การทดลองที่ 1

Chapter 1 Introduction to Computers, Programs, and Java – Chapter 2 Elementary Programming

Program # 1 (Exercise 1.11 p.31 Population projection)
The U.S. Census Bureau projects population based on the following assumptions:

- One birth every 7 seconds
- One death every 13 seconds
- One new immigrant every 45 seconds

Write a program to display the population for each of the next five years. Assume the current population is 312,032,486 and one year has 365 days.

Hint: *In Java, if two integers perform division, the result is an integer. The fractional part is truncated.*
For example, 5 / 4 is 1 (not 1.25) and 10 / 4 is 2 (not 2.5). To get an accurate result with the fractional part, one of the values involved in the division must be a number with a decimal point.
For example, 5.0 / 4 is 1.25 and 10 / 4.0 is 2.5.

Program # 2 (Exercise 1.13 p.31 *Algebra: solve 2 * 2 linear equations*)
You can use Cramer's rule to solve the following 2 * 2 system of linear equation:

$$ax + by = e$$
$$cx + dy = f$$

$$x = \frac{ed - bf}{ad - bc}$$

$$y = \frac{af - ec}{ad - bc}$$

Write a program that solves the following equation and displays the value for x and y:

$$3.4x + 50.2y = 44.5$$
$$2.1x + 0.55y = 5.9$$

Program # 3 (Exercise 2.6 p.70 Sum the digits in an integer)
Write a program that reads an integer between 0 and 1000 and adds all the digits in the integer. For example, if an integer is 932, the sum of all its digits is 14.

Hint: *Use the % operator to extract digits and use the / operator to remove the extracted digit. For instance, 932 % 10 = 2 and 932 / 10 = 93.*

Here is a sample run:

```
Enter a number between 0 and 1000: 999 <Enter>
The sum of the digits is 27
```

Program # 4 (Exercise 2.14 p.72 Health application: computing BMI)
Body Mass Index (BMI) is a measure of health on weight. It can be calculated by taking your weight in kilograms and dividing by the square of your height in meters. Write a program that prompts the user to enter a weight in pounds and height in inches and displays the BMI. Note that one pound is 0.45359237 kilograms, and one inch is 0.0254 meters.

Here is a sample run:

```
Enter weight in pounds: 95.5 <Enter>
Enter height in inches: 50 <Enter>
BMI is 26.8573
```