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| Assessment Title | Assignment - Enrolment System |

## Competency Details

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| Unit code/s and title/s | ICTPRG614 Create Cloud Computing Services |
| Qualification code/s and title/s | ICT50220 - Diploma of Information Technology (Advanced Programming) |
| Business unit/Work group | BARTS/IT Studies |

## Instructions

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| Method/s of assessment | Product |
| 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. |
| Task/s to be assessed | This is a practical task and will require you to design and code in the C# language and Visual Studio IDE.  This assessment will require you to complete the following tasks   * Part I - Gathering and Documenting Requirements * Part II – Building the Cloud Computing Application * Part III - Testing the Cloud Computing Application * Part IV - Deploying /Publishing Application to Azure |
| Time allowed | Refer to your schedule for submission dates |
| Location of assessment | Assessment can be completed anywhere with access to the resources required. (see Resources Required section below) |
| Decision making rules | To receive a satisfactory outcome for this assessment you must complete all parts correctly. |
| Assessment conditions | This assessment must be undertaken where the conditions replicate noise levels and interruptions that people typically experience working in the ICT industry.  This is an unsupervised assessment, and you may access any required resources.  This is not group work and must be completed as an individual. |
| Resources required | To complete this assignment, you will need to use the following:  MS Word Visual Studio 2019 or above  MS SQL Server  Microsoft Azure for Students Subscription  ICTPRG614 - Enrolment System Report Template  The legacy Windows Form version of the system ‘ABC Ed Services’ |
| Result notification and reassessment information | You will be provided feedback and the result for your assignment on TAFESA Learn. You will be given the chance to resubmit with required corrections only once.  Refer to the TAFE SA assessment policy for more information <https://www.tafesa.edu.au/apply-enrol/before-starting/student-policies/assessment> |

**Enrolment System - Assignment**

**Abstract**

ITWorks has hired you as an analyst/developer to work with a team of other developers to develop a new enrolment system for their client 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 consists 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 cloud based multiuser application that is accessible by different users at various locations. The current UI is to remain unchanged.

**Part I - Gathering and Documenting Requirements**

Complete the following sections of the Enrolment System Report using the report template provided. Use the legacy Windows Form version of the system ABC Ed Services and the abstract provided above to identify the technical requirements, use cases and technical considerations.

**Technical requirements/Use cases:**

Determine five technical requirements for the application.

Using the provided ABC Ed Services Legacy application identify and document the following.

1. Use Case Model
2. A UML model of all the design classes required, including properties, methods, and relationships.
3. List of services to be implemented.

**Technical Considerations:**

* 1. Hosting:   
     Compare a cloud solution vs private hosting.   
     Identify three factors to consider when you are making this decision.
     1. Cost
     2. Space Availability
     3. scalability
  2. Cloud Model:   
     Identify a suitable cloud delivery model for this application.   
     List three main characteristics of the identified model.
  3. Service Provider:  
     If your choice is a cloud service provider, which option would you choose from AWS, Google Cloud or Azure? Justify your choice (maximum 100 words).
  4. Database:   
     The current system uses a local SQL Server Database which runs on an old legacy version of SQL Server. Identify a suitable alternative multi-user database to local SQL Server. Justify your choice (maximum 100 words).
  5. IDE:  
     Based on the identified cloud model, service provider and database, identify a suitable development environment and two tools to be used for the development.
     1. Visual Studio 2022
     2. Azure
  6. Architecture and Framework:  
     Identify a suitable cloud computing application architecture and a framework.
  7. Uptime Strategy:  
     Identify and develop an uptime strategy for the services. Your strategy must include use of availability zones and uptime estimate based service providers SLA (maximum 100 words).

**Submission Details**

Submit the completed Assignment – Report Template to Part I in LEARN for feedback.

**Part II – Building the Cloud Computing Application (Draft)**

* 1. Based on Use Case model created above, identify the services to be implemented. Implement the services by creating service contract with operation contracts for each service.
  2. Using the class diagrams created above implement the classes as data contracts and all their fields as data members.
  3. The implemented service should connect to the database using data adapters or similar technique that will manage the applications persistency requirements.

You are required to follow the guidelines below.

* + Your solution will be developed using Visual Studio as the IDE using C#.NET.
  + 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.
  + Your code should adhere to the C#.NET coding standards that can be found in Supporting Documents for Students.

**Part III - Testing the Cloud Computing Application (Draft)**

* 1. Create a test plan with suitable test cases to test each of the services implemented in Part II.
  2. Test each service using WCF test client and record the results in your test plan to confirm all the services are working as per the requirements.
  3. Include screenshots for each test case and add to your Assignment – Report Template document confirming all the services and the application are working as expected. If you get a client not allowed error or similar, record the errors in Assignment – Report Template document and performs basic debugging if required.
  4. Submit the Assignment – Report Template completed up to Part III to LEARN for feedback. You are required to modify the application based on the feedback provided.

**Part IV - Deploying /Publishing Application to Azure (Draft)**

1. Deploy/Publish the SQLServer database and the services to the selected environment and document the steps. Record the published URL in the Assignment – Report Template document. You are required to configure firewall rules on Asure to control access to the database.
2. Create a Windows form-based application to access the services created above. The UI must match the UI provided in the legacy single user application.
3. Test the Windows client and record the results in your test plan to confirm all the services are working as per the requirements.
4. You are required to demonstrate your application and obtain sign off from the Team Leader at IT Works (your lecturer will act as the Team Leader). You must demonstrate each service against the requirements identified in Use Case design (Part I). You are required to modify the application based on the feedback provided.

**Submission Details**

On completion of all above tasks, zip Visual Studio project, and Assignment – Report documentation and upload it using the Assignment Upload link on Learn site.

**Supplied**

1. A legacy Windows Form version of the system ‘ABC Ed Services’
2. ICTPRG614 - Enrolment System Report Template
3. IT Works C#.NET coding standards