Introduction to Programming

Lab 3

Contents

Lab 3 exercises

lab time: 120 minutes

Lab 3 has two objectives:

- Primary: Implement the DeskBankApp [refer to Lab 2 class diagram]
- Secondary: Complete the practice exercises [1 to 7]

Complete the Lab 3 exercises using either Java or Python.

Recommended IDE for Java and Python: vscode

Lab 3

Case Study: Develop the DeskBankApp system – First Implementation

This exercise is the first implementation of the DeskBankApp case study

1 - Create a main class called Bank

2 - Define main() method in Bank with the following operations:

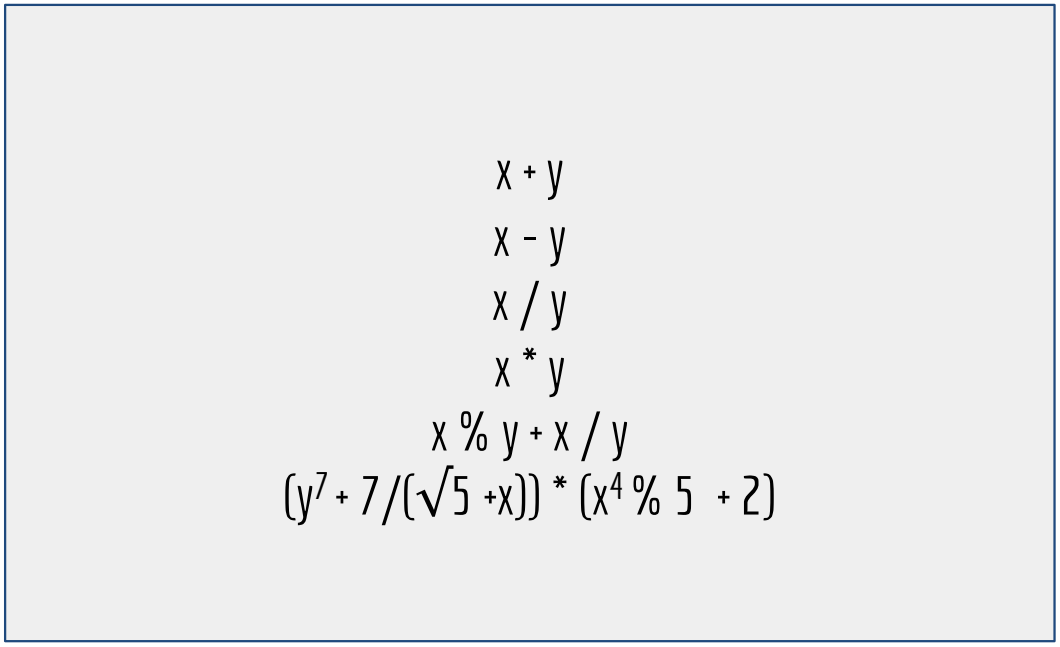
- make a deposit (read amount from STDIN) and display the amount deposited
- make a withdraw (read amount from STDIN) and display the amount withdrawn

Sample I/O

```
Amount to deposit $ 200.2
Amount $200.20 deposited
Amount to withdraw $ 50.5
Amount $50.50 withdrawn
```

Lab 3 Exercises

Exercise 1: Write a program to initialize two variables x to 4 and y to 2. Then print out the results of the following operations (format each result to 3 decimal points and print each result on a new line).



Lab 3 Exercises

Exercise 2: Write a program that completes the following operations:

1. Read in the integer values of x and y from STDIN
2. declare a variable z, and assign the result of x to the power of y to it
3. declare a variable called ‘result’ and assign the square-root of z to it
4. print the above results each on a new line (formatted to 2 decimal points)

Lab 3 Exercises

Exercise 3: Write a program that outputs the following and determines the area and volume:

1. Enter circle radius: xyz
2. Circle area of radius "value of radius go here" is: area
3. Sphere volume of radius "value of radius go here" is: volume

NOTE: The value of the radius must be printed between double quotes
NOTE: all values should be formatted to 2 decimal points

Lab 3 Exercises

Exercise 4: Write a program that reads the coordinates of A and B from STDIN and calculates the distance between A and B:

1. Please enter the x1 coordinate of point A: 1.0
2. Please enter the y1 coordinate of point A: 2.0
3. Please enter the x2 coordinate of point B: 3.0
4. Please enter the y2 coordinate of point B: 4.0
5. The distance between A(x1,y1) and B(x2,y2) is distance

NOTE: The values x1, y1, x2, y2 must be formatted into the output
NOTE: format the distance to 2 decimal points

Lab 3 Exercises

Exercise 5: Write a program that reads a string from STDIN and prints out the required information:

1. Please enter a string: *type your input here*
2. First character: *display first character of the string*
3. Last character: *display last character of the string*
4. Lower-case string: *convert and display the string in lower-case*
5. String length: *display the length of the string*

Lab 3 Exercises

Exercise 6: Develop a class called Car as follows

1- The class should have two fields: make and pos
2- Define a constructor that initializes the fields
3- Define a function to move the position by distance
4- Define the object descriptive function that returns: ‹make› is at position ‹pos value›
5- Create an object of Type Car and initialize the fields to “BMW” and 0
6- Print the current position
7- Move the car by 15
8- Print the new position

Lab 3 Exercises

Exercise 7: Develop a class called Numbers as follows

1- Create an array of integers called ‘numbers’ of size n, n is read from STDIN
2- Display the array
3- Change the first element to 10
4- Change the last element to -5
5- Change the middle element to 3
6- Display the array again

Thank You