Assignment 3
(Part 1: Load Balancer)

After attending several lectures on Software Architecture, you started preparing for placements. One of your friend from the mathematics background is also trying for CSE job. You promised to help him. One day he came to you and asked you to design a system for him with the following requirements.

1) Design a client-server based system (a website) which contains two servers at the backend. The first server is capable of handling mathematical functions (like addition, subtraction, multiplication, division, sin, cos, and many more) and second is capable of doing string operations (like concatenation, string length, string reverse and many more). Server 1 and Server 2 are equipped with databases which stores query coming to them along with result and timestamp which are computed by the server.

2) Based on assignment 2 (ping and echo) assume server 1 is sitting on VM1 and server 2 is sitting on VM2. VM1 and VM2 are private VM's and not exposed to the outer world.

3) Create a third VM named VM3 on which your site is running (this VM is exposed to the outer world). You are free to design an attractive interface for your site using any technology stack. This interface must be designed to handle string and mathematical operations.

4) Instead of using Javascript to do computation on client-side use server 1 and server 2 to do mathematical and string-based computations respectively.

5) You must design the system in such a way that when the client selects any operation, then data along with an operator is sent to VM3. VM3 contains load balancer logic which looks the operator and forwards the request to either server 1 or server 2. Then the server (1 or 2) computes the query store the query and its result in its database and return the result to the client.

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(Part 2: Ionic App)

A few days back, you all had an interactive session on Ionic app development. Using knowledge acquired in that session, you decided to build an app. To do something challenging, you asked your friends for some requirements. Then your friends told you about their requirements.

1) Friend 1: I want to record my voice using your app.

2) Friend 2: I want to see all audio recordings present in your phone through your app and please design it in such a way that I can rename and delete audios through your app.

3) Friend 3: I want to use the camera module for taking selfies, pics and videos through your app.

4) Friend 4: I want to turn on/off Bluetooth of your phone through your app.

Keeping their requirements in mind design an app using Ionic framework.

Total Marks: 20 [Part 1=10 + Part 2=10]
Submission Deadlines:
Part 1: Friday (4/10/2019) 11:55 PM
Part 2: Monday (7/10/2019) 11:55 PM