RMIT UNIVERSITY

School of Computing Technologies

COSC2626/2640 Cloud Computing

Assessment 3

	Assessment Type: Group assignment. Submit online via Canvas→Assignments→Assessment 3. Marks awarded for meeting requirements as closely as possible. Clarifications/updates may be made via announcements/relevant discussion forums.
	Due date: 11:59pm, Friday 11/June/2021 Please check Canvas→Assignments→Assessment3 for the most up to date information. As this is a major assignment in which you demonstrate your understanding, a university standard late penalty of 10% per each working day applies for up to 5 working days late, unless special consideration has been granted.
	Weighting: 50 marks

1. Overview

Assessment 3 will contain 50% of total assessment for this course. It should be a project by using AWS cloud platform and technologies. You are free to choose any programming language and API you want to use. You will be provided with some sample reports to help you understand the depth and required skills of the project but keep in mind the assignment specifications have been varied.

You are strongly encouraged to form a group of maximum two students. Individual submission is also allowed but there is no variation on the rubrics. Discuss your proposal with your tutor. Finalize your team and your preliminary project idea by week 5 so you can start early.

A recommended timeline to help you finish your Assessment 3 on time can be found below:

Weeks	Milestones	Recommended Tasks
Week 4		Project Group Forming AWS Service Investigation References: Lecture slides, AWS website
Week 5	Preliminary Project Idea Consultation (in Week 5 workshop time)	Preliminary Project Idea Forming References: Lecture sides, AWS website, tutorial notes, past sample reports[1]
Week 6	System Architecture Consultation (in Week 6 workshop time)	Project Planning System Architecture Design References: Lecture sides, AWS website, tutorial notes, past sample reports
Week 7-13	Project Implementation Consultation (in weekly	Project Implementation/Testing Project Report Writing

[1] The past sample reports just provide you references how a report might look like. Note that the assessment criteria have been changed.

	workshop/assessment consultation time)	References: AWS website, tutorial notes, past sample reports
Week 14	Project Implementation Project Report and Code Submission Due	Project Implementation Wrap-Up Project Report Wrap-Up Presentation and Demo Preparation Project Report and Code Submission References: AWS website, tutorial notes, past sample reports
Week 15	Project Presentation and Demo Due	Project Presentation and Demo

2. Assessment Criteria

This assessment will develop your ability to:

1. Design and develop a highly scalable application by applying the knowledge of distributed architecture and multiple cloud services
2. Develop a professional project report
3. Write a user' manual to introduce your product
4. Deliver a presentation to introduce your project and demo your product

3. Learning Outcomes

This assessment is relevant to the following Learning Outcomes:

1. Develop and deploy cloud application using popular cloud platforms.
2. Design and develop highly scalable cloud-based applications by creating and configuring virtual machines on the cloud and building private cloud.
3. Explain and identify the techniques of big data analysis in cloud.
4. Compare, contrast, and evaluate the key trade-offs between multiple approaches to cloud system design, and Identify appropriate design choices when solving real-world cloud computing problems.
5. Write comprehensive case studies analysing and contrasting different cloud computing solutions.
6. Make recommendations on cloud computing solutions for an enterprise.

4. Assessment details

Criteria/Project requirements:

1. You must use the AWS services under the categories of **Compute, Containers, Storage, Networking and Content Delivery, Database,** and **Analytics** on the AWS Management Console for your application.
2. Each service/API must be 1) **fully implemented and automated** in your application and 2) **assessed as an appropriate selection for your application** by the examiner, in order to receive full marks.
   Note: **Fully implemented and automated** services/APIs mean the services/APIs should be automatically invoked by your client interface operations/code/other services other than CLI/AWS Console.
3. The following fully implemented AWS services are worth **5 marks per type**: Elastic Beanstalk, Lambda, API Gateway, ECS, and EMR.
4. The other fully implemented AWS services under the categories of Compute, Containers, Storage, Networking and Content Delivery, Database, and Analytics on the AWS Management Console for your application are worth **2 marks per type**. Note: The mark calculation for implemented AWS services **cannot be iterated**, e.g., if you fully implement an Elastic Beanstalk/ECS/EMR/Lambda service that automatically contains an EC2 service and an S3 service, you can only receive 5 marks in total.

