## Written Test

### Question 1

You have taken over the management of a web application written in ASP.NET C# MVC. The application requires a username and password to login, and the url to access the system is:

<http://made-up-application.com/>

When a user logs into the application they can view their existing details that are stored in the database by going to the following url:

<http://made-up-application.com/customer/details?customerid=1001>

Here is all of the code used in the details action:

public ActionResult details()

{

string database = "Data Source=localhost;Initial Catalog=CustomerDatabase;User Id=sa;Password=password";

string id = Request.QueryString["customerid"];

SqlConnection connection = new SqlConnection(database);

connection.Open();

string query = "SELECT \* FROM Customers WHERE ID = " + id;

SqlCommand cmd = new SqlCommand();

cmd.Connection = connection;

cmd.CommandText = query;

SqlDataReader reader = cmd.ExecuteReader();

while (reader.Read())

{

ViewBag.Firstname = (string)reader[0];

ViewBag.Surname = (string)reader[1];

ViewBag.Email = (string)reader[2];

ViewBag.Telephone = (string)reader[3];

}

return View();

}

Please list any improvements you think can be made to the above code.

### Question 2

Given a base URL of <https://made-up-api.com/> for a set of RESTful web services, what URL and HTTP verb might you expect to use to carry out each of the following actions:

* Get a list of all customers.
* Get the details of order number 25.
* Delete the customer with an ID of 133.
* Update a single field for all orders.
* Update all fields for the customer with an ID of 1701.

## Practical Test

### Task 1

You should have been sent an accompanying file **students-and-subjects.csv**. This includes example data for a group of 20 fictional students.

For each student there is a record of an id number, first name, surname, title, e-mail address, date of birth, and up to 2 subjects that the student is studying.

Using this csv please design a relational database that would be appropriate for storing all the details in the csv file.

Please provide a database diagram showing the tables you would use in the database, and the relationships between the tables, and accompanying SQL commands that you would use to create the tables and their relationships.

### Task 2

Please create a web page that displays a list of all students in the attached spreadsheet. This page needs to display the following information about each student - id, first name, surname, title, and e-mail address.

This web page does not have to connect to a data source, and you can just use the static data provided if you wish.

Please use bootstrap v5.3 (https://getbootstrap.com/) to help you build this web page.

### Task 3

Please create a web page for creating a new student account. This page needs to provide input fields for:

* first name (maximum 25 characters)
* surname (maximum 25 characters)
* title
* e-mail address (maximum 50 characters)
* date of birth (date picker)
* Up to 2 subjects

This web page does not have to connect to a data source to save the data and can just be a web page to allow data to be input and provide client-side validation.

Please use bootstrap v5.3 (https://getbootstrap.com/) to help you build this web page.

### Task 4

The following JSON feed is used to lists courses at the University where students can study some of the course at a partner institute:

<https://www.liverpool.ac.uk/app-data/study-abroad/courses.json>

Please create a web page to list all the courses that are available. Each course name should be a link that when clicked on will then provide a list of the names and countries of partner universities where the course can be studied.

Please use bootstrap v5.3 (https://getbootstrap.com/) to help you build these web pages.