**Student Written Assessment (Practical Test)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Business Unit/Work Group** | IT Studies | | |
| **Qualification Code** | National Code: ICT50715  National Code: ICT50715 | **Qualification Title** | Diploma of Software Development  Diploma of Software Development |
| **Unit Code/s** | ICTPRG604 | **Unit Title/s** | Create Cloud Computing Services |
| **Assessment Task Title** | Assessment 2 – Cloud Computing Assignment | | |
| **Student Name** | Submit your solution via your LEARN account | **Student SIS ID** | Submit your solution via your LEARN account |
| **Assessor Name** | You have been added to a LEARN group which defines your assessor. This is normally your Course Registration Number (CRN) lecturer. | **Date** | 2018 Semester 1 |

|  |  |
| --- | --- |
| **Student Guide for Written Assessment** | |
| **Overview of Assessment** | This assessment will require you to gather and document a set of requirements relating to an existing legacy database driven and to re-engineer this application as a cloud based remote service. You will also be required to code, test, document and publish/deploy/host a working solution in Azure, that can be accessed from the existing legacy Windows Forms client.  There are two sections in the Basic Requirements section and one section in the Additional Requirements section |
| **Task/s to be assessed** | You will be assessed on the successful completion of all Basic Requirements as defined in the Basic Requirements specification below.  If you wish to accrue Merit points you must also complete the Additional Requirements as defined in the specification below |
| **Time allowed** | This assessment will be released in Week 4 and you have up to the end of this course to submit a working solution |
| **Location** | You complete this assessment in a computer lab on campus or at a suitable external site |
| **Decision making rules** | To receive a satisfactory outcome for this assessment you must complete all sections of the Basic Requirements correctly. |
| **Assessment conditions** | * You will be required to demonstrate/explain your solution to the instructor in class as detailed in section 5 of Basic Requirements. * You are not allowed copy or use code/documentation that is not yours without acknowledgement and prior permission from the instructor * You need to complete the assignment and upload it to LEARN by the due date   Ensure you follow the provided ITWorks organizational guidelines for developing maintainable code, and adhere to the provided ITWorks C# coding standards. |
| **Resources required** | To complete this assessment you will need to use Visual Studio 2015 with Azure SDK , Multiple Web Browsers and access to the subject Learn resources.  Visual Studio 2015 with Azure SDK/Web Browsers based machines are provided during this assessment.  You can use a Mac if you prefer but these are not provided. |
| **Results/Re-assessment** | You will be provided with feedback for each section of the assessment and be given the opportunity to resubmit any required corrections only once. If there are more than minor corrections, you will be required to resit the assessment later. |
| **Submission Instructions** | * Create a folder called yourName\_6CLP\_Assessment2 on the desktop and add your completed Visual Studio 2015 projects (Cloud and Windows Forms) inside this folder. * Add your name to the comments at the beginning of each file. |

**6CLP- Cloud Computing Assignment**

**TafeSA Ed Services Assignment**

**Abstract**

IT Works has hired you as an analyst/developer to work with a team of other developers to develop a new enrolment system for their client of TafeSA Ed Services. The client is currently using a Windows Forms application to manage their student enrolments. The application consists of a menu driven system that enables a single user to administer both Student and Courses.

The backend database is a SQL server database that consist of three tables:

1. Enrolment
2. Student
3. Course

A perusal of the database TafeDB (which is provided) will reveal its schema.

The current Windows application enables only a single user to work with one set of data at a time. The organization wants a multi user system that is accessible by different users at different locations. The current UI is to remain unchanged – THIS IS A CRITICAL NON-NEGOTIABLE REQUIREMENT

**Basic Requirements**

1. **Gather and Document Requirements**

The client has given you the above Abstract - which is a broad description of the existing system. You will need to communicate with the client (in class) to get a more detailed description of what is required in the new system.

