Logo: Cardiff Metropolitain University

School of Technologies

### Assessment

### Brief

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| Module Code | Module Title |
| CSE4005 | Database Design and Development |
| Academic Year | Semester |
| 2022/2024 | Semester 02 |
| Module Leader email | |
| ErangiP@icbtcampus.edu.lk | |

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Assessment Detailsssessment Details

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| Assessment title | Abr. | Weighting |
| Database Management System for a Social Networking Site | WRIT1 | 100% |
| Pass marks are 40% for undergraduate work and 50% for postgraduate work unless stated otherwise. | | |

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| Task/assessment brief: | |
| Infor Pvt Ltd, one of the leading IT companies in Sri Lanka, is planning to build a new social media networking site called “Social Buzz”.  The platform will function similarly to typical social networking sites, allowing users to sign up, share photos, videos, posts, manage friends and sign out.  Both the user and friends have their own details like id, name, phone no, email, user name, password, address etc. When a user posts a new post on the feed it needs to be recorded the post id, posted user id, post description, post visibility etc. User can post their personal digital photos and videos as well. It needs to record photo/video details like unique id, name, size, type and description. When a user shares content, it is necessary to record the shared id, id of the original post, name, type, and description of the shared content. Friends can view, like and comment on the posts and shares made by the respective user on their feed.  **You can add any functionality which will enhance the system and make the proposed solution more comprehensive..**  **Tasks**  Design the database with the constraint that the available technology is relational.   1. Explain what data model is, critically compare different data models and explain why older data models are being replaced by new data models. (10 Marks) (LO1) 2. Draw an entity relationship diagram for given scenario with proper standards. Identify important keys and represent different types of attributes and relationships. (20 Marks) (LO2) 3. Draw Relational Schemas. Effectively map conceptual data models with relational database schema according to the mapping algorithm. All the steps should be clearly mentioned. Normalize Schema up to 3NF. (Clearly show the steps) (15 Marks) (LO2) 4. Create the database using SQL server.   NOTE: Make sure to enter at least 15 records for each table. (25 Marks) (LO3)   1. Write SQL queries for below requirements.   Practical Implementation and Demonstration. (20 Marks) (LO3)   * List of details of all users. * List of friends’ names of a specific user. * List of all users who have shared a specific post. * List of Likers for a particular post. * Total number of posts made by a specific user.  1. Provide the test plan, test strategy and proper test cases. (10 Marks) (LO4)   **Guidelines for the report format**  Paper - A4  Margins - 1.5” left, 1” right, 1” top and 1” bottom  Page numbers - bottom, right  Line spacing - 1.5  Font face - Times New Roman  Headings - 14pt, Bold  Normal - 12pt  Referencing and in-text citation should be done strictly using **Harvard Referencing System.** | |
| Word count (or equivalent): | 3000 |
| This a reflection of the effort required for the assessment. Word counts will normally include any text, tables, calculations, figures, subtitles and citations. Reference lists and contents of appendices are excluded from the word count. Contents of appendices are not usually considered when determining your final assessment grade. | |

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| Academic or technical terms explained: |
| **SQL**: Structured Query Language  **Data model**: Conceptual representation that describes the structure, relationships, and constraints of the data stored in the database  **Entity relationship diagram**: Visual representation that illustrates the relationships and structure of data entities within the database system  **Relational schema**: Logical blueprint that defines the structure and organization of data in the relational database, including tables, attributes, and relationships  **Normalization**: The process of organizing data in the database to reduce redundancy and dependency, aiming to improve data integrity and efficiency in querying and updating operations.  **SQL queries**: Commands written in the Structured Query Language that retrieve, manipulate, or manage data stored in the database according to specified criteria and conditions  **Test plan**: Comprehensive document outlining the scope, objectives, resources, and schedule of testing activities  **Test strategy**: An overarching approach or blueprint that defines how testing will be conducted throughout the lifecycle  **Test case**: A specific set of inputs, execution conditions, and expected outcomes designed to verify the functionality, performance, or behavior of the database or component |

