux distribution.

b. It means a collection of languages.

c. **It is a software package for the development of websites.**

d. It is a security protocol.

Answer: c)

Explanation: The LAMP stack is a common combination for constructing online applications, consisting of *Linux*, the *Apache web server*, the *MySQL database*, and the *PHP programming language*.

4. Which of the following operating systems is based on the Linux kernel and is commonly used in smartphones?

a. iOS

b. **Android**

c. Windows Phone

d. Oxygen OS

Answer: b)

Explanation: *Android* is a smartphone and tablet-oriented operating system based on the Linux kernel.

5. Which industry has seen widespread acceptance of Linux due to its stability, security, and scalability?

a. Gaming

b. Aeronautical

c. **Banking and finance**

d. Manufacturing

Answer: c)

Explanation: Linux was adopted by the *banking* and *financial sectors* due to its stability, security, and scalability, which provided dependable and cost-effective solutions.

6. What Linux-based operating system is well-known for its user-friendly interface?

a. **Ubuntu**

b. Fedora

c. Arch

d. CentOS

Answer: a)

Explanation: *Ubuntu* is a well-known Linux-based operating system that is noted for its user-friendliness and simplicity of use.

7. Which industrial titans recognized Linux's promise and embraced it?

a. General Motors, Ford, and Toyota

b. Sony, Samsung, and LG

c. **IBM, Oracle, and Red Hat**

d. Coke, PepsiCo, and Nestle

Answer: c)

Explanation: Companies such as *IBM, Oracle,* and *Red Hat* adopted Linux because they saw its potential to deliver cost-effective and dependable solutions.

8. Which technology is primarily reliant on Linux for AI-powered services and infrastructure?

a. **Artificial Intelligence**

b. AR

c. Virtual reality

d. Machine learning

Answer: a)

Explanation: Linux is heavily used in the field of artificial intelligence due to its sturdy basis and scalability.

9. What makes Linux inherently more secure compared to closed-source alternatives?

a. Regular software updates

b. Strong encryption algorithms

c. **Constant scrutiny and collaboration**

d. Access control mechanisms

Answer: c)

Explanation: Linux benefits from constant scrutiny and collaboration due to its open-source nature, making it inherently more secure.

10. What is the function of Linux in edge computing?

a. It enables seamless data transfer between edge devices.

b. It provides real-time data analytics capabilities.

c. It ensures secure communication between edge devices and the cloud.

d. **It offers a lightweight operating system for edge devices.**

Answer: d)

Explanation: *Linux* provides a lightweight operating system appropriate for edge computing devices.

11. Which industry had a major uptake of Linux due to its dependability, security, and flexibility?

a. Healthcare

b. Retail

c. Manufacturing

d. **All of the above**

Answer: d)

Explanation: Linux is widely used in a variety of industries, including healthcare, retail, and manufacturing because of its dependability, security, and flexibility.

12. What was the role of Linux in the emergence of the Internet and web servers?

a. It supplied web servers with a graphical user interface (GUI).

b. It was easy to integrate with web development frameworks.

c. **It evolved into the foundation of web server infrastructure.**

d. It allowed for safe online transactions.

Answer: c)

Explanation: Linux became the backbone of *web server architecture*, allowing the internet and online applications to flourish.

13. What is the function of Linux in the realm of cybersecurity?

a. It comes with built-in antivirus protection.

b. It provides robust encryption techniques.

c. It offers secure remote network access.

d. **It serves as a safe and dependable foundation for security solutions.**

Answer: d)

Explanation: *Linux*, which is extensively used in the market, provides a safe and trustworthy base for cybersecurity solutions.

14. How does the open-source ideology improve Linux?

a. It enables commercial usage without the need for a license.

b. **Through community collaboration, it promotes continuous development and innovation.**

c. It ensures interoperability with proprietary software.

d. It outperforms closed-source alternatives in terms of performance.

