**Assignment 1**

**100 marks – 15% of coursework**

1. Develop a menu-driven 2-tiers architecture Java application accessing data from the database and draw the relationship between entity classes in a class diagram.
2. Instructions (related to specific assessment)

Develop a Java console-based program for Center of American Education (CAE) department to maintain the students' registered subjects and results in every semester. The following data are required to store in the database, i.e. Student Id, Student name, major, full time/part-time, semester, subjects’ name and result.

Identify all the required entity classes (min 3 object classes) and their relationships (inheritance, aggregation or composition), draw them in a class diagram. Implement all these classes and other supporting classes. Implement the entity classes as the database tables in a database.

The program must have a method with 5 menu options as below:

Main Menu

1. Add student record
2. Delete a student record
3. Modify a student record
4. List all students’ records
5. Exit

Enter your choice [1..5]

Figure A

On the “Add student record” menu option, the user will be asked to enter all the data for a new student, but, only semester number, subjects’ name and the results for an existing student. Given that,

* Student ID is 4 digits value. It is a unique value in the database table.
* 3 courses are available, i.e. Computer Science (Full Time), Computer Engineering (Full Time), Software Engineering (Part-Time)
* A student may study up to 10 semesters in CAE.
* 10 subjects are offered in every semester, i.e.
  + Programming 1
  + Programming 2
  + General Chemistry 1
  + General Chemistry 2
  + Basic Principle in Accounting
  + Introduction to Journalism
  + Calculus I
  + Calculus 2
  + Research Methods
  + Advertising
* A full-time student is allowed to register up to 4 subjects, whereas a part-time student is allowed to register up to 2 subjects in every semester.
* User will choose the course name and subject from the given list.
* A subject cannot be registered multiple times in a semester.
* A student is allowed to re-take the subject if he/she got a grade=’F’ in the previous semester.
* 5 valid value for the result are ‘A’, ‘B’, ‘C’, ‘D’ and ‘F’
* On the “Delete a student record” menu option, the user will be asked to enter student id. If the record is found in the database, the program will display it on the screen. The user will be asked to re-confirm the deletion. Once user has confirmed, all related records will be deleted from the database. However, user can choose to cancel the delete process. If the record cannot be found in the database, the system should display a message to inform the user.
* On the “Modify a student record” menu option, the user is only allowed to change the latest semester subject and/or result. The user will be asked to enter a student’s id and semester number. If the semester is not the lastest semester for the student, the system will prompt an error message. Otherwise, if it is found in the database, the program will retrieve and display it on the screen. The user is allowed to change the subject and/or result. If it cannot be found, an error message will be displayed to inform the user.
* On the “list all students’ records” menu option, the program will display all the students’ information (sorted by student id and semester) in tabular format, as shown below:

Student Result Listing

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Id | Name | Major  FT/ PT | Sem | Subjects | Result |
| 1001 | John Wayne | Computer Science (FT) | 1 | Programming 1  General Chemistry 1  Basic Principle in Accounting  Calculus 1 | A  B  A  A |
| 1002 | Bea Arthur | Computer Science (FT) | 1 | Introduction to Journalism  Calculus I  General Chemistry 1 | B  B  B |
| 1004 | Jane Doe | Software Engineering (PT) | 1 | Calculus 1 | A |
| 1004 | Jane Doe | Software Engineering (PT) | 2 | Programming 1 | A |
| 1004 | Jane Doe | Software Engineering (PT) | 3 | Programming 2 | A |
| 1005 | Al Johnson | Computer Science (FT) | 1 | Introduction to Journalism  General Chemistry 2 | B  F |
| 1005 | Al Johnson | Computer Science (FT) | 2 | General Chemistry 2  Research Methods | B  B |
| 1007 | Karen Winter | Software Engineering (PT) | 2 | General Chemistry 1 | A |
| 1008 | Pearls William | Computer Engineering (FT) | 1 | Programming 1  General Chemistry 1 | B  A |

Additional information:

* The Main method should have only ONE single statement, i.e. a statement to execute the main menu method.
* All the menu options must be implements in respective methods, except the exit option.
* Perform validation on all input values
* All operations accessing to the database must be implemented in the controller class(es)
* the entity classes MUST only have
  + private instance variables
  + public accessor and/or mutator methods
  + at least one parameterized constructor to initialize all the instance variables.
  + The toString method to return all the data fields’ values as a string.

1. Submissions:

Hardcopy Requirements:

1. Cover Page
2. Rubrics
3. A Class Diagram
4. All program listing
5. 10 different sample print-screen

Softcopy submission requirements:

* all .java files,
* MySQL database .sql backup file,
* sample screen file(.docs),
* class diagram file (.docs)

1. Due Date and Submission (Specific date and week)

***Due Date for this assessment is on 3 Oct 2019 (Thursday) 10 am***

***Absence from Assessment***

Students are expected to be present for assessments. If a student is absent for no good reason the assessment will be awarded zero marks. Medical reasons will only be accepted if the student presents a medical certificate issued by a doctor. Any other special cases will be considered at course lectures discretion.