# Submission DetailsSubmission Details

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| Submission Deadline: | This will be provided on the Moodle submission point. | Estimated Feedback  Return Date | This will normally be 20 working days after initial submission. |
| Submission  Time: | By 2.00pm on the deadline day. |  | |
| Moodle/Turnitin: | **Any assessments submitted after the deadline will not be marked and will be recorded as a non-attempt unless you have had an extension request agreed or have approved mitigating circumstances. See the School Moodle pages for more information on extensions and mitigating circumstances.** | | |
| File Format: | The assessment must be submitted as a pdf document (save the document as a pdf in your software) and submit through the Turnitin submission point in Moodle.  **Your assessment should be titled with your:**  **student ID number, module code and assessment ID,**  **e.g. st12345678 BHL5007 WRIT1** | | |
| Feedback | Feedback for the assessment will be provided electronically via Moodle. Feedback will be provided with comments on your strengths and the areas which you can improve. View the [guidance](https://learn.cardiffmet.ac.uk/mod/glossary/showentry.php?courseid=8107&eid=9581&displayformat=dictionary) on how to access your feedback.  All marks are provisional and are subject to [quality assurance processes](https://outlookuwicac.sharepoint.com/:b:/s/QED/Ec3kYQQeEHdKrCbo_tJnr2kBomIiiLINmPebUgvTUljq9Q?e=a0G2z5) and confirmation at the programme Examination Board. | | |

# Assessment Criteriasessment Criteria

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| Learning outcomes assessed |
| * LO1 Explain the database concepts and components. * LO2 Develop a logical database design. * LO3 Construct a physical database for a given requirement. * LO4 Test and Manage databases. |
| Other skills/attributes developed  This includes elements of the Cardiff Met EDGE (Ethical, Digital, Global and Entrepreneurial skills) and other attributes developed in students through the completion of the module and assessment. These will also be highlighted in the module guidance, which should be read by all students completing the module. Assessments are not just a way of auditing student knowledge. They are a process which provides additional learning and development through the preparation for and completion of the assessment. |
| **Ethical Skills**:  **Data Privacy**: Understanding and implementing measures to ensure data privacy and security, including handling sensitive information responsibly and complying with relevant regulations.  **Ethical Decision-Making**: Considering ethical implications when designing databases, such as avoiding bias in data representation and ensuring fairness in data processing.  **Professional Conduct**: Adhering to professional standards and best practices in database design, development, and management, including honesty, integrity, and transparency in handling data and projects.  **Digital Skills**:  **SQL Proficiency**: Mastering SQL queries, database manipulation, and optimization techniques to efficiently work with digital data sets.  **Database Management Tools**: Familiarity with database management systems (DBMS) and related tools for designing, developing, and administering databases.  **Coding and Scripting**: Writing code and scripts to automate database tasks, create stored procedures, triggers, and other database objects.  **Global Skills**:  **Cross-Cultural Communication**: Collaborating with diverse individuals from different cultural backgrounds to understand global perspectives and requirements.  **Data Localization**: Designing databases with considerations for global data storage, access, and localization requirements.  **Entrepreneurial Skills**:  **Innovative Thinking**: Developing creative solutions and approaches to database design challenges, such as optimizing performance, scalability, and cost-effectiveness.  **Project Management**: Planning, organizing, and executing database projects effectively, including resource management, budgeting, and timelines.  **Business Acumen**: Understanding how databases support business goals and strategies, including identifying opportunities for data-driven decision-making and innovation.  **Risk Management**: Assessing and mitigating risks related to database design, security, and compliance to ensure business continuity and resilience. |

