DBS Assessment

Assignment Details

Item	Description[1]
Module Title:	Advanced Programming Techniques
Module Code:	B9CY108
Module Lecturer (s):	Swati Dongre
Programme/Cohort:	MSc Cyber Security
Method of Assessment:	Continuous Assessment
Percentage (%) Weighting:	70%
MIMLOs being assessed:	1, 3, 4, 5, 6
Assessment Number:	2
Individual/Group:	Group
Issue Date:	Nov. 6, 2025
Submission Date:	Dec. 15, 2025
Feedback Date:	Dec. 18, 2025
Feedback Strategy[2]:	Moodle

Requirements:

- You are required to implement a solution in Python.
- Prepare a report and submit .pdf file. Please make sure to attach the Assignment Cover Sheet (Please refer to page.no. 7)
- Create an 8–10 minutes video explaining your application's workflow and code and discuss your design decisions along with the reasoning behind them. Provide link for the video.
- Kindly keep your folder organized. Name the main folder by your student-id. Have all project sub-folders in this main folder.
- Maintain all project progress on GitHub, with multiple daily updates expected. Include the repository link and video link in the report
- Submission:
    - Zip the folder and upload using the CA_TWO_(70%) link
    - Submit the project report as a pdf file separately. Hence students will submit two files - .zip and .pdf
    - This is a group assignment. There will be max.2 students in each group. It is mandatory for each group member to submit their work individually on the Moodle.
    - Moodle is the only mode of submission.
    - IMPORTANT NOTE: **Only One submission** is allowed so please ensure that you have included all required files in the zip before uploading to Moodle.

Assignment Task

Provide solution to develop a system of your choice in a particular domain.

Research, plan and develop an information system by using the following skills: (70%)

- Research and select a problem domain.
- Identify the requirements of an Information System to be developed.
- Select an architectural pattern to implement the backend, front-end and business logic components of the system. For example, layered pattern, client-server architecture, microservice architecture etc.
- Choose appropriate data structures and develop suitable algorithms to develop the system.
- Use appropriate APIs where required.
- Debug and test the system by using unit testing and integration testing approach.

A report including the detail of the following: (20%)
Word count: 800-1000 words.

- Selection of a problem domain
- Elicitation and Specification of Requirements of the System. Software Development Life Cycle to implement solution. Justify your decision.
- Analysis and design of the application, supported by UML diagrams, with explanations and rationale for the design decisions.
- Evaluation and justification of the architectural pattern, along with a discussion of the technologies selected for front-end and back-end development.
- Discussion of Data Structures and algorithms used, together with their rationales for inclusion
- Review of APIs utilized, with justification for their selection.
- Consideration of security measures and strategies incorporated into the system.
- Overview of testing strategies, including unit testing and integration testing, along with an explanation of their implementation and purpose.
- Provide screenshots of system in execution, showcasing its features.
- Ensure that all external help and resources are attributed in detail. General references to w3school, friends are not acceptable. Any AI attribution must include full chats (prompt response).
- Include the repository link in the report

Project Demonstration (10 %)

Minimum Intended Module Learning Outcomes:

1. Critical analysis of a problem domain and expertly identifying the requirements of an Information System.
2. Utilization of a variety of data formats including system files, databases, HTML, XML, JSON, etc. to acquire and store data according to the requirements.
3. Applying a suitable architectural pattern to develop components of an information system.
4. Effective integration of packages, APIs and external sources to develop effective systems.
5. Critical evaluation of the developed system using unit testing.

Group Management[3]

Refer to the College's Group Work Policy, QAH B.5.2.2.2.

Group Sizes:	Max. 2 students per group
Group allocation:	Students choose
Grading approach:	Individual Grade for each group member
Alternative assessment:	Learners with PMCs that require an alternative assessment must log a ticket for consideration.

Resources

Software or tools required/ useful: -
Templates, files, data tables provided by the lecturer: -

Generative Artificial Intelligence Assessment Scale[4]

Can generative AI be utilised in this assignment? 02

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AI-ASSISTED IDEA GENERATION AND STRUCTURING
AI can be used in the assessment for brainstorming, creating structures, and generating ideas for improving work. **No AI content is**

allowed in the final submission.

Grading Criteria

		Evaluative Criteria/Performance Level Descriptors (what does performance at this level look like?)				
Scale[5]	**Grade Band**	Programming Project	Report	Presentation / Demonstration	-	-
Exceptional	**90-100%**	Excellent solution to problem, very well written code and interface with several functions	Excellent solution to problem very well written	Excellent demonstration		
Outstanding	**80-89%**	Excellent solution to problem, well written code and interface with several functions	Excellent solution to problem very well written	Excellent demonstration		
Excellent	**70-79%**	Excellent solution to problem, well written code and interface with several functions	Excellent solution to problem very well written	Excellent demonstration		
Very Good	**60-69%**	Well- structured code with good interface design and functions	Well- structured report with good specifications and models	Good demonstration providing explanation of the artefact		
Good	**50-59%**	Sufficient solves problem but lack of attention to best programming practices	Sufficient solves problem but lack of attention to technical report writing skills	Demonstration showing sufficient evidence of original work		
Sufficient	**40-49%**	Some but barely sufficient and poorly written code with which partially solve the problem	Some but insufficient and poorly written report with poorly developed models and code which	Demonstration showing some evidence of original work		

