JAVA PROGRAMMING COURSE (SWE2023)
FALL SEMESTER 2023

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COLLEGE OF SOFTWARE

Assignment 1

This assignment consists of 3 tasks. Guidelines for submission format are given at the end of the assignment file.

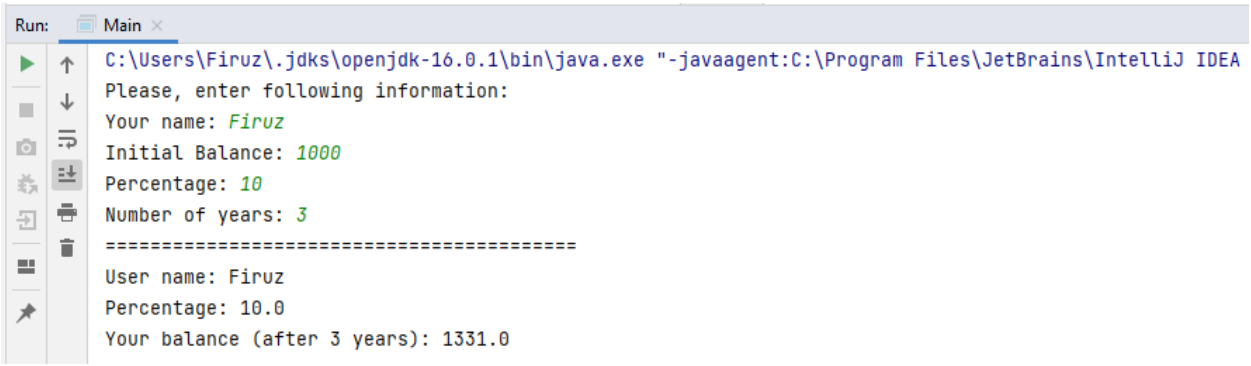
Note: The green numbers and green words in the console are the user's inputs (Used IDEA: IntelliJ IDEA 2021.1).

Task 1

(SKKU Bank) In SKKU bank, you can put money as a deposit and each year your deposit will be increased by some percent. You need to develop a Java program that calculates the final amount of money:

Your program has to ask for the following information from the user: user's name, initial balance, percentage, and a number of years. Then your program will calculate the amount of money after the given year.

Expected Output:



Explanation:

Initial balance = 1000, percentage = 10, number of years = 3

*1st year: 1000 + 1000*0.10 = 1100.0*

*2nd year: 1100 + 1100*0.10 = 1210.0*

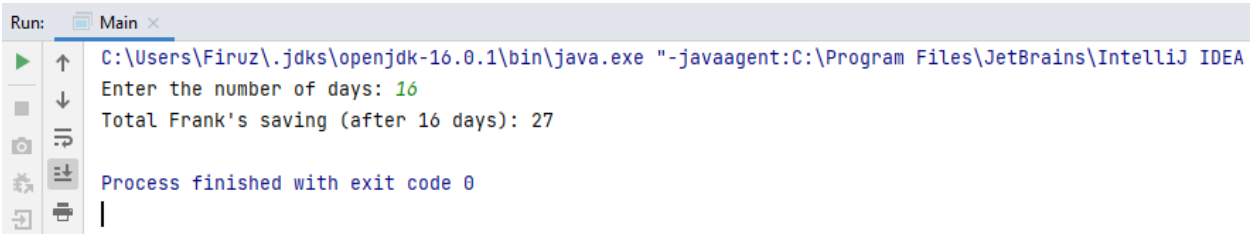
*3rd year: 1210.0+ 1210.0*0.10 =* ***1331.0***

Task 2

Frank is a student of SKKU. He wants to buy a new laptop for the upcoming year. He tries to save money. He wants to save as follow:

He starts by putting in $1 on the first Monday. Every day he puts in $1 for the first week. On every subsequent Monday, he will put in $1 more than the previous week.

Expected Output:



Explanation:

After 16 days, the total

$$\underbrace{(1+1+1+1+1+1+1)}_{\text{1st week}} + \underbrace{(2+2+2+2+2+2+2)}_{\text{2nd week}} + \underbrace{(3+3)}_{\text{3rd week}} = 27$$

Task 3

(Test System) Computers are playing an increasing role in education. Write a program that will help an elementary school student learn to find the addition of two numbers. Use a Random object to produce two positive integers. The program should then prompt the user with a question, such as

