Sri Lanka Institute of Information Technology

B.Sc. Honours Degree

in

Information Technology

Final Examination

Year 3, Semester I (2019)

SE 3040- Application Frameworks

Duration : 04 Hours

June 2019

Online Exam

Instructions to Candidates:

- This paper has one Question.
- Total Marks 100
- This paper contains 3 pages with the cover page
- Please follow the instructions provided by the Invigilators

Question 1 (100 marks)

You have been asked to develop a web application for a Hotel. After the discussions with related parties, the product team has come up with the following noticeable points.

1. The system is built mainly around categories and rooms. Categories and rooms shares a many-to-many relationship.. See the example below.
    a. Rooms- RM102, RM203
    b. Categories- Sporty, Romantic, Nature, Rustic
2. A web interface is required to display all categories and rooms belongs to a category. You can come up with your own design.
3. 3rd parties vendors are interested in accessing following data;
    a. Get all categories.
    b. Get all rooms.
    c. Add new room.
    d. Get rooms in a given category.

All the above services and not CPU heavy (please consider this when you are selecting the technology).

4. Another special service is required to calculate the total amount of given set of rooms. This is calculated by adding all rooms amount together. This service is expanding and will be a CPU heavy task, please consider this when you are selecting the technology.

Note the following points as well.

1. RESTful services are required for the following;
    a. Get all categories.
    b. Get all rooms.
    c. Get rooms by category.
    d. Add new room- Pass all the categories room belongs to as a list of IDs.
    Ex:
```
{
    code:"RM102",
    amount:40000,
    wing:"west",
    pax: 3
    categories:[ARRAY OF DOCTOR IDS]
    }
```
    e. Get doctors in a given ward.
    f.
2. Doctor and Ward data structures should be flexible. Please note the data structures;
    a. Ward
        i. Code- RM102
        ii. Amount- 40000
        iii. Wing- Possible values (west, east, north, south)
        iv. Pax- Possible values (2,3.4)
    b. Category
        i. Name- Rustic
        ii. Description- Rustic experience

3. There is no concern for transaction control and consistency in this system.

The Architect suggests to use the following technologies and you have to select the best suitable technology depending on the requirements being provided (You don't need to use all the technologies).

1. React JS
2. Node JS/Express JS
3. MongoDB
4. Spring Boot

Allocation of marks is as follows;

1. Implementation of UI for view categories and rooms belongs to a category.
   (Marks 24)
2. Implementation of get categories, get rooms, add rooms and get rooms belongs to a category service endpoints.
   (Marks 30)
3. Implementation of Room total amount calculation service.
   (Marks 24)
4. Suitable technology selection (Student will be eligible for this mark if only he/she select the correct technologies for the different parts of the application).
   (Marks 10)
5. At least one unit test for either part of the application (UI, services).
   (Marks 5)
6. Styling of the UI.
   (Marks 2)
7. Coding standards and quality
   (Marks 5)

Note: Following are considered when awarding marks for Coding standards and quality;

1. Following the REST architecture (resource paths).
2. Variable, function and class naming.
3. Clear file and directory structure.

End of exam question paper