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| Marking/Assessment Criteria |
| |  |  | | --- | --- | | **This submission will be assessed as follows** | **Depth of the task** | | TASK 1 | Compare Hierarchical, Network and Relational data model and the importance of adapting a new data model. | | TASK 2 | ERD with entities, attributes and cardinalities with proper standard symbols. (Proper theories and techniques need to apply in ERD)  Use Chen & Martin notations for ERD. | | TASK 3 | Relational Schema for ERD. State the primary key,  Foreign key concept correctly.  (Proper theories and techniques need to apply in Relational schema)  Normalize Schema up to 3rd Normal Form. | | TASK 4 | Create Database using SQL server. | | TASK 5 | Produce SQL queries for manipulation functions. | | TASK 6 | Correct Test plan and Test Cases with all test documents. |   **Task 1 – Contains 10 marks**   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Marks** | **Poor**  **0-2** | **Pass**  **3-5** | **Good**  **6-7** | **Excellent**  **8-10** | | **Criteria** | * Demonstrates a fundamental misunderstanding of data models. * Fails to compare data models. * Fails to provide proper reasons for the replacement. | * Demonstrates a basic understanding of data models but lacks depth. * Fails to provide enough/proper comparing factors. * Fails to provide enough/proper reasons to replace the older data models. | * Demonstrates a solid understanding of data models. * Provides proper comparing factors. * Provides proper reasons to replace the older data models. | * Demonstrates a comprehensive understanding of data models. * Critically compares the data models. * Well explains why older data models are being replaced by new data models. |   **Task 2 – Contains 20 marks**   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Marks** | **Poor**  **0-5** | **Pass**  **6-10** | **Good**  **11-15** | **Excellent**  **16-20** | | **Criteria** | * The diagram is missing or severely incomplete. * Key entities, attributes, or relationships are not identified. * Incorrect representation of cardinality or participation constraints. * No clear indication of primary keys or foreign keys. * Not used proper /standard symbols. | * The diagram is basic but lacks detail or clarity. * Key entities and relationships are identified, but some are missing or inaccurately represented. * Attributes are listed but may lack specificity or organization. * Primary keys are identified but may not be consistently applied. * Used proper /standard symbols with minor mistakes. | * The diagram is well-structured and mostly accurate. * Key entities, attributes, and relationships are clearly identified and appropriately represented. * Attributes are specified with appropriate data types and descriptions. * Primary keys are correctly identified and consistently applied. * Correct use of ERD notations with minor mistakes. | * The diagram is comprehensive, clear, and highly accurate. * All key entities, attributes, relationships, and constraints are identified and correctly represented. * Primary keys are accurately identified and consistently applied throughout the diagram. * Attributes are well-defined with appropriate data types, lengths, and constraints. * The diagram backed by relevant assumptions. * Use Chen & Martin notations for ERD. |   **Task 3 – Contains 15 marks**   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Marks** | **Poor**  **0-4** | **Pass**  **5-8** | **Good**  **9-12** | **Excellent**  **13-15** | | **Criteria** | * Fails to map the ER diagram to a relational schema. * Shows a lack of understanding of mapping algorithms or normalization concepts. * Schema lacks normalization or is not normalized up to 3NF. | * Maps the ER diagram to a relational schema but lacks clarity or completeness. * Demonstrates a limited understanding of mapping algorithms and normalization principles. * Schema includes some tables and attributes but may have errors or omissions. * Schema includes some normalization but may have errors or omissions, not fully reaching 3NF. | * Maps the ER diagram to a well-structured and clear relational schema. * Demonstrates a good understanding of mapping algorithms and normalization principles. * Schema is normalized up to 3NF, with most relationships, attributes, primary keys, and foreign keys. | * Maps the ER diagram to an exceptional relational schema with high clarity, completeness, and accuracy. * Demonstrates a thorough understanding of mapping algorithms and normalization principles. * Schema is fully normalized up to 3NF, with all relationships and attributes accurately represented and optimized. * Additional insights