

WIX1002 Fundamentals of Programming

Lab 3: Flow of Control (Selection)

- Write a program that simulates a calculator. It reads three integers and two characters.

*	Multiplication of two numbers
/	Quotient of two numbers
%	Remainder of two numbers
+	Addition of two numbers
-	Subtraction of two numbers

The sequence of operand should follow this order * / % + -. (Use the `String.charAt(index)` to return the character)

Sample Input 1: Enter three integer number: 30 5 7 Enter two operands: + *	Sample Input 2: Enter three integer number: 4 2 3 Enter two operands: / %
Sample Output 1: 30 + 5 * 7 = 65	Sample Output 2: 6 / 2 % 3 = 0

- Generate a random integer within 0 to 999 and display the integer in word.

Sample Output:
2 is two.
111 is one hundred and eleven.
451 is four hundred and fifty-one

- Write a program that calculates the total commission received based on the table below. The program will accept the sales volume and calculate with the commission rate. Display the commission in two decimal places.

Sales Volume	Commission Rate
Less than or equal to 100	0.05
Greater than 100 and less than or equal to 500	0.075
Greater than 500 and less than or equal to 1000	0.1
Greater than 1000	0.125

For example, if sales volume is 420, then total commission should be $100 \times 0.05 + 320 \times 0.075 = 29$

- Write a simple two players dice game. Each player will roll the dice twice and the player with the highest score wins the game. However, the game rules are special and is stated in the table below.

If first and second dice value are both odd	+5 scores
If first and second dice value are 6	-5 scores
If first and second dice value are 3	Roll one more time

5. Cramer's rule is used to solve the linear equations.

$$ax + by = e, cx + dy = f; \quad x = (ed-bf)/(ad-bc) \quad y=(af-ec)/(ad-bc)$$

Write a program that ask the user to enter two line in the format of $ax + by = e$ and $cx + dy = f$. Display the result of x and y . If $ad - bc$ is equal to 0. Display "The equation has no solution". All a, b, c, d, e and f will be <10 and >0 .

Sample Input:

$$1x + 2y = 6$$

$$2x + 9y = 2$$

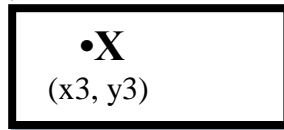
Sample Output:

$$x = 10$$

$$y = -2$$

6. Write a program that asks users to enter top left coordinate of a rectangle, the bottom right coordinate of the rectangle and the coordinate of point X. Determine whether the point is inside or outside of the rectangle.

$(x1, y1)$



$(x2, y2)$

Sample Input:

Enter $x1, y1$ of rectangle: 0 4

Enter $x2, y2$ of rectangle: 8 0

Enter $x3, y3$ of point X: 3 3

Sample Output:

Point X is inside of the rectangle.