

BSc in Information Technology – Semester 2, 2017

System Programming and Design Concepts - IT

Programming Assignment – .NET Web API

Note: This assignment carries 15 marks.

Assume that you have been asked to develop a system to make restaurant reservations and to order food online. Following are the requirements given by the client and/or the Business Analyst.

- The system should have a web interface where users can reserve tables at a restaurant, by giving the number of guests and the expected time of arrival.
 - There are no online payments required to make a reservation. However, the customer should register in the system prior to making a reservation.
 - To make a reservation, the customer has to give his/her mobile number, as the user ID.
 - Once a reservation is successfully made, the client is notified via SMS and email of the reservation.
 - In addition to the online reservations, food items can be selected from a menu and can be ordered online.
 - The payment for the food to be delivered can be made using credit cards or by paying cash at delivery.
 - The system can connect to a payment gateway for credit card transactions. The information that should be submitted includes the credit card number, amount, CVC number (3 digit number at the back of the card) and card holder's name.
 - Once the payment is made for a delivery the user should be given a confirmation of the appointment via SMS and email.
1. Based on the above information, come up with a set of RESTful Web API services to implement the system. Use JSON as the message format.
 2. Develop a web client to expose the Web API services to the end user. You should use asynchronous Javascript (AJAX) + JQuery / AngularJS / .NET HttpClient or a similar asynchronous web technology to improve the responsiveness of the web client.
 3. Use appropriate security/authentication mechanisms to uniquely identify each user and to authenticate/authorize each user.

Deliverables

1. Source code/binaries of the RESTful Web API Services.
2. Source code/binaries of the web client.
3. A readme.txt document, listing down the steps to deploy the above deliverables.
4. Any database scripts or any other data-store documents (xml documents, flat files, etc.) that you may have used to store the sample data (e.g. food/table/customer details).
5. A 7-10 page report (excluding the appendix). The report should include a high level architectural diagram showing the services and their interconnectivity. Also, it should list out the interfaces exposed by each service and should briefly explain each of the workflows used in the system (you may use diagrams to do this). It should include the details about the authentication/security mechanisms adopted. At the end of the report, attach an appendix with all the source files that you have used (exclude the auto-generated code).

Note that the report is the main deliverable that will be marked. The source code is used just to verify that you've implemented the system. So, please make sure all your design/implementation details are mentioned in the report. Make sure to add the source code as an appendix.

6. Turnitin similarity report.

In order for your report to be marked, it must be uploaded to Turnitin. The Turnitin similarity score should be less than 20% for the report to be accepted. You must attach the turnitin similarity report with your submission, for the assignment to be considered for marking. Please upload only your report (including the appendix) to Turnitin.

Use the following URL to access Turnitin.

www.turnitin.com

You can create a turnitin account. Then access the class with the Class id 16573114. The class name is SPDC_2017_Assign. The Enrollment key for the class is IT301_Assign. Once

accessing the class, go to the **Assignment 1 – Web API** assignment and **upload your report** to get the similarity report.

Use the following directory structure to upload the answer. You should zip the entire folder and name it using your registration number. **Upload the entire zip bundle to the Courseweb link.**
The deadline for submitting the assignment is 18th November.

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- **Reports** (contains the report and the turnitin similarity report)
- **Services library** (contains the Web API services)
- **Web client**
- **Readme.txt** (instructions on how to deploy the deliverables)
- **Other** (any configuration files, database scripts, XML data files)

Notes:

1. To **simulate a payment gateway**, you may **use a dummy service**.
2. For **email and SMS notifications**, you may **call actual services** (if you can locate such free services on the Internet). If not, you may use **dummy services, developed by yourself**.
3. In case the deliverable is too large to be uploaded to the Courseweb, upload **only the report and the Turnitin similarity report**. You should **upload the source code to a cloud directory** (e.g. Google drive) and **mention the link in the readme file**. Make sure that you give **public access to the Cloud directory**. Clearly **mention your name, registration number, contact email and contact no. in the readme file**, in case the evaluators encounter any issue in accessing the cloud directory.

Marking Rubric

Following rubric will be used in evaluating the assignment.

Criteria	Good (10-8)	Average (4-7)	Poor (0-3)
Application of SOA principles in the architecture and the design			
Having clearly defined interfaces, that facilitate reusability			
Quality and the readability of the code, with meaningful and detailed comments.			
Adoption of appropriate security/authentication mechanisms			
Comprehensiveness and the quality of the report			