

**SCHOOL OF COMPUTER SCIENCE & INFORMATICS
COURSEWORK PROFORMA**

MODULE: CM1209 Object Oriented Java Programming

LECTURER: Dr Matt Morgan

DATE SET: 7th February 2017

SUBMISSION DATE: 17th February 2017 17:00

SUBMISSION ARRANGEMENTS: Undertake (and complete) the Learning Central Test (see SECTION A) by 5pm on 17/02/17 and submit the code for your completed applications (see SECTION B) in the **REQUIRED FORMAT**, electronically through Learning Central, by 5pm on 17/02/17.

TITLE: CM1209 ASSESSMENT 1

This coursework is worth 25% of the total marks available for this module. The penalty for late or non-submission is an award of zero marks. You are reminded of the need to comply with Cardiff University's Student Guide to Academic Integrity. Your work should be submitted using the official Coursework Submission Cover sheet.

FURTHER DETAILS

Feedback on your coursework will be provided in approximately 14 days. This will be supplemented by oral feedback after 2 to 3 days of the submission deadline.

ASSESSMENT 1

This coursework is made up of **2 elements**. In '**Section A**', a test that will be completed through Learning Central and in '**Section B**', a series of applications that you are required to create or debug in Java, that will test your Java skills.

SECTION A – LEARNING CENTRAL TEST

IMPORTANT: The test is **TIMED** and you will only be allowed **ONE** attempt. Please ensure that you read this document fully, **BEFORE** making your attempt.

You will find the test within the CM1209 module on Learning Central, within the folder titled "Coursework", visible on the left sidebar. The test is called 'Java Test 1'.

You will have up to **10 minutes** to complete the test, which will check your knowledge and understanding of the Java covered in Lectures, Lab Sessions and Exercise Labs to date. A timer will start when you commence your test and you will have 10 minutes before the test is **automatically submitted**. You **MUST COMPLETE** the test in **ONE SITTING** (i.e. you cannot pause it and come back later). Once you have **STARTED** the test, you must **COMPLETE IT**.

You must undertake the test (and complete it) before 5pm on Friday 17th February 2017.

TEST AVAILABILITY

The test will be available on Learning Central from **11am on Friday 10th February 2017** until **5pm on Friday 17th February 2017**.

[10 Marks]

SECTION B – JAVA IMPLEMENTATION SKILLS

You are required to create or debug **FIVE applications** in Java, as outlined below. NOTE: each application should be written in a separate file. A starting template for EACH application is provided on Learning Central, in an archive called "ast1_templates.zip", located within the "Coursework" folder, visible on the left sidebar.

Application 1 [NameSort.java]

Write a program that asks the user to enter three people's names, e.g. "Zac", "Matt" and "John". Your program should output a list of the entered names in ascending order, e.g.:

John

Matt

Zac

[2 Marks]

Application 2 [RewardPoints.java]

Morgan Plc awards points to its customers each month based upon the total value of purchases that they make each month. Points are awarded as follows:

- Customers that spend up to £100 earn 100 points
- Customers that spend between £100 and £250 earn 250 points
- Customers that spend between £250 and £500 earn 500 points
- Customers that spend between £500 and £1000 earn 1000 points
- Customers that spend more than £1000 earn 1500 points

Write a program that asks the user to enter how much money they have spent this month and displays the number of points that they have earned.

[2 Marks]

Application 3 [RandomCounter.java]

A student was asked to write an application that would generate 10 random integer numbers between 0 and 100. As each of the random numbers is generated, it is output to the screen and its value added to the running total

of all numbers generated. Finally, once all 10 random integer numbers have been generated, the total of these 10 numbers is output to the screen. The following represents a correctly formatted output from the application:

```
86 44 77 65 73 81 86 95 72 28
```

```
Sum of the 10 random numbers is 707
```

The code below was submitted as a solution to the problem, but contains a number of errors (the submitted RandomCounter.java file can be found in the “ast1_templates.zip”). Update the code so that it will compile without errors and correct any logical errors in the code, so your application achieves the original specification.

**** CODE ****

```
public class RandomCounter {  
    public static void main(String[] args) {  
        int randomCount = 0;  
        for(int i = 0; i < ; ++i) {  
            int randNum = Math.random();  
            System.out.print(randNum + " ");  
            randomCount += randNum;  
        }  
        System.out.println("Sum of the 10 random  
        numbers is" + randomNum);  
    }  
}
```

[4 Marks]

Application 4 [OddEven.java]

Write an application that requests FIVE integers using the Scanner Class and then determines the sum of the odd numbers and the sum of the even numbers.

[2 Marks]

Application 5 [Palindrome.java]

A palindrome is a word, phrase, number, or other sequence of characters that reads the same backward or forward. Write an application that asks the user to enter a phrase and evaluates whether the phrase entered is a palindrome. Your application should output to the screen whether the phrase entered is or is not a palindrome.

[5 Marks]

NOTE: The marking criteria for 'Section B' will focus on application functionality and code quality.

SUBMISSION INSTRUCTIONS

You should submit your source code via Learning Central at "Coursework" → "Java Assessment 1". At the beginning of each source file you must complete your full name and student number as comments. You must zip your source files together into **ONE** zip archive. The zip file should be **NAMED** with your **STUDENT NUMBER**; for example, if your student number is c126548, you should upload a zip file named c126548.zip.

NOTE: Failure to follow these submission instructions will mean that your coursework is treated as a "NON-SUBMISSION" and you will receive a mark of ZERO.