**CMU B.Sc. (HONS) SE /B.Sc. (Hons) BIS- ASSIGNMENT FEEDBACK SHEET –ICBT CAMPUS**

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| **Student Details ( Student should fill the content)** | | | | | | | | | | |
| Name | | |  | | | | | | | |
| Student ID | | |  | | | | | | | |
| **Scheduled unit details** | | | | | | | | | | |
| Unit code | | | CIS6003 | | | | | | | |
| Unit title | | | Advanced Programming | | | | | | | |
| Unit enrolment details | | | Year | | 3 | | | | | |
| Study period | |  | | | | | |
| Lecturer | | |  | | | | | | | |
| Mode of delivery | | | Full Time | | | | | | | |
| **Assignment Details** | | | | | | | | | | |
| Nature of the Assessment | | | **Course work** | | | | | | | |
| Topic of the Case Study | | | **Online loan offering system to buy items and it in installments** | | | | | | | |
| Learning Outcomes covered | | | **1,2,3** | | | | | | | |
| Word count | | | 4000 | | | | | | | |
| Due date / Time | | | March 10, 2023 | | | | | | | |
| Extension granted? | | | Yes | No | Extension Date | | | |  | |
| Is this a resubmission? | | | Yes | No | Resubmission Date | | | |  | |
| **Declaration** | | | | | | | | | | |
| I certify that the attached material is my original work. No other person’s work or ideas have been used without acknowledgement. Except where I have clearly stated that I have used some of this material elsewhere, I have not presented it for examination / assessment in any other course or unit at this or any other institution | | | | | | | | | | |
| Name/Signature | | |  | | | | Date | |  | |
| **Submission** | | | | | | | | | | |
| Return to: | | |  | | | | | | | |
| **Result** | | | | | | | | | | |
| Marks by 1st Assessor |  | Signature of the 1st Assessor | | | | | |  | | **Agreed Mark** |
| Marks by2nd Assessor |  | Signature of the 2nd Assessor | | | | | |  | |
| **Comments on the Agreed Mark.** | | | | | | | | | | |
| **For Office use only (hard copy assignments)** | | | | | | | | | | |
| Receipt date |  | | Received by | | |  | | | | |

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| --- | --- | --- | --- | --- | --- | --- |
| **STUDENT NAME:** | | | | | | **STUDENT NUMBER:** |
| **Module Number & Title**: | | | | | | **Semester:** |
| **Assignment Type & Title:** | | | | | | |
| **For student use: *Critical feedback on the individual progression towards achieving the assignment outcomes*** | | | | | | |
|  | | | | | | |
| **For the Assessors’ feedback**  **Indicate the Task number strength and Weaknesses and the marks for each task** | | | | | | |
| **Task No/Question No** | **Strengths** | | | | | |
| **Task No / Question No** | **Weaknesses** | | | | | |
| **Areas for future improvement** | | | | | | |
|  | | | | | | |
| **Marks** | | | | | | |
| **Task /Question No** | | **Allocated Marks** | **Awarded Marks** | | **Remarks** | |
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|  | |  |  | |  | |
| **Total Marks** | |  |  | |  | |
| **Name and the Signature of the Assessor** | | | |  | | |
| **Date** | | | |  | | |

Upon successful completion of this module, you will have demonstrated:

* Demonstrate fluency in contemporary programming languages, development tools and environments.
* Evaluate and demonstrate the theory and concepts of contemporary/industry standard programming and design in the software development life cycle.
* Demonstrate awareness of industry standards of professional and ethical software development, software carpentry and codemanship.

Coursework –**Online loan offering system to buy items and it in installments**

“Bumble bee: Buy first and pay later” is a well reputed online loan providing application. This application lets any person above age 18 to make purchases online within the maximum entry budget up to 15,000LKR.The loan can be paid basically in 3 interest free installments.

Suppose that the application is introduced and already launched, but they need to have the admin system (web view) application to be developed from your end.

The system administrator should be able to get the customer details (registered users) listed out with their information like customer id, full name, date of birth, loan balance, used amount, installment plan etc. Also customers should be able to manage everything about products, categories, brands and inventory management (Update details, remove details, add new details etc.). The admin login should be provided separately.

Additionally, the web view should let the customers get registered to the system themselves separately using a separate option called “Register”.

**Up to now, the customers are only supposed to use this option to register to the system in web view, but the login and the using of the system to do shopping is expected only through the mobile app.**

Provide a well-designed, user friendly system addressing the following features:

* System should have differential access rights to the system users.
* Interactive user friendly interfaces
* Clear implementation of the business flow via the system.
* Design & implement suitable sets of reports, which you think will add more value to the entire business
* Use test driven development and include test classes to test your application

Students are free to make necessary assumption on system design & granting access permissions

other than mentioned within the scenario, but all suggestions must be well explained with the

Valid reasons.

Students can add any functionality which will enhance the system and make the proposed

Solution more comprehensive.

**Use Harvard referencing to properly acknowledge all the external sources you use.**

**Your tasks**

**Tasks A:**

Provide a requirement specification for the proposed system. (06 marks)

**Tasks B:**

Provide the UML diagrams for the given problem with clear explanations on the design decisions. Derive detailed Use Case diagram, Class diagram & a sequence diagram. Whenever necessary document the relevant assumptions you made.

(09 marks)

**Tasks C:**

There are many system design patterns available in system development. Critically evaluate singleton, factory and abstract factory design patterns and apply the most suitable design pattern for your system development.

