

## CSY1019

### Lab Exercises:

#### Part A:

1. Write a program that uses dialog boxes to read your name, number of hours worked this week, hourly pay rate, calculates and displays your total wages to the console.

Sample Run:

What is your name?

Derek Jones

How many hours did you work this week?

20.5

What is your hourly pay rate?

7.0

*Output:*

Hello Derek Jones. Your total wages this week is: 143.5 pounds

2. Write a program that reads the radius of a sphere and prints its surface area. Print the output to four decimal places. Use the following formula:

$$\text{Surface Area} = 4 * \pi * r^2$$

#### Part B:

1. Write a program using if..else construct that asks the user to enter an integer greater than 20 and less than 45. If the number is within range display “Number within Range”. Otherwise display “Invalid Entry”.
  - 1.1 Rewrite the above program using a conditional expression.
2. Write a program that asks the user to enter two numbers and displays if one number is larger, equal to or lesser than the other number.
  - 2.1. A number x is divisible by y if the remainder after the division is zero. Write a program that prompts the user to enter an integer and checks whether the number is divisible by both 3 and 4, or neither of them or just one of them.

Sample Run: Enter an integer: 16

16 is divisible by 3 or 4 but not both.

Enter an integer: 24

24 is divisible by both 3 and 4

Enter an integer: 7

7 is not divisible by either 3 or 4.

3. Write a program that asks the user to enter three numbers and displays the smallest of the three numbers.
4. Write a program that asks the user to enter three test scores. The program should display the average of the test scores and the letter grade that is assigned for the test score average. Use the grading scheme in the following table:

Test Score Average	Letter Grade
90-100	A
80-89	B
70-79	C
60-69	D
Below 60	F

Make use of if..else..if construct

5. Write a program that prompts the user to enter a number within the range of 1 through 10. The program should display the Roman numeral version of that number. If the number is outside the range of 1-10, the program should display an error message. Make use of switch statement.

Sampe Run 1: Enter a number between 1 and 10

2

II

Sample Run 2: Enter number between 1 and 10

12

Error: Invalid Number

6. Assume that one euro costs 0.80 pounds. Write a program that converts euros to pounds or pounds to euros based upon user input.

Sample Run: Enter 1 to convert from pounds to euros and 2 from euros to pounds: 1

Number of pounds: 256

Number of Euros: 320.0

7. Write a program that simulates a rather simple ATM machine. The program prompts the customer for a transaction code:

- 1- Withdrawal
- 2- Deposit
- 3- Check Balance
- 4- Exit

The application subsequently carries out the customer's request. Assume that the beginning balance is £5423.00.

8. Write a program that inputs the radius of a circle from the user. The program should provide the user with the following choices.

- (1) Enter A or a to calculate area of circle  
Formula:  $\text{Area} = \text{PI} * \text{radius} * \text{radius}$
- (2) Enter C or c to calculate circumference of circle  
Formula:  $\text{Circumference} = 2 * \text{PI} * \text{radius}$
- (3) Enter D or d to calculate diameter of circle  
Formula:  $\text{Diameter} = 2 * \text{radius}$

The program should read the choice from the user, perform calculations and display the relevant result. If the user enters an invalid choice, display a relevant error message. Make use of switch statement.

9. Write a program that reads two strings and displays if one string is larger, equal or less than the other string in terms of length (i.e. number of characters).

10. Write a program that reads three strings from the user and displays them in ascending order of their lengths. The length of a string is equal to the number of the characters in a string.