**OOP Lab 7**

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| Name: |  | Department: |  |
| Student ID: |  | Room Number: |  |
| Due Date: | April 20, 23 : 59 | | |

* Submit your assignment using the following file format:

LabNumber\_StudentName\_ID.zip (eg. Lab7\_Hongkildong.zip).

* This zip file will contain two types of files, namely:

1. Report file with file format “Report\_Lab number” (eg. report\_7) to answer theory questions and to write the screen shot of your program.
2. Source code file that contains codes of classes to answer programming questions.

**Objectives**

1. Understanding the requirements of an application and learning how to write them as use cases.

2. Learning basic object-oriented analysis and design methods.

3. Developing the ability to draw UML diagrams.

4. Developing the ability to interpret and modify a code based on existing requirement document

**ATM Case Study, Part 1: Object-oriented-design using UML**

* Unified Modeling Language (UML) to design and implement an Object oriented-application.
* Case study: design and implementation of an object-oriented automated teller machine software system.
* Six types of UML diagrams are used to graphically represent the design of an Object-oriented Program, namely:

1. Use Case Diagram
2. Class Diagram
3. State diagram
4. Activity Diagram
5. Communication Diagram
6. Sequence Diagram

* Read the PPT to get detailed information.

**ATM Case Study, Part 2: Implementing an object-oriented design**

* Incorporate inheritance into the design of the ATM.
* Incorporate polymorphism into the design of the ATM.
* Fully implement in Java the UML-based object-oriented design of the ATM software.
* Study a detailed code walkthrough of the ATM software system
* Read the PPT and the code to get detailed information.

**Instruction**

* For each of the following questions, write the answers directly in your report.
* If you draw a UML diagram by hand, take a picture and include it in this report.
* Please zip the code of question **#4** into a file that has name: "ATMextended(optional)

**Part 4. Exercises (15 points)**

1. Analyze the “use case” scenario of Authenticate and Withdrawal, and then write the “use case” scenario for Transfer (5 points)
2. Analyze the “activity diagram” of Withdrawal, and write the “activity diagram” for Transfer. (5 points)
3. Write the “sequence diagram” for Transfer. (5 points)
4. Add the code for “Transfer” at the end of the given code(Optional)

**Note: In order to answer the above questions, read the PPT and the given code.**