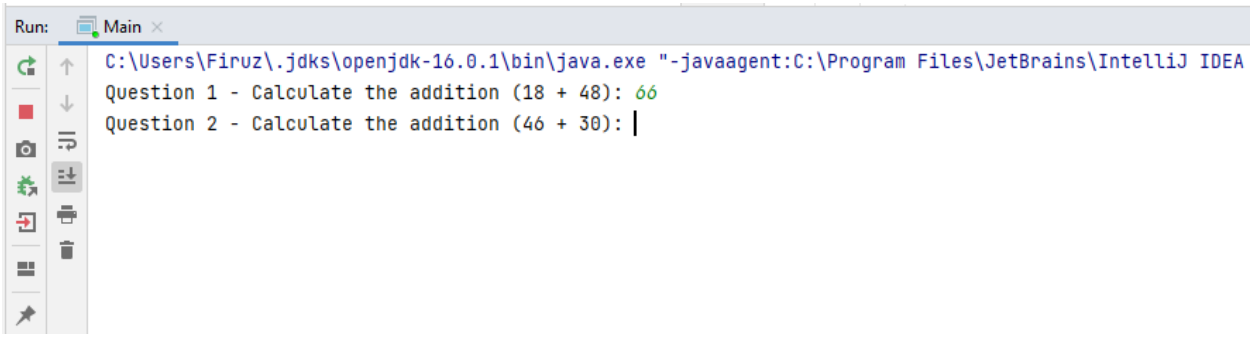
Question 1 - Calculate the addition (37 + 13)

The program asks five questions one by one (all numbers are generated randomly). The student then inputs the answers. Next, the program checks all student's answers and output the number of correct answers with feedback:

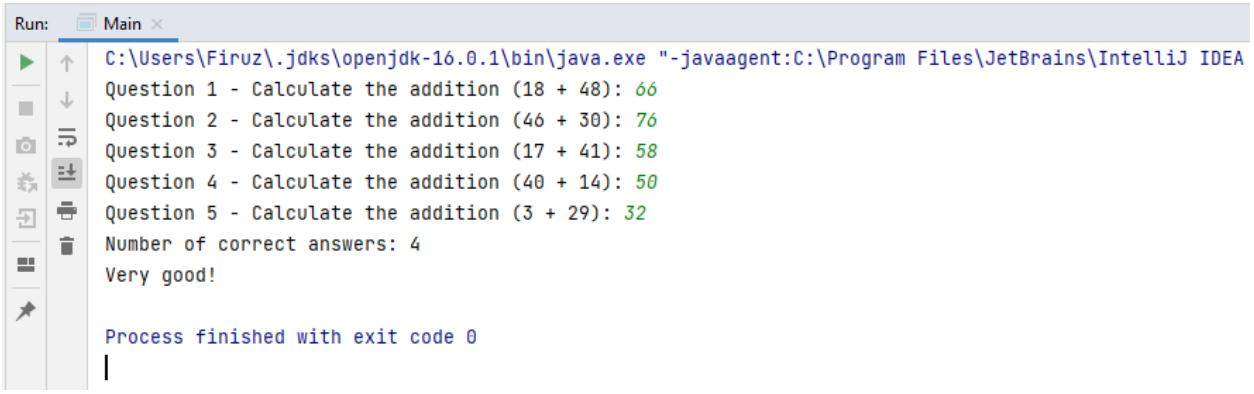
- Feedback for 5 correct answers: Excellent!
- Feedback for 4 correct answers: Very good!
- Feedback for 3 correct answers: Good.
- Feedback for 2 correct answers: Not Bad.
- Feedback for 1 correct answer: Very bad.
- Feedback for 0 correct answers: Try again.

Output:

The program randomly generates questions one by one and the user answers them in order:



Final Output:



In the final output, you can see the user answered 4 questions correctly and the feedback for 4 correct answers is “Very good!”.

Hint:

```
// import the library
import java.util.Random;
/** Generate a random integer in the range 0..49. */
public final class RandomInteger {
        public static void main(String[] args) {
                System.out.print("Generating a random integer in range 0..49.");
                // create a single Random object which is reused in here
                Random randomGenerator = new Random();
                int randomInt = randomGenerator.nextInt(50);
        }
}
```

Grading:

- Correctness of code (should be run without errors)
- Comments (for important lines)

Submission format: Submit **three separate files (only .java files, not the whole project folder)**. Files must include the implementation code of each task and comments for important lines of code to explain the purpose. All the files should be submitted as a **zip** file.

Name of zip file: {student ID}_{Student name}_assignment1.zip

Example: 2020712837_Frank_Thomas_assignment1.zip

Important: Plagiarism is strictly prohibited. If there is any plagiarism found in the code, you will be given an "F" for the assignment evaluation.

If you have any questions about the assignment, you can ask in the discussion section of the week or contact the TAs directly.

Good luck!