Answer: b)

Explanation: *Linux's* open-source philosophy enables continuous improvement and innovation through collaboration among developers and users

15. When was the first version of the Linux kernel released?

a. 1985

b. **1991**

c. 1995

d. 2000

Answer: b)

Explanation: The initial version of the Linux kernel was released in *1991* by *Linus Torvalds*.

16. What was the original reason for developing Linux?

a. To threaten Microsoft's market supremacy in operating systems

b. **To develop a Unix-like operating system that is free and open source.**

c. to create a kernel tailored to embedded systems

d. to try out new programming concepts

Answer: b)

Explanation: *Linus Torvalds* designed Linux to provide a free and open-source Unix-like operating system.

17. Which of the following Linux distributions was among the first and most influential?

a. Ubuntu

b. Red Hat

c. Arch Linux

d. **Debian**

Answer: d)

Explanation: *Debian* is the earliest version of the Linux distribution. It has created a massive impact on the development of Linux.

18. Which business was instrumental in the commercialization of Linux and the provision of enterprise-level support?

a. **IBM**

b. Google

c. Apple

d. Microsoft

Answer: a)

Explanation: By investing in Linux development, contributing to the open-source ecosystem, and offering enterprise-level support for Linux-based products, IBM played a critical role in commercializing Linux.

19. Which major smartphone maker made Linux the foundation of their operating system?

a. **Samsung**

b. Apple

c. Huawei

d. Sony

Answer: a)

Explanation: *Samsung* chose Linux as the foundation for their operating system, which is utilized in smartphones and other mobile devices.

20 . Which organization is responsible for the creation and upkeep of the Ubuntu operating system?

a. **Canonical Ltd.**

b. Red Hat In

c.Debian Project

d. Free Software Foundation

Answer: a)

Explanation: *Canonical Ltd.* is the company that is responsible developing and maintaining the Ubuntu operating system.

21. Which of the following is a notable characteristic of Linux?

a. High resource consumption

b. Closed-source architecture

c. **Customizability and flexibility**

d. Limited software options

Answer: c)

Explanation: *Linux's* open-source nature allows users to customize and adapt the system to their unique needs.

 22. Which feature makes Linux an excellent choice for mission-critical applications and servers?

a. The interface that is simple to use

b. Extensive gaming support

c. **Stability and dependability**

d. Exclusive licensing

Answer: c)

Explanation: The *UNIX-like design* of Linux provides stability and dependability, making it appropriate for mission-critical applications and servers.

 23. What is the advantage of *Linux's open-source* nature?

a. Limited options in software

b. Increase in the vulnerabilities

c. Frequent system crashes

d. **Community support and patches**

Answer: d)

Explanation: *Linux's* open-source nature enables a global community to gather and examine the source code, identify the problems in the code and then rectify the mistakes.

 24. What is the most prevalent package management system in Linux distributions?

a. **RPM (Red Hat Package Manager)**

b. MSI (Microsoft Installer)

c. DMG (Disk Image)

d. EXE (Executable)

Answer: a)

Explanation: RPM is a package management system that is widely used in Linux distributions such as Red Hat Enterprise Linux and Fedora.

25. The low market share of Linux in the desktop market contributes to?

a. Increased vulnerability to malware attacks

b. Limited hardware compatibility

c. Reduced software diversity

d. **Enhanced security against malware**

Answer: d)

Explanation: The limited market penetration of Linux on desktops makes it less appealing to malware developers, resulting in improved protection against malware assaults.

26. Which interface in Linux gives expert users with sophisticated tools and system control?

a. Graphical User Interface (GUI)

b. Web-based interface

c. **Command Line Interface (CLI)**

d. Natural Language Processing (NLP) interface

Answer: c)

Explanation: The *Command Line Interface (CLI)* in Linux provides experienced users with strong tools and granular control over the system.