			doesn't solve the problem			
Somewhat/ Unfulfilled	**30-39%**	Insufficient code or incomplete project	Insufficient or incomplete report with incomplete explanation etc.	Weak demonstration showing no evidence of original work		
Unfulfilled	**0-29%**	Insufficient code or incomplete project	Insufficient or incomplete report with incomplete explanation etc.	Weak demonstration showing no evidence of original work		
MIMLO Alignment (see Module Guide for Minimum Intended Learning Outcomes for Module)						
MIMLO to which criterion is aligned:		Offer critical analysis of a problem domain and expertly identify the requirements of an Information System.	Utilise a variety of data formats including system files, databases, HTML, XML, JSON, etc. to acquire and store data according to the requirements.	Apply a suitable architectural pattern to develop components of an information system.	Comprehend packages and API specifications and effectively integrate external sources to develop effective systems.	Critically evaluate the developed system using modern testing and debugging techniques.

General Requirements for Students:

1. All assignments must be submitted no later than the stated deadline (date and time).
2. Assignments submitted after the latest deadline specified (including any approved extension deadline) are considered late and penalised according to the Quality Assurance Handbook (QAH) **Part B Section 5.2.2.6** as follows:
    a. A penalty of 2 marks will be applied per day or part thereof (including weekends and public holidays) for an ongoing failure to submit beyond the submission deadline.
    b. An examiner has the right to refuse to mark the assignment if the submission instructions have not been observed.
    c. Where a late assessment is submitted within 14 days of the deadline, and is of a passing standard, the late penalty is capped (such that the minimum grade that can be awarded is 40% for the late submission).
    d. Where a late assessment is submitted more than 14 days after the deadline, it will receive 0%. The lecturer may, at their discretion, review the submission for feedback.
    e. Where the assessment is undertaken in a group, the piece of work should be submitted in its complete entirety, and any penalty for late submission incurred applies to all group members.
3. Extensions to assignment submission deadlines will not be granted, other than in exceptional circumstances. To apply for an extension please go to https://students.dbs.ie/dashboard/SCCM and open a ticket.

4. All relevant provisions of the Assessment Regulations must be complied with (see QAH B.5).
    a. Students are required to refer to the assessment regulations in their Programme Handbook, and on the Student Website.
    b. Dublin Business School penalises students who engage in academic impropriety (i.e. plagiarism, collusion and/or copying, ghost writing/ essay mills, improper use of Generative Artificial Intelligence software).
        i. Refer to the College's Generative AI Guidelines HERE for further information.
    c. Guides on referencing are available on the Library website: https://libguides.dbs.ie/referencing
    d. Text-matching analysis software is integrated in Moodle to generate a report regarding the degree of text-matching in a submission.

5. Students are required to retain a copy of each assignment submitted, until the issuing of a transcript indicating the mark awarded and the closure of the Appeal period (2 weeks following the release of final results).
    a. Results can only be appealed following the release of final results, and the Appeal form must be submitted to the Exams Office within the Appeal period.
    b. An appeal must be based on valid grounds (see the Appeals Policy QAH B.3.5), dissatisfaction with a grade is not sufficient grounds for an appeal.
    c. Assignments must be appropriately packaged and presented.
    d. All assignments should be submitted to your subject/course page on Moodle by the deadline date.
    e. Where a submission involves digital media (i.e. formats other than Word, PowerPoint or PDF), it is the submitting students' responsibility to ensure the media is appropriately labelled, fully working and they must retain a copy[6].
    f. Components of an assessment which are not included in the final submission cannot normally be subsequently accepted for grading. It is the student's responsibility to ensure their file is uploaded correctly.
    g. Include an electronic **cover sheet** with the following details to the front of the assignment (see below)

6. Assignments that *breach* the word count requirements will be penalised. *There is a 10% discretion, either way, applicable in terms of word count.*

7. When you submit your assignment you will be asked to click on a button which will declare the following:

By ticking this box I am confirming that this assignment/exam is all my own work. Any sources used have been referenced. *I have read the College rules regarding plagiarism in the QAH Part B Section 3 and understand that penalties will be applied accordingly if work is found not to be my own. All work uploaded is submitted via Ouriginal, whereby a text-matching report will show any similarities with other texts.*

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Assignment Cover Sheet

Please fill out and insert as the first page of any essay-style Assignment.

Student Name(s) and Number(s) as per student card (s):

Programme:

Lecturer Name:

Module/Subject Title:

Assignment Title:

No of Words:

By submitting this assignment, I am/ we are confirming that:

- **This assignment is all my/our own work;**
- **Any sources used have been referenced;**
- **I/we have followed the Generative AI instructions/ scale set out in the Assignment Brief;**
- **I/we have read the College rules regarding academic integrity in the QAH Part B Section 3, and the Generative AI Guidelines, and understand that penalties will be applied accordingly if work is found not to be my/our own.**
- **I/we understand that all work uploaded is submitted via Ouriginal, whereby a text-matching report will show any similarities with other texts.**

Note: Technical support is available to students between **0830- 2000 hrs (Mon-Fri), 0930-1630 (Sat) only**. There is no technical support after 2000 hrs. It is your responsibility to ensure that you allow time to troubleshoot any technical difficulties by uploading early on the due date.