5. You are encouraged to use third-party APIs external to AWS cloud services. Each type of fully implemented and automated API is worth **1 mark per type**. For example, if you fully impellent and automate a Twitter API and a Facebook API, 2 marks will be rewarded.
6. You should have a well-designed and user-friendly **client-side interface** (e.g., a webpage/website or a mobile app). If you have any kind of data analysis you should interpret your result nicely using tabular and/or graphical format. You must deploy your application in AWS cloud.
7. Each group should submit the project with **a report** and demo their project to be assessed (see 6. Submission, Demonstration, and Report for details)
8. Students in a group must sign a contribution agreement form (see Appendix on p.8) to acknowledge each member's contribution portion in the project. The contribution agreement form must be signed by all group members, scanned, and attached with the report **otherwise your assignment cannot be marked**. If fewer contributions are identified by a student, then he/she will receive less marks than his/her groupmate.

Project Options

1. Option 1: Development of a cloud application using your own idea and strength (**Note:** You are **NOT** allowed to reuse your Assessment 2 application)
2. Option 2: Development of a cloud application using idea suggested by your tutor based on your interest and strength.

5. Referencing guidelines

What: All submitted contents must be your own. If you have used sources of information other than the contents directly under Canvas→Modules, you must give acknowledge the sources and give references using IEEE referencing style.

Where: Add a code comment near the work to be referenced and include the reference in the IEEE style.

How: To generate a valid IEEE style reference, please use the citethisforme tool if unfamiliar with this style. Add the detailed reference before any relevant code (within code comments).

6. Submission, Demonstration, and Report

You need to submit a report and all the materials related to your project. The deadline of submission of your Assessment 3 in Canvas is 11 June Friday 11:59 PM. If you submit after that it will be considered as late submission. **You will be penalised 10% of your total mark per working day for late submission. You will not get your mark if you do not submit your project materials and report. If you work in a group only one submission of a group member is fine.**

During submission you will need to provide the following content in a .zip file.

1. Your report in word document or pdf extension. You can make your own format or follow the sample reports that has been provided in Canvas.

   The report should contain the following materials:

   a. **Signed Contribution Agreement**: of all team members (Must be signed by all the members, scanned, and attached otherwise your assignment cannot be marked) -- **A temple can be found from Appendix on the last page**.
   b. **Links**: Live url of your project (if any), repository url (github/bitbucket/google drive/dropbox) of your source code (if any – but do not store your AWS credential information for security protection), public dataset links of your project (if any).

c. **Summary**: The objective/purpose of your project.
d. **Introduction**: Introduce your project such as:
   i. What are the motivations behind your idea?
   ii. What it does?
   iii. Why it is required?
   iv. How it can be used as real-life application?
   v. The advantages/positive/new things of your application.
e. **Related work**: Refer some related works similar to your application.
f. **System Architecture**
   i. One or more architectural diagram(s) that shows the function and communication between different cloud components used in your project
   Note: The diagram(s) must be able to clearly show 1) the whole process how each client interface operation invokes the other components of the system, 2) the detailed interactions (e.g. invoking) among all the components, and 3) the functions of all the components. Some good examples can be found from here and here.
   ii. A system description that explains the purpose of using each of those components.
   iii. Description of your dataset/data structure/APIs/sensors you used for your project (if any) [use figure if required]
g. **Developer Manual**: A step-by-step guideline to reproduce your project [use figure if required] and make it live. This is like our tutorial sheet.
h. **A small user manual**: A quick overview of how to use your application.
i. **References**: Important references/website links that you use to develop your application.

2. Put all the images you have used in your report in a folder name doc_images.
3. Put all the source code of your project in a folder named code. If source code is greater than 5 MB then provide a google_drive/dropbox/github share link in a text file (name it code.txt). to download your source code (Note: DO NOT put any credential information there).
4. Put runnable/deployable files (if any e.g. .war, .zip, .jar) in a folder named deploy
5. Put all the data/sql tables/sql script (if any) in a folder named data. If data files are larger than 5MB then provide a link to download your data in a text file (name it data.txt)

You must demonstrate your project online to an available tutor (**unnecessarily your tutor**) by making an appointment with the tutor in Week 15. The demo booking will be made available to students in Week 14. All demonstrations must be completed by Week 15. There will be **penalty** if you fail to complete and demonstrate your work by Week 15. **All team members must present** during demo time and explain individual contributions. The demo is around **30 minutes** (including project introduction, app demo and Q&A) for each team. During demonstration you will need to use the submitted report to introduce your projects. Keep everything ready and make your application live during your demo.

