American University of Beirut
Department of Computer Science
CMPS 200 – Introduction to Programming
Lab 3: Feb 17 – Feb 18

Exercise 1. Strings

For this exercise, it is recommended that you fill the answers first, then you check them by implementing the corresponding class in Java. The following two strings were declared:

```
String text1 = "Chapter 1";
String text2 = "Data Input";
```

Write the value returned by each of the following:

```
text1.length();
```

```
text1.charAt(8);
```

```
text1.charAt(0);
```

```
text1.charAt(9);
```

```
text1.indexOf("a");
```

```
text2.indexOf("t", 3);
```

```
text2.toUpperCase();
```

```
text2.toLowerCase().indexOf("D");
```

```
text2.substring(5);
```

```
text2.substring(1, 6);
```

```
text2.replace("a", "AA");
```

```
“text2”.replace("t", "T");
```

```
text2.charAt(1).toUpperCase();
```

Write the needed statement to extract the chapter number (1) (as a string) from the string text1, and save it in a variable:

_____

Write the statement to create an integer variable: nextChapter, and assign to it the extracted chapter number + 1.

_____

Exercise 2. Math Methods

Math.max and Math.min can be used to bound numbers.

Consider a program that asks the user to enter his numerical grade. What are the statements needed to create a Scanner object, and take a real value from the user?

_____

_____

What statement would replace negative grade with 0?

_____

What statement would cap the maximum grade to 100?

_____

Exercise 3. String Input

Write a Java program that asks the user to enter his full name (first, middle, and last names separated by spaces in this order). Your program should then display the name as follows:

LastName, FirstName MiddleInitial.

Sample run:

```
Enter your name: Jack Kevin Smith
Welcome to our application Smith, Jack K.
```

Note that, to print a text without a new line at its end, you can use: *System.out.print* (instead of *println*).

Exercise 4. Input with Doubles

Having the following statements:

```
Scanner in = new Scanner(System.in);
double n = in.nextDouble();
```

What will the value of n be when the user enters each of the following:

12 ☐

5.6 ☐

Two ☐

10 * 4 ☐

Exercise 5. Command Line Arguments

Write a Java class, called Exponent, that reads ***two double values*** from the command line (x and y), and then outputs ***x to the power y***, rounded to the ***nearest integer***.

Exercise 6. Interactive Input

Write a Java program that asks a computer science student to enter: *Full name, id number, number of credits completed* and *number of credits failed*. It will then display a report about the main information, plus the remaining credits to graduate (out of 90). A sample run is shown below *(the input is shown in blue italic font)*:

```
Enter your full name: Sarah Luis
Enter your id number: 202112123
Enter the fulfilled credits: 36
Enter the number of failed credits: 6
--------------------
Student “Sarah Luis – 202112123”:
Credits taken: 36
Credits failed: 6
Remaining credits: 60
```

Exercise 7. Parking Hours

Write a java program that asks the user to enter the number of minutes spent in a mall. It then displays the number of hours and the number of minutes spent there. The parking fee is then calculated where each full hour spent, costs $2.

Sample run:

```
Enter the total minutes spent: 145
Hours spent: 2
Extra minutes: 25
Parking fee: $4
```