***Extension and Late Submissions***

Penalties applied for late submission are as follows:

* Coursework submitted after the deadline but within 1 week will be accepted for a maximum mark of 40%.
* Any coursework handed in after seven days, and without an agreed extension will be regarded as a non-submission and marked as zero.
* Submission of reseating coursework must adhere strictly to the deadline. No extension will be given and late submissions will be marked as zero.

Course lecturers have authority to agree to extensions for coursework within their own courses and agreements will be documented.

***Plagiarism***

University policy prohibits students plagiarizing any material under any circumstances. Plagiarism involves the unacknowledged use of someone else’s work, usually in coursework, and passing it off as if it were his/her own (please refer to the course outline for more details).

**CSCP2014 PROGRAMMING 2 (ASSIGNMENT 1) RUBRICS**

Transferable Skills (30 marks):

Problem-solving ability, logical thinking skills, and creative analytical skills.

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| --- | --- | --- | --- |
|  | **Well Done**  **(100% of the marks)** | **Acceptable**  **(50% of the marks)** | **Not Acceptable**  **(0% of the marks)** |
| Class Diagram  (15%) | Identify all the necessary class, attributes, and methods.  Identify and draw the relationship between classes | There will be less than 4 mistakes | More than 4 mistakes |
| Database design  (15%) | Identify all necessary tables with relevant fields in each table and with valid data type | There will be less than 4 mistakes | More than 4 mistakes |

Learning Outcome (70 marks):

Solve problems by using Java programming skills

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|  | **Well Done**  **(100% of the marks)** | **Acceptable**  **(50% of the marks)** | **Not Acceptable**  **(0% of the marks)** |
| Good Programming  Practices (5 marks) | Program written follows the appropriate  B-block coding  C- comments  L- Line spacing  NC- naming conventions | Only 2 out of the 5 requirements are met | Fewer than 2 requirements are met |
| Controller classes  (10 marks) | Consists methods to access database with relevant parameters and return value. Free from running platform. | Consists methods to access database with irrelevant parameters or return value. Free from running platform. | Consists methods to access database with missing parameter and return value, and are too dependent on the platform. |
| Main menu  (5 marks) | User-friendly, relevant validations were carried out by the program. Relevant message(s) are displayed. | Easy to use but missing required validation(s) | Hard to use or/and no validation is being implemented |
| Add menu option  (20 marks) | User-friendly, relevant validations were carried out by the program. Relevant message(s) are displayed. Data is stored into the relevant database table(s) correctly. | Easy to use but missing required validation(s) or/and data cannot be stored property into the required table(s) | Hard to use or/and no validation is being implemented or/and data does not store into the required database table(s) |
| Delete menu option  (10 marks) | User-friendly, relevant validations were carried out by the program. The record is deleted from the required database table(s) | Easy to use but missing required validation(s) or/and data cannot be updated into the required table(s) | Hard to use or/and  No validation is implemented and/or data cannot be updated into the required table(s) |
| Modify menu option  (10 marks) | User-friendly, relevant validations were carried out by the program. The record is updated to the required database table(s) | Easy to use but missing required validation(s) or/and data cannot be updated into the required table(s) | Hard to use or/and  No validation is implemented and/or data cannot be updated into the required table(s) |
| List all menu option  (10 marks) | All required records are displayed correctly with proper alignment. | Records are displayed with some missing value/alignment | Problem on displaying the required records |

***CENTER FOR AMERICAN EDUCATION***

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| ***ASSIGNMENT 1 COVER SHEET  (please print this out and attach to the hardcopy of your work)*** |

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| --- | --- | --- |
| **Student Details:** | | |
|  |  | |
| **Name:** |  |  |
| **Student Number:** |  |  |
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|  |  |  |
| --- | --- | --- |
| **Subject Details:** | | |
|  |  | |
| **Subject Name:** | Programming 2 |  |
| **Subject Code:** | CSCP 2014 |  |
| **Lecturer's Name:** | Tan Tee Hean |  |
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| **Assignment Details:** | | |
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| **Due Date:** | 3 Oct 2019 (Thursday) |  |
| **Date Submitted:** |  |  |
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| **PLEASE NOTE** | |
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| **All assignments are the responsibility of the student. Ensure you keep a copy of your assignment before submitting.** | |
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| **DECLARATION:** | |
|  |  |
| I declare that, to the best of my knowledge and belief, this assignment is my own work, all sources have been properly acknowledged, and the assignment contains no plagiarism. This assignment or any part thereof has not previously been submitted for assessment at this or any other University.  Student Signature: Date: | |
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