Seminar 3 (Iteration) – Exercises

1a. Write a program to display consecutive numbers between 2 numbers. Assume that the first number will always be less than the second. Display from the first number up to and including the second number, one number per line. Use a while loop. Input sample is as follows:

```
Enter first number: 3
Enter second number: 5
```

Output:

```
3
4
5
```

1b. Modify the above program to include display of sum of the consecutive numbers.

2. Repeat question 1 using for loop.

3. Modify question 1a to cater for any 2 integer input. The first can be greater, equal or less than the second integer. The display will still be from the smaller integer to the larger integer.

4a. (Written exercise. Past year exam question)
The following is a short Java program. Examine it carefully and show the result obtained when the program is executed.

```
public class Q4
{
    public static void main(String args[])
    {
       for (int i = 0; i < 16; i=i+2 )
       {
         if ( i % 3 == 0 )
           System.out.println( i);
         else
           System.out.print( i );
         System.out.print('^');
       }
    }
}
```

4b. Rewrite the program in part a) using while loop.

5. Write a program that has 2 input values, one representing a String and another an integer. The program prints a number of lines of the string as specified by the integer. For example, if the string is “Java”, and the integer is 3, then the program displays

```
Java
Java
Java
```

6. Write a program that displays a multiplication table. Use the Scanner class to input an integer number. Input and display of result is as follows:

```
Enter number: 5
1 x 5 = 5
2 x 5 = 10
3 x 5 = 15
4 x 5 = 20
5 x 5 = 25
```

If the input is 5, the table displays 5 rows in multiples of 5.

7. Write a Java program that displays a simple menu. It works as follows:

Menu
1. Option 1
2. Option 2
3. Option 3
4. Quit
Enter choice: 1
Option 1 selected

Menu
1. Option 1
2. Option 2
3. Option 3
4. Quit
Enter choice: 3
Option 3 selected

Menu
1. Option 1
2. Option 2
3. Option 3
4. Quit
Enter choice: 4
End of program

8. Write a program to play a "high low" guessing game. The program 'thinks' of a number (limit 1 to 100) and the user tries to guess the number. The program displays "Too high" if the number guessed is higher than the actual number and "Too low" if the number guessed is less than the actual number. The program continues until the user enters the correct guess. A sample session is as follows:

Enter your guess: **10**
Too low. Try again.
Enter your guess: **20**
Too high. Try again.
Enter your guess: **16**
You got it in **3** tries!

When the number guessed is correct, display a message including the number of tries taken to get the answer.

9. Modify question 5 to read in the String and the number of times to repeat using the Scanner class. A sample session is as follows:

```
Enter String: Java
Number of times to repeat: 3
Java
Java
Java
Enter String: program
Number of times to repeat: 2
program
program
Enter String: exit
end
```

The program continues to prompt for another string until the user keys in “exit” to end the program.

10. Display the following 3 patterns. Use two sets of nested loops for each pattern:

```
+++++
++++
+++
++
+

X++++
+X+++
++X++
+++X+
++++X

12345
23456
34567
45678
56789
```

11. Modify the “high low” game in question 8 that prompts the question “Continue game?(y/n): “. If yes, the game is repeated.