or improvements may be included. |   **Task 4 – Contains 25 marks**   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Marks** | **Poor**  **0-7** | **Pass**  **8-13** | **Good**  **14-19** | **Excellent**  **20-25** | | **Criteria** | * Provides a poor database design with mistakes. * Not work with enough database objects. * Does not provide any SQL script or attempts that are significantly incorrect. * Does not add records to any of the tables or adds very few records | * Provide a basic database design with minor mistakes, including enough database objects. * Provides a SQL script that creates the database and tables but may have minor syntax issues or missing elements. * Adds records to each table, but the number of records added may be slightly below the required 15 for each table. | * Creates the database with proper structure and without errors. * Provides a well-structured SQL script that creates the database, tables, and adds at least 15 records to each table. * Ensures data integrity and appropriate data types for the records added. | * Creates the database flawlessly with proper structure, data integrity and being proposed to facilitate requirements. * Provides a highly organized and optimized SQL script that efficiently creates the database, tables, and adds 15 or more records to each table. * Demonstrates a deep understanding of SQL database creation and data insertion processes, possibly including additional optimizations or advanced features. |   **Task 5 – Contains 20 marks**   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Marks** | **Poor**  **0-5** | **Pass**  **6-10** | **Good**  **11-15** | **Excellent**  **16-20** | | **Criteria** | * Fails to write any SQL queries or provides queries that are completely incorrect. * Shows a lack of understanding of SQL syntax and query structure. * Queries are not related to the specified task or are severely flawed. | * Writes SQL queries but with significant errors, such as syntax issues or incorrect logic. * Demonstrates a basic understanding of SQL syntax but lacks clarity or completeness. * Queries may partially achieve the specified task but have noticeable flaws. | * Writes SQL queries accurately and effectively to achieve the specified task. * Demonstrates a good understanding of SQL syntax, query structure, and logical operations. * Queries are well-structured, clear, and provide the expected results. | * Writes SQL queries flawlessly with high accuracy, efficiency, and optimization. * Demonstrates a deep understanding of SQL concepts, including joins, subqueries, functions, and optimization techniques. * Queries are highly efficient, well-commented, and may include advanced features or optimizations that go beyond the basic requirements of the task. |   **Task 6 – Contains 10 marks**   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Marks** | **Poor**  **0-2** | **Pass**  **3-4** | **Good**  **5-7** | **Excellent**  **8-10** | | **Criteria** | * Fails to provide a test plan, test strategy, or test cases. * Shows a lack of understanding of testing concepts or database testing requirements. * Does not address the necessary components of a test plan, strategy, or test cases. | * Provides a basic test plan, strategy, or test cases but with significant omissions or errors. * Demonstrates a limited understanding of testing concepts or lacks depth in addressing database testing requirements. * Includes some components of a test plan, strategy, or test cases, but they may lack detail or effectiveness. | * Creates a well-structured and comprehensive test plan, strategy, or test cases. * Demonstrates a good understanding of testing concepts and effectively addresses database testing requirements. * Includes all essential components of a test plan, strategy, or test cases, with appropriate detail and coverage. | * Develops an exceptional test plan, strategy, or test cases with high detail, accuracy, and effectiveness. * Demonstrates a deep understanding of testing concepts, database testing principles, and best practices. * Includes advanced testing techniques, risk assessment, and comprehensive coverage of test scenarios, ensuring thorough testing of the database. |   **This submission will be assessed as follows.**   |  |  |  | | --- | --- | --- | | **Task** | **Total marks allocated** | **Marks obtained by the student for the answer provided** | | TASK 1 | 10 |  | | TASK 2 | 20 |  | | TASK 3 | 15 |  | | TASK 4 | 25 |  | | TASK 5 | 20 |  | | TASK 6 | 10 |  | | TOTAL | 100 |  |   **Final Grading Criteria**   |  |  | | --- | --- | | **Marks** | **Final Grade** | | >=70 | Dictinction | | 69-55 | Merit | | 54-40 | Pass | | <40 | Fail | |

