National College of Ireland

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MSc in Cloud Computing
MSCCLOUD1JAN25I and MSCLOUD_JAN25B_I

Winter 2025/ January 2026 Repeat Examinations Session

Release Date on Moodle: 11 November 2025
Online Moodle Submission Deadline: 08 December 2025 by 4:00pm

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External Examiner: Dr F. Pérez-Téllez

Cloud Platform Programming
Repeat Assessment Brief

This Repeat Assessment is worth 100% of the total marks for those repeating this module.

IMPORTANT: It is your responsibility to avoid plagiarism. Please read the comprehensive guidelines on academic honesty and academic integrity, and how to avoid plagiarism made available by the NCI Library (https://libguides.ncirl.ie/referencingandavoidingplagiarism).

NOTE: YOU ARE NOT ALLOWED TO PUBLISH THIS ASSIGNMENT BRIEF OR A PART THEREOF ON ANY WEBSITES. YOU ARE NOT ALLOWED TO PUBLISH/SHARE YOUR SOLUTION WITH OTHERS. All work submitted **should be your own.** Conferring with others **is not permitted.**

All coursework will be electronically screened (via Turnitin) for evidence of academic misconduct (copying and collusion).

Please note: This is a repeat assessment. You are required to submit a complete NEW project.

Introduction

The repeat assessment of the Cloud Platform Programming module is based on Assessment which represents 100% of the module assessment.

The learning outcomes of the Cloud Platform Programming module are as follows:
LO1. Demonstrate in-depth knowledge of core cloud-based services.
LO2. Critically analyze advantages and disadvantages of different cloud-based technologies/services.
LO3. Formulate and produce new code libraries that implement advanced programming constructs in order to create secure, dynamic, configurable, robust, scalable cloud-based applications.
LO4. 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.
LO5. Identify and ethically apply best practices for continuous integration, delivery and deployment of cloud-based applications.

Project Brief

For this assignment, assume that the company has commissioned you to develop a complex dynamic cloud-based application in a given industry sector through selecting relevant cloud based services. Your application must be deployed and hosted on a public Cloud.
The given industry sector is allocated to you based on penultimate i.e., second to last digit of your Student_ID as described in Table 1:

Table 1 Industry Sectors

Penultimate (i.e. second to last) digit of Student ID	Industry Sector
0	Inventory
1	Sales
2	Automotive
3	Secondary Schools
4	Finance
5	Insurance
6	Courier and Delivery Services
7	Retail Supermarket chains
8	Entertainment
9	E-Commerce

IMPORTANT: Each student must work on the correct industry. For example, if your student ID number is 203576**9**4, the penultimate i.e. second to last digit of your Student ID is 9, and therefore the industry sector assigned to you is Insurance.

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 analyze and document the architecture of your cloud-based application.
- Implement a cloud-based application that addresses the requirements defined above. This application must employ programmatically atleast five cloud services. Also, the project 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.

Project Deliverables

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** (8-9 pages, every additional page will incur a penalty of 10%, formatted using the IEEE Conference double-column template[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 analyze 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.

[1] https://www.ieee.org/conferences/publishing/templates.html

- 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.
- The NCI Project submission coversheet is not included in the page count. (All the students are expected to submit a project cover sheet placed on the Moodle page as the first page of the project.)

2. 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.

3. **Video of Project presentation, project demonstration:** A maximum of 10 minutes video submission that should include the following:
   - A concise presentation of the motivation and high-level description of the project.
   - Demonstration – give a demonstration of your application's highlighting the main features.

Note: You must submit a video of your project in order to be marked 'Present' for this project. Those who do not, will be marked ***'Absent'*** **and the other deliverables will NOT BE GRADED.**

Assessment Criteria

Architectural Design & Explanation	15%
Cloud-based Services and Critical Analysis	15%
Library Creation	15%
Implementation	20%
Deployment	10%
Conclusions and findings	5%
Video Presentation and Demonstration	20%

Grade Criterion	H1 (> 70%)	H2.1 (> 60%)	H2.2 (> 50%)	Pass (> 40%)	Fail (< 40%)
Architecture & Design: 15%	Architecture and design of the cloud based application is clearly defined, well presented and critically analysed.	Architecture and design of the cloud based application is created, well presented and analysed.	Architecture and design of the cloud based application is created and presented. Critical analysis of the design is missing.	Architecture and design of the cloud based application is created and presented with minimal information.	No architecture diagram created or presented.
Cloud-based Services and Critical Analysis: 15%	Very good number of relevant cloud services used, critically analysed and justified. Explained well in the report as well in architectural diagram.	Good number of relevant cloud services used, critically analysed and justified. Explained well in the report as well in architectural diagram.	Adequate cloud services used which are at most required along with explanation in the report and in architectural diagram.	Minimum services used and shown. Very less information shown on the services used.	Very less cloud services used in the project. No explanation about services provided.
Library Creation: 15%	Library created with all required aspects and elements. Explained the rationale behind creating the library and published successfully.	Library created library with all required aspects and elements along with the rationale behind.	Attempt made to create a library. Implemented basic functionality.	Attempt made to create a library though not successfully implemented.	No library created.
Implementation: 20%	Excellent implementation of application functionalities, functional and non-functional requirements shown. All the CRUD operations implemented successfully. The source code is well written along with the required comments/explanation.	Very good implementation of application functionalities, functional and non-functional requirements shown. All the CRUD operations implemented. The source code is well written along with the required comments/explanation.	Good implementation of application functionalities shown. All the CRUD operations implemented. The source code is written as per the basic constructs.	The CRUD operations implemented in the application but not showing the required outputs. The source code is written as per the basic constructs.	Less than required functionalities implemented.
Deployment: 10%	The application is deployed on a suitable public cloud platform. All the functionalities of the application are working properly on the deployed URL.	The application is deployed on a suitable public cloud platform. Some of the functionalities of the application are working on the deployed URL.	Efforts have been made to deploy application on a suitable cloud platform but not working properly as required.	Efforts have been made to deploy application on a suitable cloud platform but this may be unsuccessful.	No efforts made to deploy application on cloud platform.
Conclusion and findings: 5%	Insightful conclusions which appreciate the limitations and implications of the study.	Conclusions appreciate the limitations and implications of the study.	Shows an understanding of the implications of the study.	The implications and limitations of the study are not fully appreciated.	No or inappropriate conclusions.
Video Presentation and Demonstration: 20%	The presentation clearly outlined the project argument. Slides were error-free and logically presented. The speaker was poised and enthusiastic. Questions were excellently answered.	The presentation somewhat clearly outlined the project argument. Slides were somewhat error-free and somewhat logically presented. The speaker was poised and enthusiastic. Questions were very well answered.	The presentation outlined the project argument. Slides were mostly error-free and mostly logically presented. The speaker was poised and enthusiastic. Questions were well answered.	The presentation provided a limited outline of the project argument. Slides were not error-free and not logically presented. The speaker was poised and enthusiastic. Questions were reasonably well answered.	The presentation is unorganised and unclear. Questions were unanswered/poorly answered.