JAVA LAB RECORDS

1) A student named Akash wants to find **sum** and **product** of two numbers. Every time Akash has to perform those tasks for different numbers.
Write a java program to help Akash which takes two numbers and prints sum and product of the given numbers.

2) Raju is feverish. Although the thermometer only displays temperatures in Fahrenheit, his companion Ravi wants to check Raju's body temperature in Celsius.
Write a java program to help ravi which converts temperature from Fahrenheit to Celsius scale.
Use the formula:

```
Celsius=(Fahrenheit - 32) * 5/9
```

3) Write a java program to convert **int** to following data types

- int to long
- long to float
- float to double
- Print all the converted values.

4) You are working on a software project for an international language education program. The project involves creating a program that allows users to enter keyboard shortcuts for various language characters and symbols. These shortcuts are represented as **short** data types, and you need to convert them to **char** data types to display the corresponding characters.

5) A task is assigned to a student, in which the student has to categorise the metal blocks in different boxes based on their weight. He can weigh only two metal blocks, at a time.
Write a program which takes weights of two metal boxes and displays a list which includes all relations between the weights. (Observe the sample test case).

6) Write a Java program that prints all real solutions to the quadratic equation ax^2+bx+c. Read in a,b,c and use the quadratic formula.

7) Sarah is learning about the Fibonacci sequence in her maths class. Her teacher asked to start the sequence with two initial values, which are 0 & 1. Sarah is fascinated by this sequence and wants to explore it further.
Write a java program that generates the first **n** numbers in the Fibonacci sequence in Recursive(with using recursion) and Non-recursive way(without using recursion), starting with the initial values of 0 and 1, and then prints them out.

8) Create a class InterviewProcess.Write a Java program that models an interview process with multiple rounds. The interview process consists of the following rounds: written test, group discussion, technical round, and HR round. The program should ask the candidate for their results at each stage and determine if they are eligible to proceed to the next round or if they should go home.

9) Ravi possesses three geometric figures: a rectangle, a square, and a circle. He has the measurements for these shapes but lacks the knowledge to compute their respective areas. Create a program that assists Ravi in determining the areas of these different shapes.

10) Write a Java Program that prompts the user for an integer and then prints out all the prime numbers up to that Integer.

11) Suresh is an employee at a medical store, and he stores delicate and expensive medicines in a wooden box. This box is divided into **numRows** rows and **numCols** columns.Each medicine inside the box has a label indicating its price.
You are asked to create a program that calculates and displays the **total price** of all the medicines stored in this box.

12) Create a class PalindromeOrNot with a **main** method. The method receives one command line argument. Check the given argument is palindrome or not.

For example:

```
Cmd Args : madam
The given string madam is a palindrome
Cmd Args : Godavari
The given string Godavari is not a palindrome.
```

13) Imagine you are working on a chat application for a tech startup. The chat application should allow users to send messages to each other, and you are responsible for implementing a feature that allows users to send both single messages and broadcast messages to multiple recipients.
Adapt the program to handle this scenario.

14) Imagine you are working for a popular fast-food restaurant. The restaurant is known for its customizable orders, and you have been tasked with developing a command-line tool for creating and displaying orders.
Consider a scenario where a customer wants to order a "**Classic Cheeseburger**" with a price of **$6.99** and gave specific instructions like "**Extra ketchup and no pickles**"
Then the order should be displayed as:

```
Order:
Item: Classic Cheeseburger
Price: $6.99
Special Instructions: Extra ketchup and no pickles
```

15) Assume there is a class called Bank with method calculateInterest(float principal, int time).

Create sub-classes of Bank with names SBI, ICICI and AXIS and override the calculateInterest(float principal, int time) method.

Create a constant of type float called INTEREST_RATE in classes SBI, ICICI and AXIS with values 10.8, 11.6 and 12.3 respectively.

Use the formula **(principal * INTEREST_RATE * time) / 100** to calculate the **interest** for given **principal** and **time** and return the value as float in the **overriden method**.

16) You work for a university that is planning to implement a new student information system. This system will store and manage student data, including their personal information and student IDs. where you have a "**Person**" class as the base class and a "**Student**" class as a subclass.
Some of the code is supplied for you to simplify the task.Create a program that receives input from the students(**String**-args[0],**int**-args[1],**int**-args[2]) and outputs the following:

17) When a method in a subclass overrides a method in superclass, it is still possible to call the overridden method using super keyword. If you write **super.func()** to call the function func(), it will call the method that was defined in the superclass.

You are given a partially completed code in the editor. Modify the code so that the code prints the following text:

```
Hello I am a motorcycle, I am a cycle with an engine.
My ancestor is a cycle who is a vehicle with pedals.
```