UNIVERSITY OF RUHUNA

Faculty of Engineering

Assignment 2 - Semester 7: June 2025

Module Name: Cloud Computing

Module Number: EC7205

[Answer **all questions**. This accounts for 20% marks of the module]

Assignment Title

Building a scalable, secured, and high available cloud application

Objective

Design and implement a realistic cloud-native application that demonstrates the core principles of cloud computing, including scalability, high availability, security, and modern deployment practices.

Team Size

4 members

Assignment Task

You need to build an application which will cater a real world problem by using the cloud computing principles and architecture (you may pick your own): application which demonstrates the functionalities of microservice application.

Requirements

Consider the following fact when you develop the project

- Scalability of the application and how you are going to scale the system to handle increased load
- Providing a high-availability system
- Think about how you can communicate with other components of the system with synchronous and asynchronous communication methods.
- Securing the application to avoid any security issues
- Usage of deployment tools to deploy applications and maintain the system
- Show how new features or services can be added without breaking the system

- Think about what database/databases match with your requirement.

Submission Deliverables

The end project should be simple to deploy. Make it easy to deploy with deployment tools.

Include the following in the submission:

- Clear README file with steps to run
- Source code (GitHub or zip file)
- Dataset, example data, configurations, and DB schemas used to execute the program
- Do a small demo in video format (not exceeding 20 minutes), which includes the following
    - Overall architecture of the design and what are the major components
    - Show core features working
- Document which contain the following (Maximum 3 - 4 pages):
    - Introduction
    - Architecture
    - Implementation steps
    - Challenges faced
    - Lessons learned

Mark allocation

Functionality	20%
Cloud-native architecture	20%
Scalability & availability	15%
Security implementation	10%
Deployment & DevOps setup	10%
Communication methods	10%
Documentation & clarity	15%
Total:	100%