Langara College

# Department of Computing Science & Information Systems

# CPSC1150 – Program Design

###### **Lab2: Java Basics**

**Problem 1:** Calculate body mass index

|  |  |
| --- | --- |
| File name | CalculateBmi.java |
| Purpose | To calculate a person’s BMI base on weight and height. |
| Input | Weight in kilogram and height in meter. |
| Output | The BMI base on weight and height. |

Algorithm

1. Get weight
2. Get height
3. Compute bmi = weight / (height \* height)
4. Display bmi

Sample input and output

Input your weight in kilogram: 65

Input your height in meter: 1.76

Your BMI is: 20.98

Input your weight in kilogram: 79.5

Input your height in meter: 1.8

Your BMI is: 24.54

**Problem 2:** Display the digits in a number

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| --- | --- |
| File name | DisplayDigits.java |
| Purpose | Get a number, show its digits and compute the digits sum |
| Input | A number |
| Output | The number’s digits and the digits’ sum |

Algorithm

1. Get the number
2. Set stDigit=number%10, then set number=number/10
3. Set ndDigit=number%10, then set number=number/10
4. Set rdDigit=number%10, then set number=number/10
5. Display the digits as rdDigit ndDigit stDigit
6. Set sum as stDigit + ndDigit + rdDigit
7. Display sum

Note:

* number%10 means get the last digit of the number,
* number/10 means delete the last digit of the number,
* So steps 2, 3, and 4 can understand that get the last digit and delete it from the number.
* Must display the digits as rdDigit ndDigit stDigit. Because counting number from left to right, rdDigit stands before ndDigit and stDigit, etc.

Sample input and output

Input your number from 0 to 999: 0

The digits of number: 0 0 0

The sum of digits: 0

Input your number from 0 to 999: 12

The digits of number: 0 1 2

The sum of digits: 3

Input your number from 0 to 999: 123

The digits of number: 1 2 3

The sum of digits: 6

**Problem 3:** Compute the area of a triangle

|  |  |
| --- | --- |
| File name | ComputeTriangleArea.java |
| Purpose | From the triangle’s coordinates, compute its area |
| Input | Triangle’s coordinate |
| Output | The triangle’s area |

Algorithm

1. Input x1, y1, x2, y2, x3, y3
2. Compute triangle’s sides:
   * side1 =
   * side2 =
   * side3 =
3. Compute s=(side1+side2+side3)/2
4. Compute
5. Display the area

Sample input and output

Input 3 points of a triangle: 1.2 3 -1.8 0.5 7 2.6

The area of triangle: 7.85