1. Draw an ER Diagram for a movie booking system showcasing the following relationships.
    - One to one
    - One to many
    - Many to one
    - Many to many

Hint – Consider tables like the following but not limited to Movies, Cities, Theatres, Users, Show Timings, Tickets, Movie Screens, User Tickets, etc

2. Setup a NodeJS mock backend server using ExpressJS/KoaJS that connects to a MySQL/PostgresSQL that can accept requests. Create the following API/Requests –
    a. greet – Should return “Hello World”
    b. greet-user?name=kang – Should return “Hello Kang”
    c. add-villain?name=ultron – Should add a new row to a table called charactes where the name is “Ultron” and type is villain
    d. add-hero?name=ikaris – Same add a new row to the characters table where the name is “ikaris” and type is hero
    e. get-characters – Should return everyone present in the characters table and their type.
    f. avengers-assemble – Should return all the characters who are of the type “hero”

Hint – You can use POST to pass the variables like name=kang, etc into the body of the request. If you are unable to create the server then create all the DDL and DML queries for such a task (c, d, e, f). Like for example for if you were required to return all villains, the query will be “select * from characters where type = ‘villain’”.

3. Consider the following tables

Table –

EmpID	EmpFname	EmpLname	Department	Project	Address	DOB	Gender
1	Sanjay	Mehra	HR	P1	Hyderabad(HYD)	01/12/1976	M
2	Ananya	Mishra	Admin	P2	Delhi(DEL)	02/05/1968	F
3	Rohan	Diwan	Account	P3	Mumbai(BOM)	01/01/1980	M
4	Sonia	Kulkarni	HR	P1	Hyderabad(HYD)	02/05/1992	F
5	Ankit	Kapoor	Admin	P2	Delhi(DEL)	03/07/1994	M

Table –

EmpID	EmpPosition	DateOfJoining	Salary
1	Manager	01/05/2022	500000
2	Executive	02/05/2022	75000
3	Manager	01/05/2022	90000
2	Lead	02/05/2022	85000
1	Executive	01/05/2022	300000

Questions -

i. Write a query to fetch the number of employees working in the department 'HR'.
ii. Write a query to get the current date.
iii. Write a query to find all the employees whose salary is between 50000 to 100000.
iv. Write a query to find the names of employees that begin with 'S'
v. Write a query to retrieve the EmpFname and EmpLname in a single column as "FullName". The first name and the last name must be separated with space.
vi. Write a query find number of employees whose DOB is between 02/05/1970 to 31/12/1975 and are grouped according to gender
vii. Write a query to fetch details of employees whose EmpLname ends with an alphabet 'A' and contains five alphabets.
viii. Write a query to fetch details of all employees excluding the employees with first names, "Sanjay" and "Sonia" from the EmployeeInfo table.
ix. Write a query to retrieve Departments who have less than 2 employees working in it.

4. Write code in any language that you are comfortable in which gives the user to perform some kind of operation. The code should be able to perform at least 15 operations. It can be any operation like add two numbers, tell me a joke, multiply two numbers, what is the 25^{th} element in the Fibonacci series, what is the factorial of a number, etc.

   Showcase your best coding skill here. Is it code modularity? Is it recursion? Is it code styling?

Notes –

- Upload all your solutions to GitHub, even if it is a word document. Any submission other than GitHub will not be considered.
- You need to do complete at least two of the four given tasks.
- One of the four questions has brownie points for completing (Hint: - Less than 3 but more than 1).