

# Fundamentals of Programming 1

## Exercise sheet 6 – 5%

**\*\*\* READ THE QUESTIONS CAREFULLY \*\*\***

**\*\*\* Name your files Question1.java \*\*\***

### Question 1

Write a Java program that contains **two separate** for-loops. The first loop should print the numbers from 1 to 50 and the second loop should print the numbers from 50 – 1. Your output should look similar to the screenshot shown below:

```
Numbers from 1 to 50
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27
28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50

Numbers from 50 to 1
50 49 48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 27
26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1
```

### Question 2

Write a Java program to generate and print **6 rolls** of an **eight-sided** dice. Use a **for-loop**, **printf** statements and the **Math.random()** function in your answer. Your program output should be similar to the following screenshot.

```
Roll: 1 You got a 5
Roll: 2 You got a 4
Roll: 3 You got a 8
Roll: 4 You got a 6
Roll: 5 You got a 8
Roll: 6 You got a 3
```

### Question 3

A sum of money is invested for 6 years at 12.5% compound interest (interest is calculated based on the initial sum plus any previous interest earned). Write a program that will print out the following for each year:

- ☐ interest for the year
- ☐ cumulative interest (interest earned so far)
- ☐ new capital amount

Your program must use a **for-loop** and a **printf** statement to **round** any output to **2 decimal places**. Use the following test case in your program screenshot.

```
Enter capital to invest: 120
YEAR 1
Interest = 15.00 Cumulative interest = 15.00 Capital = 135.00
YEAR 2
Interest = 16.88 Cumulative interest = 31.88 Capital = 151.88
YEAR 3
Interest = 18.98 Cumulative interest = 50.86 Capital = 170.86
YEAR 4
Interest = 21.36 Cumulative interest = 72.22 Capital = 192.22
YEAR 5
Interest = 24.03 Cumulative interest = 96.24 Capital = 216.24
YEAR 6
Interest = 27.03 Cumulative interest = 123.27 Capital = 243.27
```

**Deliverables**

Place all your files in a folder called **Week6**. Zip the Week6 folder and upload the zip file using the Week6 upload link for your group on MOODLE.

**Please check the deadline using the MOODLE link for your group.**

**Plagiarism**

This assessment should be an individual piece of work. Any evidence of plagiarism will result in a grade of zero for all parties involved and will trigger the Universities plagiarism policy 3AS08 (see course coordination page).