Some of the issues you would need to consider will be:

* 1. Cloud solution vs private ISP hosting (think of scalability, availability of C#.NET hosting and costs)
  2. If it is a cloud service, which one – AWS, Google App Engine or Azure? (justify your choice)
  3. While the UI is the same how will the core services be implemented - choices are ASP.NET Web Service, MVC, WCF service or REST? (Justify your choice)
  4. Based on requirements gathered earlier, what services would be required to be develop – Prepare a Use Case model to itemize and document the services.
  5. The current system uses a local SQL Server Database which runs on an old legacy version of SQL Server. Consider if the current database will stay on the current legacy system or deployed as a cloud based database (Think scalability and Compatibility)

Use the provided Report Template to document to the Requirements specification that should include the above details and the following:

1. Use Case Model
2. Use Case Priority List
3. Glossary
4. Implementation Mechanism to address Persistence, Message Formats, and Access formats, etc.)
5. Document the development environment and tools required
6. A UML model of all the design classes required, including properties, methods and relationships
7. A UML component model to document how the client, server-side services, data access and database all interact.
8. **Implementing a Solution**
   1. The Windows Form client should connect remotely to the database through your remote service.
   2. The implemented service should connect to the database using the Entity Framework that will manage the applications persistency requirements.
   3. Your solution will be developed using Visual Studio as the IDE using C#.NET.
   4. Your design/code should reflect how the Object Oriented (OO) paradigm has influenced your architecture by documenting a description and use of the OO best practices/patterns in your UML models and code (Update your Requirements Specification above)
   5. Your code should adhere to the C#.NET coding standards that can be found ……..
9. **Test your Application** 
   1. Create a test plan with suitable test cases that will be used to test your application
   2. Run the documented tests using the client Form UI and record the results in your test plan
   3. Include some unit tests using NUnit to tests the DataMember/Service classes (Entity classes).
   4. NOTE – You will have to test iteratively once the service is deployed/published on the selected platform
10. **Deploying /Publishing your services**
    1. Deploy/Publish the SQLServer database/your services to the selected environment and document the steps.
    2. Use the published URL to further test your services
11. **Presenting your Solution**
    1. You will be required to present your working Solution and answer questions about your coded implementation, UML models, and Best Practices/Patterns used from the instructor
12. **Further Research**

The project lead has requested that you stay on to do some further research in the following areas that might help with future projects and present as a report.

* 1. Research the topic of ‘Big Data’ and present a report (500 words) on how this could impact on the development of the above application.
  2. WCF services use the DataContract Serializer to move Data to and from the WCF service in XML. If you had to consider using a JSON Serializer instead of the XmlSerializer, what advantages would it have? Explain your answer in the report by examining the typical structure of a serialized XML message in contrast to a JSON one.
  3. The client has expressed a desire to move away from the legacy Windows Form client to a web based UI in the future. Would moving to an ASP.NET MVC application framework instead of a WCF service better serve the client’s needs?

Compare and contrast the advantages/disadvantages of replacing Windows Forms with ASP.NET MVC HTML Views in reference to moving data using HTML page views vs C#.NET form classes.

1. **Submission Details**

On completion of all above tasks, zip your client and services project, all required documentation and upload it using the Assignment Upload link found on the subject Learn site.

The Project lead I should be able to unzip your Windows Form client and connect to your WCF service on the cloud and perform all Student and Course Admin services.

**Additional Requirements**

Create either a Web client or Windows Phone client that could connect to the same WCF service and consume the following WCF services.

**NOTE** – Your WCF services should not be modified to enable access from these client applications.

**Supplied**

1. A legacy Windows Form version of the system ‘ABC Ed Services’
2. A SQL Server database TafeDB.mdf file.

What to submit on Moodle

1. Your documentation as required in step 5
2. The zipped-up Windows Form client, modified to access the cloud WCF service
3. A zipped version of your Web or Windows Phone client (Merit part ONLY)

I should be able to unzip your Windows Form client and connect to your WCF service on the cloud and perform all Student and Course Admin services.

For the merit part, I should be able to do the same for either Web or Windows phone clients.

Please ensure this can be done prior to finalizing your submission.