27. Which feature of Linux allows it to adapt to different hardware architectures?

a. Closed-source licensing

b. Limited software compatibility

c. **Customizability**

d. Proprietary file system

Answer: c)

Explanation: Because of Linux's adaptability and flexibility, it can be extended to a broad number of hardware architectures, making it very compatible.

28. Where can Linux users find comprehensive documentation, tutorials, and troubleshooting resources?

a. Encrypted private forums

b. **Community-driven websites and mailing lists**

c. Closed-source developer forums

d. Proprietary software support portals

Answer: b)

Explanation: The Linux community provides significant documentation, tutorials, and troubleshooting tools through community-driven websites and mailing groups.

29. Which of the following is not a Linux feature?

a. Stability and reliability

b. **Closed-source licensing**

c. Customizability and flexibility

d. Command Line Interface (CLI)

Answer: b)

Explanation: Linux is an open-source operating system that does not use proprietary licensing.

30. Which Linux characteristic makes it less prone to program bloat?

a. Extensive pre-installed applications.

b. Proprietary software compatibility

c. **Customizable installation options**

d. Restricted software repositories

Answer: c)

Explanation: The customizable installation options in Linux allow users to install only the components required, reducing software bloat.

31. Which of the following is a significant advantage of adopting Linux?

a. License costs are very expensive.

b. Software compatibility is limited.

c. **Improved security features**

d. Exclusive source code

Answer: c)

Explanation: Linux provides more security features. Although it is an open-source OS, it provides security to its OS.

32. What cost advantages can Linux provide?

a. High startup expenditure

b. Ongoing licensing costs

c. **Open-source and free software**

d. Expensive hardware requirements

Answer: c)

Explanation: Linux provides free and open-source software, which means that users may get the operating system and a variety of applications without paying licensing costs. In comparison to operating systems that demand upfront or continuing licensing costs, Linux is a more cost-effective option.

33. What attribute of Linux allows it to be very customizable?

a. Architecture with a closed source

b. Compatibility with proprietary software

c. **Configurable installation options**

d. Inadequate hardware support

Answer: c)

Explanation: Linux offers configurable installation options, allowing users to pick and install only the components they want. Users may customize their Linux system to their unique needs, optimizing performance, and resource utilization.

34. What makes Linux an excellent server operating system?

a. Incapability to network

b. Limited performance optimization

c. **Stable and dependable operation**

d. Incompatibility with web technologies

Answer: c)

Explanation: Linux is well-known for its stability and dependability, which makes it a great choice for server settings requiring constant uptime and robust performance. Its UNIX-like design ensures that it runs consistently, even under large workloads.

35. What benefits does Linux offer in terms of hardware support?

a. Limited hardware compatibility

b. Expensive driver upgrades

c. Proprietary hardware requirements

d. **Hardware is widely supported and compatible**

Answer: d)

Explanation: Linux offers a wide range of hardware support and compatibility, allowing it to run on a variety of hardware devices.

36. Which feature of Linux adds to its reputation for dependability?

a. Frequently occurring system failures

b. Untrustworthy software upgrades

c. Closed-source codebase

d. **UNIX-like architecture**

Answer: d)

Explanation: Linux gives users access to a massive library of free and open-source software, as well as a wide choice of applications for a variety of uses.

37. How does the open-source nature of Linux benefit it?

a. **Access to a worldwide developer and contributor community**

b. Limited community support

c. Limited growth prospects

d. Greater exposure to security risks

Answer: a)

Explanation: As Linux is open source, a worldwide community of developers and contributors may study, enhance, and contribute to the codebase. This collective effort results in continuing development, bug fixes, and security updates, which helps to improve Linux's quality and dependability.

38. What benefits does Linux provide in terms of system performance?

a. Excessive resource usage

b. **Efficient resource utilization and performance optimization**

c. Limited multitasking capabilities

d. Proprietary system bottlenecks

Answer: b)

Explanation: Linux is well-known for its effective resource utilization and performance enhancements.

