1.

a. You mistakenly created a file named "tempp.txt". How would you rename it correctly to "temp.txt"?
Suppose you want to read the content of a file "notes.txt" without opening it in an editor. How would you do it?

b. Develop an application for getting a name in parent and convert it into uppercase in child using shared memory.

2.

a. You edited a script "deploy.sh" and want to view the last 5 lines of the file. What command would you use?
You want to make a script "install.sh" executable by you but not others. What would you do?

b. Consider a hospital scenario, where the patients are waiting for doctor consultation. Develop a solution to schedule the patients with respect to their token number. Arrival time of the patient is used to decide the token number, consultation time with the doctor is the burst time.
In the above scenario, let us include the following cases that take less consultation time:
    - Vaccination
    - Showing test reports only
    - Medical representatives

    Identify the suitable scheduling algorithm for this scenario by giving preferences to the above cases and develop a solution to schedule the consultations. Compute the waiting time, turnaround time and response time of each patient and tabulate the results with the Gantt chart.

3.

a. List all the files and folders inside your "Documents" directory in a detailed format.
You want your friend to read your report.txt but not modify it. How would you change permissions?

b. Imagine you are developing a food delivery app.
In your system, there is a kitchen (producer) preparing food orders. There are delivery agents (consumers) who pick up ready orders and deliver them to customers.
    - The kitchen can produce multiple orders, but there is limited space (buffer size = 5) on the pickup counter.
    - Delivery agents can only pick up food if an order is ready.
    - If the pickup counter is full, the kitchen must wait.
    - If the counter is empty, delivery agents must wait.

    Develop a system using semaphores to properly synchronize the kitchen (producer) and delivery agents (consumers).

4.

a. Display the number of lines, words, and characters in "report.docx".
Show only the first 10 lines of a big log file "server.log".

b. A banking system has 5 customers and 3 types of resources (like loan types: Home loan, Car loan, Education loan). The system needs to allocate resources to each customer in a way that avoids deadlock and ensures that the system remains in a safe state.

The following matrices are given:

- Available Resources = [3, 3, 2]
- Max Matrix (Maximum demand of each customer):

Customer	Loan 1	Loan 2	Loan 3
0	7	5	3
1	3	2	2
2	9	0	2
3	2	2	2
4	4	3	3

- Allocation Matrix (Resources already allocated):

Customer	Loan 1	Loan 2	Loan 3
0	0	1	0
1	2	0	0
2	3	0	2
3	2	1	1
4	0	0	2

Write a program to implement the Banker's Algorithm.

5.

a. Write a Shell program to reverse a number.

b. Write a program to implement the contiguous memory allocation based on Best fit algorithm.

6.

a. Write a Shell Program to implement Fibonacci series.

b. Write a program to replace the pages using Least Recently Used (LRU) algorithm.

7.

a. Write an awk script to find out the average pay of all employees whose salary is more than 8000 and no. of days worked is more than 3.

b.You are a system administrator working in a large computing environment. The system uses the Banker's Algorithm for deadlock avoidance to ensure that processes requesting resources does not end up in a deadlock situation. The system has three types of resources (A, B, and C) and five processes (P1, P2, P3, P4, P5). The number of resources available for each type and the current allocation and maximum demand resources for each process are given below.

System Resources:

- Type A: 10 units

- Type B: 5 units
- Type C: 7 units

Processes and their resource allocation and maximum need

Process	Allocation (A, B, C)	Maximum Need (A, B,C)
P1	(3, 2, 2)	(7, 5, 3)
P2	(2, 1, 3)	(6, 3, 4)
P3	(3, 3, 2)	(9, 6, 5)
P4	(2, 2, 2)	(4, 4, 3)
P5	(3, 1, 1)	(8, 4, 3)

Current Available Resources:

- Type A: 2 units
- Type B: 1 unit
- Type C: 3 units\

Check if the system is in a safe state using the Banker's Algorithm and find the **safe sequence** if it exists.