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ICT5205 Cloud Computing

Assignment 3

🏛	**Assessment Type:** Group assignment. Submit online via LMS→MIS5205→Assignments→Assignment Marks awarded for meeting requirements as closely as possible. Clarifications/updates may be made via discussions in the lecture and/or TuteLab sessions.
⬛	**Due date:** 11:59pm, 15/06/2025 Please check LMS→MIS5205→Assignments→Assignment 3 for the most up to date information. Since this is a significant assignment where you showcase your comprehension, a university-standard late penalty of 10% will be applied for each working day it's late, up to a maximum of 5 days, unless special consideration has been approved.
✔	**Weighting:** 35 marks

1. Overview

Assignment 2 accounts for 35% of the overall course assessment and should involve a project utilizing cloud platforms and technologies. To help you gauge the project's complexity and depth, some sample reports may have been provided by your lecturer/tutor. You are free to select any programming language, cloud platform, and services or APIs you wish to use.

Discuss your proposal with your lecturer/tutor. Finalise your proposal as soon as possible so you can start early.

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 platforms and services
2. Develop a professional project report
3. Write a user' manual to introduce your product

3. Learning Outcomes

This assessment is relevant to the following Learning Outcomes:

- Develop and deploy cloud application using popular cloud platforms,
- Design and develop highly scalable cloud-based applications by creating and configuring virtual machines on the cloud and building private cloud.
- Explain and identify the techniques of big data analysis in cloud.
- 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.
- Write comprehensive case studies analysing and contrasting different cloud computing solutions.
- Make recommendations on cloud computing solutions for an enterprise.

4. Assessment details

Criteria/Project requirement

1.You must have a distributed model for your application. You can use distributed system concept for your application. (e.g. separate component for processing and storage/ Multinode cluster/ multiple processing servers/ multiple cloud features / Integration of multiple REST APIs/ IoT/ Edge computing/ Fog Computing/Publish subscriber model/ Peer to Peer system/ Push notifications).

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2.The use of Google/AWS cloud services such as Hadoop MapReduce, BigQuery, SQS, Microservices, Endpoints, API Gateway, CloudWatch, Lambda, Machine Learning, real-time data analysis, etc. will make your project interesting. You may not learn all of the services but if you learn them by yourself, it will be highly appreciated as well as helpful for your projects.

3.You should take advantage of Google/AWS Cloud storage (e.g. S3, Google Cloud Storage) and Google/AWS Cloud Datastore (e.g. Google datastore, Amazon DynamoDB, MongoDB or Relational Database Services) in your project.

4.You should have a nice client side visualization (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. For web application you should to deploy your application either in Google cloud or AWS cloud.

5. Students in a group should sign a contribution agreement form 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 one student then he/she will receive less mark than his/her group-mate.

Project Options

Option 1

Development of a cloud application using your own idea and strength.

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 in LMS, you must give acknowledge the sources and give references using IEEE referencing style.

6. **Submission, Demonstration, Report and Presentation**

You need to submit a report, and all materials related to your project. The deadline of submission of your Assignment-3 in LMS is 15/06/2025 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 LMS.

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.
   b. **Links**: Live url of your project (if any), repository url (github/bitbucket/google drive) of your source code (if any), 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?

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      ii.   What it does?

      iii.   iii. Why it is required?

      iv.   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. **Software Design/Architecture**

      i. A high level architectural diagram that shows the communication between different cloud components used in your project and purpose of using those components. ii. Description of your dataset/data structure/APIs/sensors you used for your project (if any) [use figure if required]

   g. **Implementation** - 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. For known/general description (e.g. creating and MySQL RDS instance in AWS, deploying project in Elastic Beanstalk, deploying project in Google cloud) you can refer to any web link directly. You can also refer to tutorial sheet if you have similar steps in your description. 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.

   j. **Video (optional)**: A video demonstration of your application (provide a YouTube link in the report).

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.

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 too large then provide a link to download your data in a text file (name it data.txt)

6. A readme.txt with name and student number of team members, a short description of your project and the public link to access your project (if any).

You must demo your project to your tutor by making appointment with your lecturer/tutors in Week 6. All demonstration will be completed by week 7. There will be penalty if you fail to complete and demonstrate your work by week-7. All team members must present during demo time and explain individual contributions. The demo is around 20 minutes (including project introduction, app demo and Q&A) for each team. Keep everything ready and make your application live during your demo.

During demonstration you will need to use presentation slides to introduce your projects (no more than 10 pages). The presentation slides should include the presentable information of the following sections of your report:

   a. **Summary (1 page)**

   b. **Introduction (1 page)**

   c. **Related work (1 page)**

   d. **Software Design/Architecture (1 page)**

   e. **Implementation (2-6 pages)**

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:

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- 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.

For further information on our policies and procedures, please refer to the Apex Australia Higher Education Website:
https://apexhe.nsw.edu.au/wp-content/themes/apex-mwt/assets/images/Documents/HE-AP07%20Student%20Academic%20Misconduct%20Policy%20and%20Procedure.pdf