(15 marks)

**Tasks D:**

Develop an interactive set of interfaces to get the necessary user inputs. Make sure to implement proper validation mechanisms in order to restrict invalid entries to the system. Come up with suitable set of reports, which you will think add more value to your system

1. Your program must be a distributed application with web services
2. Your program should make use of a proper database to store information

(30 marks)

**Tasks E:**

Document the test plan and explain how you used test driven development in this scenario and do a test automation to achieve that. This includes test rationale, test plan, test data and proper application of the test plan (LO II)

(15 marks)

**Tasks F:**

Create user and technical documentation for the developed solution. (10 marks)

**Tasks G:**

Create your own Git/ GitHub repository which is public to access and upload /deploy the changes of the software project you have developed in it. Share the repo link within the documentation. Update it with several number of versions where modifications applied per each day, that you have applied the new features into which was initially uploaded with. Version control techniques you have used throughout the development should be highlighted and documented properly. Demonstrate workflows deployed with the Git repository.

(15 marks)

**Guidelines for the report format**

Paper A4 **|** Margins 1.5” left, 1” right, top and bottom

Page numbers – bottom, right **|** Line spacing 1.5

Font size

Headings 14pt, Bold **|** Normal 12pt

Font face- Times New Roman

Referencing and in-text citation should be done strictly using **Harvard Referencing System.**

**Marking Scheme**

**Task (A) contains 6 marks**

|  |  |
| --- | --- |
| Criteria | Marks |
| Out of 6 |
| Functional requirement specification | 3 |
| Nonfunctional requirement specification | 3 |

**Task (B) contains 9 marks**

**Diagrams should be evaluated according to the following criteria.**

|  |  |
| --- | --- |
| Criteria | Marks |
| Out of 9 |
| Proper use of Object Oriented Design Methodology Use case Diagram · Identification of correct use cases · Identification of correct Actors and associations Sequence Diagram · Implementing identified set of use cases (about 3) as sequence diagrams. Class Diagram · Identification of associated methods, with correct signatures and attributes in each class · Correct identification of relationships | 1-3 |
| Average Design · Clear identification of private, public access modifiers & it is visible in the class diagram · Accurate use of <<include> <<extend>> stereo types in use case diagram · Appropriate use of lifelines, messages and objects in proposed sequence diagrams · Correct use of UML notations with minor mistakes Evaluation · Student has given basic description about the design and given a reasonable justification · Effective judgements have been made | 4-6 |
| Excellent Design · Highly detailed diagram · Use of OO concepts clearly visible · Backed by relevant assumptions · Multiplicity, navigability aggregation & compositions visible in class diagrams · Excellent use of UML notation Evaluation · Good justification of the design · Judge validity of results · Use critical reflection to evaluate the work and justify with valid explanations Fluency (Of design) · Evidence of critical analysis on different perspectives covering how, use case, class & sequence diagrams support in designing | 7-9 |

**Task (C) contains 15 marks**

|  |  |
| --- | --- |
| Criteria | Marks |
| Out of 15 |
| Identify the different types of design patterns and there advantages | 1-5 |
| Apply the suitable design patterns for system development | 6-10 |
| Critically evaluate the impact of design patterns | 11-15 |

**Task (D) contains 30 marks**

|  |  |
| --- | --- |
| Criteria | Marks |
| Out of 30 |
| Pass · Basic data management system features . · Use a database (simple design) · Have simple Web user interface | 0-8 |
| Good · Make a good attempt to follow the three tier architecture. · More sophisticated database design and queries · More sophisticated data representation (e.g. several classes at business logic level) · Separate UI windows for entering results and viewing overall scores. | 9-20 |
| Excellent · More sophisticated UI, · Complex functionality (Email alerts/SMS/Innovative aspects) · 3- tier architecture should exit · Appropriate use of more sophisticated database features (e.g. use of stored procedures / functions / triggers to implement business rules) · Reports being proposed to facilitate decision making. · Effective use of sessions / cookies | 21-30 |

**Task (E) contains (15 marks)**

Test Rationale **(5 marks)**

* Provide a concise rationale for the approach adopted. Discuss how you are going to use test driven development.

Devise your test data **(5 marks)**

* Derive test data for the system.

Produce and apply a test plan **(5 marks)**

* Create test classes for your system
* You are to carry out relevant tests and provide documentation detailing the tests used to verify your system**.**
* Demonstrate that the code passes all the tests (use screen-grabbing software and insert images into your submission).
* Use of test automation
* Evaluation of overall success or failure and lessons learned.
* Traceability showing how each requirement is met by the design.

**Task (F) contains 10 marks**

|  |  |
| --- | --- |
| Criteria | Marks |
| Out of 10 |
| Errors in the documentation | 0-3 |
| Acceptable standard of documentation with poor explanations | 3-5 |
| High standard of documentation with screen shots & average explanations | 5-7 |
| Professional standard of documentation with screen shots & good explanation | 5-10 |

**Task (G) contains 15 marks**

|  |  |
| --- | --- |
| Criteria | Marks |
| Out of 15 |
| Poor/no any Git version control, deployment, workflows used demonstrated | 0-3 |
| Git Repo/GitHub is used in creating a repository only and uploaded the initial version only | 3-6 |
| Git repo created, initial version of project uploaded and several versions were updated and deployed with changes but no any workflow or version control technique is demonstrated. | 6-10 |
| Git repo creation, accessibility restrictions, versioning and version control techniques, workflow(CI/CD) demonstrated and deployment of changes and the latest updated version is done and demonstrated in documentation | 10-15 |

**Final Grading criteria for the coursework:**

|  |  |
| --- | --- |
| Marks | Final Grade |
| >=70 | 1 |
| 69-60 | 2:1 |
| 59-50 | 2:2 |
| 49-40 | 3 |
| <40 | Fail |

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