39. When compared to other operating systems, how does Linux improve security?

a. Limited security patch availability

b. Closed-source codebase

c. Limited user access limits

d. **Active community inspection and rapid vulnerability patching**

Answer: d)

Explanation: As Linux is open-source, it benefits from active community inspection and timely security updates. The worldwide developer community examines the code on a regular basis, discovers flaws, and publishes timely updates, making Linux more secure than closed-source systems that rely only on a single development team.

40. In terms of software variety, which of the following is an advantage of Linux?

a. Limited application availability

b. Expensive software licenses

c. **Free and open-source software availability**

d. Incompatibility with common file formats

Answer: c)

Explanation: Linux gives users access to a massive library of free and open-source software and a wide choice of applications for various uses.

41. ACLs (access control lists) in Linux are?

a. **System permissions for discretionary access control are placed on top of ordinary Linux permissions.**

b. System permissions for obligatory access control are placed on top of ordinary Linux permissions.

c. A form of Linux firewall

d. Similar to typical Linux permissions

Answer: a)

Explanation: ACLs in Linux enable discretionary access control, allowing users to set permissions for specific files and directories, granting or denying them to others.

42. In Linux, which command is used to navigate to the home directory?

a. cd

b. **cd ~**

c. cd /

d. home

Answer: b)

Explanation: In Linux, the *tilde ()* character represents the current user's home directory. The **"cd" command**, followed by the tilde (), will take you to your home directory.

43. In Linux, which command is used to display the manual pages for a specific command?

a. **man**

b. help

c. info

d. manual

Answer: a)

Explanation: In Linux, the *"man"* command displays the manual pages (documentation) for various commands and programs. It provides detailed information about a command's usage, options, and examples.

44. In Linux, what command is used to create an empty file?

a. **touch**

b. create

c. make

d. new

Answer: a)

Explanation: In Linux, the **"touch" command** is used to create an empty file. The *timestamp* is updated without modifying the contents if the file already exists.

45. In Linux, which command is used to delete a directory and its contents?a. a.rmdir

b. **rm -rf**

c. rd

d. delete

Answer: b)

Explanation: In Linux, the **"rm" command** with the **"-rf"** option recursively removes a directory and its contents. It deletes the directory as well as all files and subdirectories contained within it.

46. In Linux, which command is used to search for a specific string within files?

a. **grep**

b. find

c. search

d. seek

Answer: a)

Explanation: In Linux, the **"grep" command** is used to search for a specific string or pattern within files.

47. Which command is used to list the processes that are currently running on a Linux system?

a. process

b. show

c. search

d. **ps**

Answer: d)

Explanation: The **"ps" command** is used to list the processes that are currently running on a Linux system. It displays the **process ID (PID)**, CPU and memory usage, and other details.

48. In Linux, which command is used to compress files or directories into a compressed archive?

a. zip

b. rar

c. compress

d. **tar**

Answer: d)

Explanation: In Linux, the **"tar" command** is used to create a compressed archive. It can combine multiple files and directories into a single archive file, which can then be compressed further with tools such as gzip or bzip2.

49. Which command is used to display a Linux system's network configuration?

a. netconfig

b. **ifconfig**

c. ipconfig

d. netsh

Answer: b)

Explanation: The **"ifconfig"** command displays Linux system network configuration, interfaces, IP addresses, and statistics.

50. What command is used to exit a Linux session?

a. **exit**

b. logout

c. quit

d. login

Answer: a)

Explanation: The **Exit command** logs out of the Linux session, terminate the terminal, and close the shell or window.

https://www.youtube.com/@codewitharrays

https://www.instagram.com/codewitharrays/

https://t.me/codewitharrays   Group Link: https://t.me/ccee2025notes

+91 8007592194   +91 9284926333

codewitharrays@gmail.com

https://codewitharrays.in/project