Note: Each team can only attend one demonstration for Assessment 3. **DON'T** overbook otherwise you will receive penalty. If you are not satisfied with your mark, you may attend the online remarking session organized by the course coordinator after Week 15 (remarking time and booking will be made available to students through announcements).

7. Academic integrity and plagiarism (standard warning)

Academic integrity is about honest presentation of your academic work. It means acknowledging the work of others while developing your own insights, knowledge and ideas. You should take extreme care that you have:

- Acknowledged words, data, diagrams, models, frameworks and/or ideas of others you have quoted (i.e. directly copied), summarised, paraphrased, discussed or mentioned in your assessment through the appropriate referencing methods,
- Provided a reference list of the publication details so your reader can locate the source if necessary. This includes material taken from Internet sites.

If you do not acknowledge the sources of your material, you may be accused of plagiarism because you have passed off the work and ideas of another person without appropriate referencing, as if they were your own.

RMIT University treats plagiarism as a very serious offence constituting misconduct. Plagiarism covers a variety of inappropriate behaviours, including:

- Failure to properly document a source
- Copyright material from the internet or databases
- Collusion between students

For further information on our policies and procedures, please refer to the University website.

8. Assessment declaration

When you submit work electronically, you agree to the assessment declaration.

9. Rubric/assessment criteria for marking

Criteria	Ratings			Pts
Project idea and project formulation with selection of appropriate technologies	**2 Pts** **Project idea excellently formulated with selection of appropriate technologies**	**1 Pts** **Project idea partially formulated with selection of most technologies being appropriate**	**0 Pts** **Project idea not well formulated (with major issues) with selection of most technologies being inappropriate**	2 pts
Skill development in learning new tools and technologies for project completion	**2 Pts** **Demonstration of excellent knowledge in learning new tools and technologies for project completion**	**1 Pts** **Demonstration of good knowledge (with minor issues) in learning new tools and technologies for project completion**	**0 Pts** **Demonstration of poor knowledge (with major issues) in learning new tools and technologies for project completion**	2 pts
Appropriate utilization and full implementation of cloud tools/technologies/services in your project	**30~0 Pts** **Appropriate utilization and full implementation of cloud services and/or APIs in your project according to Criteria 1-5.**			30 pts
Client Interface	**4~0 Pts** **High quality client interface with** ***Decent layout and appearance (1 Pts)** ***Friendly user interface (1 Pts)** ***Rich interactive functions (1 Pts)** ***Rich Visualizations (1 Pts)** **Criteria:** **100% Pts – A criterion is met with excellent quality** **50% Pts -- A criterion is met with medium quality** **0% Pts -- A criterion is not met**			4 pts

Criteria	Ratings	Pts
Project Report	**10~0 Pts** ***Summary (0.5 Pts)** ***Introduction (1 Pts)** ***Related work (1 Pts)** ***System architecture (2 Pts)** ***System descriptions (1 Pts)** ***Description of dataset/data structure/APIs/sensors (1 Pts)** ***Developer manual (1.5 Pts)** ***User Manual (1.5 Pts)** ***References (0.5 Pts)** **Criteria:** **100% Pts -- A part is well written with substantial details and rich visualizations (if required).** **67% Pts – A part is written with some details and visualizations (if required).** **33% Pts -- A part is poorly written.** **0% Pts -- A part is missing.**	10 pts
Presentation and communication skills	**2 Pts** **Excellently present the idea and actively respond to all the queries from examiner with detailed answers** **1 Pts** **Clearly present the idea and actively respond to most of the queries from examiner with answers** **0 Pts** **Cannot clearly present the idea and respond to most of the queries from examiner with answers**	2 pts
Total points: 50		

Appendix: Student Contribution Agreement

Project title here

Group name here

Student Name:	Student Name:
Student ID:	Student ID:
Contributions: 1. 2.	Contributions: 1. 2.
Contribution Percentage:	Contribution Percentage:
By signing below, I certify all information is true and correct to the best of my knowledge. Signature: Date:	*By signing below, I certify all information is true and correct to the best of my knowledge.* Signature: Date: