



Sri Lanka Institute of Information Technology

**B. Sc. Special Honours Degree/ Diploma
in
Information Technology**

**Final Examination
Year 3, Semester I (2017)**

SE3040 – Application Frameworks

Duration: 4 Hours

May/June 2017

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 the British Council Library. After the discussions with related parties, the product team has come up with the following noticeable points.

1. The system is built mainly to manage the books in the library and each book has one author. See the example below.
 - a. Books - Oliver Twist, Madol Duwa
 - b. Authors - Charles Dickens, Martin Wickramasinghe
2. Web interfaces are required to add new books and to view the books. Authors are predefined. Therefore, there is no requirement for managing Authors (add, edit, delete). (Hint: Add a dropdown to select the author and populate it from the database).
3. Several functionalities of the system should be available for 3rd parties as services. All these services are data heavy and there are no computationally heavy tasks in these services (Keep this in your mind when deciding the technology for the services).
4. Another service is required to calculate the total price for a given set of book IDs. Please note that this requirement could grow into computationally expensive calculations, which may require multiple CPUs to compute in the future (Keep this in your mind when deciding the technology for this service).

Note the following points as well.

1. There are multiple outside parties who also request access to data, they are particularly interested in the following.
 - a. Get a list of Authors whose books are there in the library.
 - b. Search for Books filtered by Author.
2. Books should have a very flexible data structure because the data is likely to be changed in the future multiple times. The current structure is as follows.
 - a. Name - Oliver Twist
 - b. ISBN - 0141192496
 - c. Author - Charles Dickens
 - d. Price - LKR 2124.25
 - e. Year of publication - 1838
 - f. Publisher - Richard Bentley
3. Author details are as follows;
 - a. First Name - Charles
 - b. Last Name - Dickens

c. Nationality – English

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

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

1. Angular JS
2. Node JS/expressJS
3. MongoDB
4. MySQL
5. Spring Boot

Answer the Following

- | | |
|--|-------------|
| 1. Implementation of UI for view books and add new books. | - 24 marks |
| 2. Implementation of add books, get authors and filter books by author service endpoints. | - 30 marks |
| 3. Implementation of the total book price calculation service. | - 24 marks |
| 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). | - 10 marks |
| 5. At least one unit test for either part of the application (UI, services). | - 05 marks |
| 6. UI aesthetics and usability of the UI. | - 02 marks. |
| 7. Coding standards and quality | - 05 marks |

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

- Following the REST architecture (resource paths where applicable).
- Variable, function, and class following proper naming standards.
- Clear file and appropriate file and directory structure.

End of the Question Paper