Assignment 2 – Group Project

Due date: Friday, 26 October 2018, 6:00pm

1. Statement of Work

You are working as a maintenance team for a bank to maintain a prototype of an ATM system. An initial prototype has been developed in Java and the source files are given as:

`Account.java`	`Deposit.java`
`ATM.java`	`DepositSlot.java`
`ATMCaseStudy.java`	`Keypad.java`
`BalanceInquiry.java`	`Screen.java`
`BankDatabase.java`	`Transaction.java`
`CashDispenser.java`	`Withdrawal.java`

As a maintenance team (about 4 to 6 students in each team), you are required to perform the following tasks.

1.1 Part I (Reverse engineering)

Based on the original source codes, construct a Class Diagram to model the classes and their relationships for the initial prototype of the ATM system.

1.2 Part II (Re-engineering)

Suppose that the bank would like to enhance the prototype with the following new features:

(A)	The prototype was originally designed for the use in USA. Adjust the selection of options for *cash withdrawal* to fit in the situation in HK (only the multiples of HKD100, HKD500, or HKD1000 are allowed).
(B)	Introduce two specific types of bank accounts – *saving account* and *current account*: Saving Account has a specific attribute – *interest rate* (default value is 0.1% per annum); for Current Account, there is a specific attribute - *overdrawn limit* (with default value HK$10,000).
(C)	Remove the deposit function
(D)	Add a new function – *transfer* (for transferring fund from one bank account to another bank account)

With reference to the above proposed enhancements, your team is responsible to reconstruct the Class Diagram that models the modified version of the prototype and then implement it in Java.

2. Expected Learning Outcomes

- describe the essential concepts of object-oriented technology and carry out the object-oriented approach for programming
- design object-oriented programs using object-oriented modeling techniques
- use an object-oriented programming language to solve computer problems and build computer systems
- build computer systems in groups and develop group work
- work responsibly, effectively and appropriately as an individual and as part of group efforts

3. Submission Requirements

Your project team is required to prepare a well documented report that contains:

3.1. For Part I:

- a Class Diagram for modeling the initial ATM prototype based on the original source codes (clearly specify the attributes and operations of each class and the relationships among the classes);
- any assumptions that you have made in constructing the Class Diagram.

3.2. For Part II:

- a modified version of Class Diagram of the ATM prototype that could support the required new features (with clear indication of the modified parts of the Class Diagram);
- any assumptions that you have made in modifying the Class Diagram;
- a complete listing of source codes (with clear indication of modified parts of the source codes);
- explanations of the key program statements;
- appropriate set of test cases and the corresponding testing results (that can be screenshots of the executions with testing cases).

3.3. In Appendix – Description of team work

- The division of job duties.
- Timeline of the work done.
- Group learning experience: e.g. describe the problems that have been encountered when working as a maintenance team and how you would resolve the problems.

Note:

- The source code and the soft copy of the report should be **zipped** and submitted through the **Moodle** e-learning system by the **Group Leader**.
- The **hard copy** of the report should be submitted to the subject lecturer's mailbox (HHB Campus 15/F). All submissions should be stated with Course Code, Course Title, Student ID and Student Name.
- The **Peer Evaluation Form** should be submitted through the **Moodle** e-learning system by **individual students**.
- Deadline for submission: **26 October 2018, 6:00pm (Week 8).**
- Demonstration will be held in Week 9 tutorial sessions.

4. Grading Aspects

Your assignment will be graded according to the following criteria:

Group basis (90%)

Modeling: Class Diagram (Part I) *correct modeling with UML notations*	15%
Modeling: modified Class Diagram (Part II) *correct modeling that fulfill the new enhancements; clear indication clear indication of the modified parts*	15%
Implementation: (with reference to the modified Class Diagram) *correct logic and output; checking of invalid inputs; conformance to Java code conventions; program readability; clear explanations*	30%
Test cases design: (for the modified version of the ATM prototype) *documentation of appropriate set of test cases for demonstrating the correctness of the program*	25%
Teamwork: (timeline of the work done; division of job duties; group learning experience)	5%

Individual basis (10%)

Self-reflection	5%
Peer Rating	5%

5. Important Points

- Plagiarism will be penalized severely. Marks will be deducted for assignments that are plagiarized in whole or in part.
- Late submission is liable to a penalty of 10% of the final mark for each day delayed.