Faculty of Engineering and Technology

Coursework Title: **Team-based Software Development**

Module Name: Software Development with Java
Module Code: **7129COMP**
Level: **7**
Credit Rating: 20

Weighting: **50**
Maximum mark available: 100

Lecturer: Dr Bo Zhou
Contact: If you have any issues with this coursework you may contact your lecturer.
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Hand-out Date: 15th November 2017

Hand-in Date: 11th December 2017
Hand-in Method: Assignment Handler on Canvas

Feedback Date: 15 working days after Hand-in Date
Feedback Method: **Feedback form via Email**

Programmes:

Introduction

For this coursework you are required to develop a simulation of a customer record system for a bank branch.

You are required to demonstrate your knowledge of object-oriented analysis, design and implementation by studying the description provided below. Additionally you are required to demonstrate your ability to develop software as part of a small team. Your group submission should cover the five items listed after the task description below. Each student should submit her/his own appraisal of the methods used.

Learning Outcome to be assessed
1. Explain the use of object-oriented principles in the design of software applications
2. Use object-oriented principles to specify and design software applications
3. Implement object-oriented designs using the Java programming language
4. Test and document Java-based applications
5. Work in small teams to distribute and manage the tasks required of points 2, 3 and 4

Detail of the Task

Customer Record System

A new customer record system is required for a local Bank branch. The system will fulfil the functional requirements described below.

For each customer the system should record:

- Their name and address,

- Their account number and current balance,

- A list of their past transactions,

- Any loans, credit cards, mortgages, or other financial services being offered through the bank.

After logging in to the system, the customer should be able to:

- View their current balance,

- List their most recent transactions,

- Add/change their personal details,

- Request an appointment in their local branch.

For each branch employee, the system should record:

- The name and address of the employee,

- The working hours of the employee, e.g. 9am-5pm, Monday-Friday

- A list of customer appointments (with date and to whom),

- A list of the financial services they specialise in (new accounts, overdrafts, loans, credit cards, etc.).

After logging in to the system, the branch employee should be able to:

- View their calendar for upcoming appointments

- List past appointments (with date and to whom) and the outcome,

- Refer customers to the branch manager for application processing.

The branch manager should be able to:

- List current employees and appointments

- View overview of customer accounts held in branch,

- List outstanding customer applications.

The branch manager should also be able to:

- Add/remove customer accounts

- Add/remove employees from the system,

- Process customer applications and accept/decline as necessary.

The five items should be covered in your report are:

1. Analysis
Based on the above description use the 'nouns and verbs' approach to list the classes and objects that can be used to model the customer record system. In addition you should list the attributes and methods associated with these objects. State any assumptions that you make in your selection.

2. Design
Based on your analysis write CRC cards for each of the classes identified. Each team member should then play the role of the classes and walk through the various scenarios, to test whether the class fulfils its responsibilities. Use the CRC cards to develop a class diagram to show the relationships between classes. If you decide to use BlueJ you may copy the class design from the BlueJ 'Class Design' window and paste it into your report.

3. Implementation
Implement your chosen classes in Java using appropriate comments to explain the purpose of each class and functionality of each method. The implementation should include a main method, which simulates the operation of the customer record system (i.e. write the main method to exercise the various functions described above for the customer record system). The implementation should be a command-line application (DOS Console Window) that produces textual output to simulate the operation of the customer record system, and in particular the above tasks of the branch manager. You should submit an electronic copy of the source code files and make sure they are compilable. In addition, sample data such as a number of customers and employees with relevant records

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Author   RJB

should be created by default (for example, implement inside the main method) and ready to be tested.

4. Testing

Devise a test plan to test the operation of the customer record system. This should cover the operation of the customer record system, and in particular the above tasks of the branch manager. Include the test plan in your report along with the output from various test cases. Include any error conditions whether or not if they are detected (by your code) or undetected (genuine design errors).

5. Appraisal

Provide a short assessment of the methods that you used for the analysis, design and implementation of the customer record system. Indicate any areas where there is room for improvement.

What you should hand in

This is a team-based coursework that is to be completed by groups of two students. Each group should submit one report only. Each student in the group should submit their own short appraisal within the group report. The individual appraisals should be clearly marked with each Student's name and ID number. In summary, you should submit:

1. A word processed report, which includes the following:

   (a) An analysis that leads to a set of classes objects, attributes and methods
   (b) A design based on CRC cards, which includes test case scenarios
   (c) A test plan for the implementation
   (d) A short appraisal of the methods used for analysis design and implementation (1 A4 side)

2. An electronic copy of the source code files.

You should submit a **Single Zip File** which contains the **Word Processed Report** and the **Source Code Files.** Submit the zip file via the *Assignment Handler* in Canvas. The zip file should be named using your unique student ID number in the filename e.g. `456789.zip.` Again only one student from each group needs to make the submission.

Report is to be approximately 6-8 A4 sheets at 12pt Times Roman font (including diagrams, but excluding the source code)

Marking Scheme/Assessment Criteria

Assessment Criteria	% weighting for each problem part
Analysis	15
Design	30
Implementation	40
Testing	10
Appraisal	5

Recommended reading
1. Course notes
2. Access to a Java development environment (e.g. BlueJ) which incorporates a Java compiler

Extenuating Circumstances
If something serious happens that means that you will not be able to complete this assignment, you need to contact the module leader as soon as possible. There are a number of things that can be done to help, such as extensions, waivers and alternative assessments, but we can only arrange this if you tell us. To ensure that the system is not abused, you will need to provide some evidence of the problem.

More guidance is available at https://www.ljmu.ac.uk/about-us/public-information/student-regulations/guidance-policy-and-process

Any coursework submitted late without the prior agreement of the module leader will receive 0 marks.

Academic Misconduct
The University defines Academic Misconduct as 'any case of deliberate, premeditated cheating, collusion, plagiarism or falsification of information, in an attempt to deceive and gain an unfair advantage in assessment'. This includes attempting to gain marks as part of a team without making a contribution. The Faculty takes Academic Misconduct very seriously and any suspected cases will be investigated through the University's standard policy (https://www.ljmu.ac.uk/about-us/public-information/student-regulations/appeals-and-complaints). If you are found guilty, you may be expelled from the University with no award.

It is your responsibility to ensure that you understand what constitutes Academic Misconduct and to ensure that you do not break the rules. If you are unclear about what is required, please ask.

For more information you are directed to following the University web pages:

- Information regarding ***academic misconduct***: https://www.ljmu.ac.uk/about-us/public-information/student-regulations/appeals-and-complaints
- Information on ***study skills***: https://www2.ljmu.ac.uk/studysupport/
- Information regarding ***referencing***: https://www2.ljmu.ac.uk/studysupport/69049.htm