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**FACULTY OF INFORMATICS**

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| **SUBJECT’S INFORMATION:** | | | |
| Subject: | CSCI204 Object and Generic Programming | | |
| Session: | July 2014 | | |
| Programme / Section: | J766SENG (SE) / J766CS53 (MGD) / J766CS42 (DSS) | | |
| Lecturer: | Ms. Siti Hawa | | |
| Coursework Type  *(tick appropriate box)* | ❑ Individual Assignment ❑ Group Assignment ❑ Project  ✓Lab Task ❑ Seminar / Tutorial Paper ❑ Others | | |
| Coursework Title: | **Lab Task 2** | Coursework Percentage: | 1% |
| **ASSESSMENT CRITERIA:** | | | |
| Correctness | All programs should produce the correct result as stated in the specification. | | |
| Coding | Programs should use appropriate control structures and data structures correctly based on what have been covered in the class and stated in the specification. Necessary input validations should be done. | | |
| Readability | Appropriate comments are included. Meaningful identifiers used. Proper indentation and line spacing used. | | |
| Well formatted output | Output should be well formatted with appropriate messages displayed. Numbers are shown with appropriate precision. | | |
| **SUBMISSION:** | | | |
| All completed work should be submitted online through Moodle before or on the due date provided.  **SUBMIT AS EARLY AS POSSIBLE. YOU CAN RE-SUBMIT LATER IF NECESSARY. ONLY THE LATEST SUBMISSION WILL BE MARKED.**  **IF YOU SUBMIT YOUR ASSIGNMENT TWICE, ONE SUBMMISSION BEFORE THE DUE DATE AND ANOTHER AFTER THE DUE DATE, THEN YOU WILL BE PENALIZED FOR LATE SUBMISSON.** | | | |
| DUE DATE: | **WEEK 4** | | |
| **PENALTIES FOR LATE SUBMISSION:** | | | |
| Penalties apply to all late work, except if student academic consideration has been granted. Late submissions will attract a penalty of 25% of the assessment mark per day including the weekend. Work more than (3) days late will be awarded a mark of zero. | | | |
| **PLAGIARISM:** | | | |
| **When you submit an assessment task, you are declaring the following**   1. It is your own work and you did not collaborate with or copy from others. 2. You have read and understand your responsibilities under the University of Wollongong's policy on plagiarism. 3. You have not plagiarised from published work (including the internet). Where you have used the work from others, you have referenced it in the text and provided a reference list at the end ot the assignment.   Plagiarism will not be tolerated. Students are responsible for submitting original work for assessment, without plagiarising or cheating, abiding by the University’s policies on Plagiarism as set out in the University Handbook under University Policy Directory and in Faculty handbooks and subject guides. | | | |

**COURSEWORK SPECIFICATION**

**OBJECTIVES:**

This lab task covers the topic classes and objects.

**TASK 1: Class/Object Design**

Declare and implement a class named ClubMember. The class should contain:

* Data fields for member name, club name, and member id.
* A constant static field for the monthly fee, which is RM25.00.
* Functions to set and display the data.
* A main function that demonstrates the class operate correctly.

**TASK 2: Basic Class/Object Construction**

Create a Temperature class that internally stores a temperature in degrees Kelvin. Create functions named setTempKelvin , setTempFahrenheit , and setTempCelsius that take an input temperature in the specified temperature scale, convert the temperature to Kelvin, and store that temperature in the class member variable. Also, create functions that return the stored temperature in degrees Kelvin, Fahrenheit, or Celsius.

Write a main function to test your class.

Use the equations shown next to convert between the three temperature scales.

Kelvin = Celsius + 273.15

Celsius = (5.0/9) \* (Fahrenheit - 32)

**TASK 3: Basic Class/Object Construction**

Implement a class named RentalCar. The class should contain the following:

* Data fields holding a car registration number, model, type, engine number, chasis number, cc, and rental amount.
* Constant static fields holding the rental rates in accordance with the following array:

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| --- | --- | --- | --- |
| **Car Type** | **cc < 1.5** | **1.5 < cc <= 2.0** | **cc > 2.0** |
| Sedan | 100.00 | 200.00 | 300.00 |
| MPV | na | 300.00 | 500.00 |
| SUV | na | 400.00 | 600.00 |

* Include a static function that displays the rates.
* Include a function setAll() to set all the field values on the basis of the car registration number, model, type, engine number, chasis number, cc.
* Include a function computeRental() to determine and assign the rental amount.
* Include a function display() to display all the information for a RentalCar.
* Include in main() a loop to read in the necessary details from a user and set the values, for three cars. Afterwards the details, included rental amount should be displayed.

In writing the code you should consider carefully whether data fields and functions should be public or private. You should call the fields by appropriate names.