CSY2030 Java Revision 3 Lab Session

1. Write a program that asks the user to enter their name and then says “Hello, [NAME]” e.g.

```
What is your name?
Bob
Hello, Bob!
```

2. Write a method that takes a string and returns it reversed. E.g. *“Hello”* becomes *“olleH”*

Hint: You will need to use a for loop that counts down and *str.charAt(i);* For this exercise do not use any inbuilt string reversal tools

The method header should look like this:

```
public static String reverse(String str) {}
```

3. Combine exercises 1 and 2 to produce a program that reverses the name entered:

```
What is your name?
Christopher
Your name spelled backwards is: rehpotsirhC
```

4. Write a program that simulates a game of Rock-Paper-Scissors. Assume that the input supplied by the user is a valid integer. To play the game, enter a number: 0 (rock), 1 (scissors), or 2 (paper). The computer then randomly selects its play, also 0, 1 or 2. The game results in a win, loss or tie based on the following rules:

- Rock breaks Scissors (Rock wins)
- Paper covers Rock (Paper wins)
- Scissors cut Paper (Scissors Wins)
- If both players choose the same letter, it’s a tie

Sample output:

```
Rock:0; Scissors:1; Paper:2 – Choose:
1
The computer chooses Rock
*********************************************
Player: scissors
Computer: rock
Computer wins.
```

5. Write a program that asks a player to discover a secret number between 1 and n, where n is any positive number that the player chooses. Each time the player guesses a number, the application responds “correct”, “too high”, or “too low”. The program should report the number of guesses used to unearth the secret number. Finally the player should be given the option to play the game again.

Sample output:

```
Give me the value for n:
100
OK. I am now thinking of a number between 1 and 100.
Your guess: 50
Too high
Your guess: 25
Too low
Your guess: 35
Too high
Your guess: 30
That's it!
Score: 4 guesses
Play again? 1 for YES:0 for NO:0
Thanks for playing!
```

Hint: See the lecture notes on *Math.random()* and repeating the program using a while loop!

6. Write a program that asks for a password, then asks again to confirm it. If the passwords don't match, prompt again.

7. Write a program that calculates the sum of a list of integers that is interactively supplied by a user. The program should prompt the user for the number of data. The program should ensure that each number supplied by the user is positive

Sample output:

```
How many numbers would you like to add?
3
Enter the 3 numbers:
5
7
9
Sum:21
```

Hint: Capture the user input as an integer and use a for loop to ask for that many numbers

8. Based on exercise 6, Check the entered password input by the user using the following rules. Your program should include a method that checks whether a password is valid.

- The password must be at least 8 characters long
- The password must have at least one uppercase and one lowercase letter
- The password must have at least one digit

9. Write a method that returns a count of all the vowels in the string supplied to the method.