# **CSC3065 Cloud Computing**

## **Assessment: Student Engagement Monitoring (QUBengage) Microservice App Submission**

### General Instructions:

* First, students must include a “Cover Page” with “Student Number” and “Name”.
* Second, student must include acknowledgement for any use of generative AI in their reports and must include this academic integrity statement in the second page of their report – **“I certify that that the submission is my own work, all sources are correctly attributed, and the contribution of any AI technologies is fully acknowledged.”**
* In addition, students must include table of contents and list of figures with page numbers. The report must include references at the end, and the use of footnotes must be avoided.
* The report must be saved as <your student\_number>.pdf, and the report shouldn’t be more than 100 pages. Any report exceeding the 100-page maximum limit will be penalised.

Important Note: The “anything else” is related to Task H (that is the use of Generative AI Tools), and also, in case something didn’t fit into implementation or testing.

The structure of the report should be as follows:

#### **Task A: Functions**

Use the following structure for each of the functions you have implemented, if necessary, please feel free to include additional information such as code, screenshots, or anything else you want to maximise demonstrating how you meet/exceed marking criteria. Please note we will mark just the FOUR functions given here (i.e. it’s better to have four more complete services than submit six less, so, only four will marked!).

* Function One

Function (What Operation):

Repository URL:

Live Service URL:

Description of Implementation (language, methods, paradigm, etc):

Description of Testing:

Anything else to highlight for Function One:

* Function Two

Function (What Operation):

Repository URL:

Live Service URL:

Description of Implementation (language, methods, paradigm, etc):

Description of Testing:

Anything else to highlight for Function Two:

* Function Three

Function (What Operation):

Repository URL:

Live Service URL:

Description of Implementation (language, methods, paradigm, etc):

Description of Testing:

Anything else to highlight for Function Three:

* Function Four

Function (What Operation):

Repository URL:

Live Service URL:

Description of Implementation (language, methods, paradigm, etc):

Description of Testing:

Anything else to highlight for Function Four:

#### **Task B: Improvements**

Detail here what you improved, why, and how. A detailed analysis is important.

To demonstrate that these improvements are made and working include screenshots, code, or any descriptions of what you’ve done. Split each improvement into its own distinct section. Please note the video must show these working but will not be marked – this report is the marked element.

Anything else to highlight for Task B:

#### **Task C: Proxy**

Implementation Details (how you implemented, what it does, how it works, etc):

Testing Details (how you tested):

Brief Review of Success (did it work):

Anything else to highlight for Task C:

#### **Task D: Frontend Failure Handler**

Implementation Details (how you implemented, what it does, how it works, etc):

Testing Details (how you tested):

Brief Review of Success (did it work):

Anything else to highlight for Task D:

#### **Task E: Monitoring**

Detail here how your monitoring and metrics is implemented and works. Include screen shots as appropriate (note this should also be demonstrated in the video but must be fully covered here). Be sure to include relevant repository and/or live URL links to working examples. Cover all points you have implemented relevant to the marking criteria.

Anything else to highlight for Task E:

#### **Task F: Stateful Savings**

Include here your stateful savings implementation details, etc. Include screen shots as appropriate (note this should also be demonstrated in the video but must be fully covered here). Be sure to include relevant repository and/or live URL links to working examples. Cover all points you have implemented relevant to the marking criteria.

Anything else to highlight for Task F:

#### **Task G: Design**

Include here your full design details including diagrams, textual justifications, etc. Please note you are not required to include any of Task G in your video demo.

Anything else to highlight for Task G:

For all the “Anything else to highlight” sections in each of the tasks-Acknowledgement should be included.

*Some examples:*

1. Saying something like“Following initial design implementations, Chat GPT 4 was used to help enhance the design for the reverse proxy server, and associated testing. As with some other facets of the assignment, the build was a process of trial and error, and the initial enhancements suggested by the AI involved a different design to that submitted which also involved building proxy code into all the micro-service back-end functions. This was rejected as being too complex and instead a standalone proxy directory was created, integrating suggestions from the AI, that interacted with each service via the service\_config.json file” is acceptable but not considered very good, as it doesn’t provide detailed description and analysis. Therefore, you could answer the following types of (sample) questions for the “anything else to highlight sections” in order to make it more detailed and showing deeper analysis:

* How did the use of Chat GPT 4 influence the design enhancements for the reverse proxy server in the initial implementation? What were the specific suggestions made by Chat GPT 4?
* Describe the trial-and-error process mentioned during the build phase. Provide examples of challenges encountered and the iterative improvements made to the design. How did this process affect the final design of the proxy server?
* Compare the initially suggested design involving integrating proxy code into all micro-service backend functions with the eventual adopted design of having a standalone proxy directory. Highlight the advantages and disadvantages of each approach, and explain why the standalone proxy directory was chosen.
* Elaborate on how the proxy directory, integrated with suggestions from Chat GPT 4, interacted with each service via the service\_config.json file. Provide a step-by-step explanation of this interaction and how it facilitated the functioning of the reverse proxy server.

2. Saying *“*To aid in the development of this code, I used ChatGPT to write the comments for my code to make the screenshots used more descriptive. When writing the tests for all my functions, I asked ChatGPT to give me the test cases needed to complete the tests, I did this to speed up the process so I could focus my time on implementing these tests on the pipeline. When pushing the code through, if the pipeline returned any errors or the webpage itself had any issues, I used ChatGPT to breakdown the error messages provided to help me troubleshoot the issues” is not fine as it is too high level and doesn’t provide detailed analysis. Therefore, you could answer the following types of (sample) questions for the “anything else to highlight sections” in order to make it more detailed and showing deeper analysis:

* Could you elaborate on the role of ChatGPT in helping with test case generation for your functions with a few specific examples? Were there any considerations or precautions taken when incorporating AI-generated test cases into your testing strategy?
* How did this impact the overall quality and coverage of your tests?
* Can you share insights into the accuracy and relevance of the AI-generated test cases? Did you have to make any adjustments or validations to ensure the adequacy of the generated test cases?
* What enhancements and modifications did you implement in your project beyond the suggestions and guidance provided by ChatGPT? Could you share specific examples of how your creative input and expertise were integrated to improve the overall project?

3. Saying just a line like this “chatgpt provided me with ideas on codes of framework and how to implement certain functions” is not acceptable as this doesn’t give any information on what enhancement you have made on top of the ideas provided by AI, nor does it say what exact ideas was provided by ChatGPT. Therefore, you could answer the following types of (sample) questions for the “anything else to highlight sections” in order to make it more detailed and showing deeper analysis:

* Can you share some specific examples of the ideas and suggestions provided by ChatGPT for code frameworks or functions during your project? How did these suggestions contribute to the development process?
* How did the collaboration with ChatGPT impact the efficiency and effectiveness of code implementation for certain functions within your project? Were there any notable improvements or optimizations that resulted from this collaboration?
* In what ways did ChatGPT assist in the decision-making process regarding the selection of code frameworks and the design of specific functions? Were there any challenges or limitations encountered while integrating these suggestions into your project?
* How did these suggestions align with your project's goals and requirements, and what enhancements or modifications did you make as a result of incorporating these suggestions?

***Please Note: These are just sample questions for your reference, and you can decide the type of questions which will cover similar details but tailored to your implementation!***