# Further Information urther Information

## Who can answer questions about my assessment?

Questions about the assessment should be directed to the staff member who has set the task/assessment brief. This will usually be the Module Leader. They will be happy to answer any queries you have.

Staff members can often provide feedback on an assignment plan but cannot review any drafts of your work prior to submission. The only exception to this rule is for Dissertation Supervisors to provide feedback on a draft of your dissertation.

## Referencing and independent learning

Please ensure you reference a range of credible sources, with due attention to the academic literature in the area. The time spent on research and reading from good quality sources will be reflected in the quality of your submitted work.

Remember that what you get out of university depends on what you put in. Your teaching sessions typically represent between 10% and 30% of the time you are expected to study for your degree. A 20-credit module represents 200 hours of study time. The rest of your time should be taken up by self-directed study.

Unless stated otherwise you must use the **HARVARD** referencing system. Further guidance on referencing can be found in the Study Smart area on Moodle and at [www.citethemrightonline.com](http://www.citethemrightonline.com) (use your university login details to access the site). Correct referencing is an easy way to improve your marks and essential in achieving higher grades on most assessments.

## Technical submission problems

It is strongly advised that you submit your work at least 24 hours before the deadline to allow time to resolve any last minute problems you might have. If you are having issues with IT or Turnitin you should contact the IT Helpdesk on (+44) 2920 417000. You may require evidence of the Helpdesk call if you are trying to demonstrate that a fault with Moodle or Turnitin was the cause of a late submission.

## Extensions and mitigating circumstances

Short extensions on assessment deadlines can be requested in specific circumstances. If you are encountering particular hardship which has been affecting your studies, then you may be able to apply for mitigating circumstances. This can give the teachers on your programme more scope to adapt the assessment requirements to support your needs. Extensions and mitigating circumstances policies and procedures are regularly updated. You should refer to your degree programme or school Moodle pages for information on extensions and mitigating circumstances.

## Unfair academic practice

Cardiff Met takes issues of unfair practice **extremely seriously.** The University has procedures and penalties for dealing with unfair academic practice. These are explained in full in the University's Unfair Practice regulations and procedures under [Volume 1, Section 8](https://www.cardiffmet.ac.uk/registry/academichandbook/Pages/Ah1_08.aspx) of the Academic Handbook. The Module Leader reserves the right to interview students regarding any aspect of their work submitted for assessment.

Types of Unfair Practice, include:

**Plagiarism,** which can be defined as using without acknowledgement another person’s words or ideas and submitting them for assessment as though it were one’s own work, for instance by copying, translating from one language to another or unacknowledged paraphrasing. Further examples include:

* Use of any quotation(s) from the published or unpublished work of other persons, whether published in textbooks, articles, the Web, or in any other format, where quotations have not been clearly identified as such by being placed in quotation marks and acknowledged.
* Use of another person’s words or ideas that have been slightly changed or paraphrased to make it look different from the original.
* Summarising another person’s ideas, judgments, diagrams, figures, or computer programmes without reference to that person in the text and the source in a bibliography/reference list.
* Use of assessment writing services, essay banks and/or any other similar agencies (NB. Students are commonly being blackmailed after using essay mills).
* Use of unacknowledged material downloaded from the Internet.
* Re-use of one’s own material except as authorised by your degree programme.

**Collusion**, which can be defined as when work that that has been undertaken with others is submitted and passed off as solely the work of one person. Modules will clearly identify where joint preparation and joint submission are permitted, in all other cases they are not.

**Fabrication of data**, making false claims to have carried out experiments, observations, interviews or other forms of data collection and analysis, or acting dishonestly in any other way.

## How is my work graded?

Assessment grading is subject to thorough quality control processes. You can view a summary of these processes on the [Assessment Explained Infographic](https://outlookuwicac.sharepoint.com/sites/QED/Shared%20Documents/Forms/Front%20Page.aspx?id=%2Fsites%2FQED%2FShared%20Documents%2Fstudent%20guide%20%2D%20Is%20my%20mark%20fair%2Epdf&parent=%2Fsites%2FQED%2FShared%20Documents&p=true&originalPath=aHR0cHM6Ly9vdXRsb29rdXdpY2FjLnNoYXJlcG9pbnQuY29tLzpiOi9zL1FFRC9FYzNrWVFRZUVIZEtyQ2JvX3RKbnIya0JvbUlpaUxJTm1QZWJVZ3ZUVWxqcTlRP3J0aW1lPXFLb08zblB3MkVn).

Grading of work at each level of Cardiff Met degree courses is benchmarked against a set of general requirements set out in [Volume 1, Section 4.3](https://www.cardiffmet.ac.uk/registry/academichandbook/Documents/AH1_04_03.pdf) of our Academic Handbook. A simplified version of these Grade Band Descriptors (GBDs) with short videos explaining some of the academic terminology used can be accessed via the [Facilitation of Learning](https://outlookuwicac.sharepoint.com/sites/QED/SitePages/Facilitation-of-Learning.aspx) resource page.

We would strongly recommend looking at the [Study Smart](https://learn.cardiffmet.ac.uk/course/view.php?id=1416) area of Moodle to find out more about assessments and key academic skills which can have a significant impact on your grades. Always check your work thoroughly before submission.

