

**National College of Ireland**

**MSc in Cloud Computing**

**Cloud Platform Programming**

**Project (60%)**

# Introduction

The assessment of the Cloud Platform Programming module is based on two assessment components:

a) *Project* which represents 60% of the module assessment, and

b) *Terminal Assessment* which represents 40% of the module assessment.

The learning outcomes of the Cloud Platform Programming module are as follows:

1. Demonstrate in-depth knowledge of core cloud-based services.
2. Critically analyse advantages and disadvantages of different cloud-based technologies/services.
3. Formulate and produce new code libraries that implement advanced programming constructs in order to create secure, dynamic, configurable, robust, scalable cloud-based applications.
4. Construct and present a complex dynamic cloud-based application through selecting relevant cloud related architectural patterns and services taking into account the evaluation and assessment of application design, development, and testing methodologies.
5. Identify and ethically apply best practices for continuous integration, delivery and deployment of cloud-based applications.

This document presents the details of the Project assessment of the Cloud Platform Programming module. The Project assesses LO1, LO2, LO3, LO4, and LO5.

# Project Description

For this assignment, you are required to develop a complex dynamic cloud-based application through selecting relevant cloud related architectural patterns and cloud-based services. Your application must be deployed and hosted on a public Cloud.

Once you have decided what your application will do, you should go through the following process:

* Define requirements: formally describe the functional and non-functional requirements of your application.
* Critically analyse and document the architecture of your cloud-based application.
* Implement a cloud-based application that addresses the requirements defined above. This application must employ several cloud services, and must use at least one new library that you create in an object oriented programming language. The new library should provide meaningful functionality to your application.
* Ensure that you are developing your application to take advantage of suitable cloud architectural patterns.
* Deploy your application to a suitable public cloud platform. The deployed application must not be modified after the submission deadline.
* You must conduct some independent research and include any relevant bibliography.

On completion, you will document the process and reflect on it through the deliverables listed in the next section.

This is an individual project.

# Project Deliverables

**Submission Deadline**: Consult the CA Schedule available on Moodle.

You are required to document the process of developing the cloud-based application and reflect on it through the deliverables listed below. You have to submit the following deliverables through Moodle:

1. A **project report** (6-8 pages, every additional page will incur a penalty of 10%, formatted using the IEEE Conference double-column template[[1]](#footnote-1)) which should include:
   * Abstract – a 150-300-word executive summary of the project and the main results
   * Introduction – motivation for your project and its main objectives
   * Project specification and requirements
   * Architecture and design aspects of your application – critically analyse and document the architecture of your cloud-based application. Provide an architecture diagram of your application which includes the different cloud-based services used in the application/system.
   * Library description
   * Cloud-based services used in the application, which includes critical analysis and justification for the choice of services
   * Implementation
   * Continuous integration, delivery and deployment of your application
   * Conclusions including findings/interpretations – what did you learn and find out? Include a short reflection on developing this project.
   * References – a complete list of academic works and/or online materials used in the project. References should be included as in-text citations using the IEEE referencing style.

1. The **source code artefacts** submission (a ZIP file) should include:
   * Source code of the application (including comments)
   * Source code of the library (including comments)
   * A readme.txt file that that includes all the dependencies required and the deployment steps and configuration files

1. **Project presentation and demonstration video**. The video submission should include the following:
   * A concise presentation of the motivation and high-level description of the idea of the project
   * Demonstration – give a demonstration of your application’s highlighting the main features
   * Answers to questions which you will receive in advance from your lecturer
   * Maximum 5 minutes, every 30 seconds over 5 minutes will incur a penalty of 20%

**Notes:**

1. **Every student must submit the video of their project presentation and demonstration in order to receive a mark for the Cloud Platform Programming project, otherwise the project will be marked with a 0 (zero).**
2. **The examiners reserve the right to conduct live mini presentations with a sample of the students, where students will provide answers to questions related to their project. Also, there may be scheduled live mini presentations if further clarifications are needed or if there is a concern with the submission.**

# Assessment Criteria

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| Architecture & Design | 15% | Critique possible architecture and design aspects for the cloud application and discuss and evaluate the chosen architecture |
| Cloud Services | 15% | Evaluate, select, and use in your project multiple cloud services. |
| Library creation | 15% | Design and implement at least one new library documenting the usefulness of the library in the context of your application. |
| Implementation | 25% | Develop a complex dynamic cloud-based application. |
| Deployment | 10% | Deploy your application to a suitable public cloud platform |
| Conclusions and findings | 10% | The report should incorporate conclusions including findings/interpretations. |
| Demonstration | 10% | Present the cloud-based application and demonstrate the dynamic characteristics of it. |

1. <https://www.ieee.org/conferences/publishing/templates.html> [↑](#footnote-ref-1)