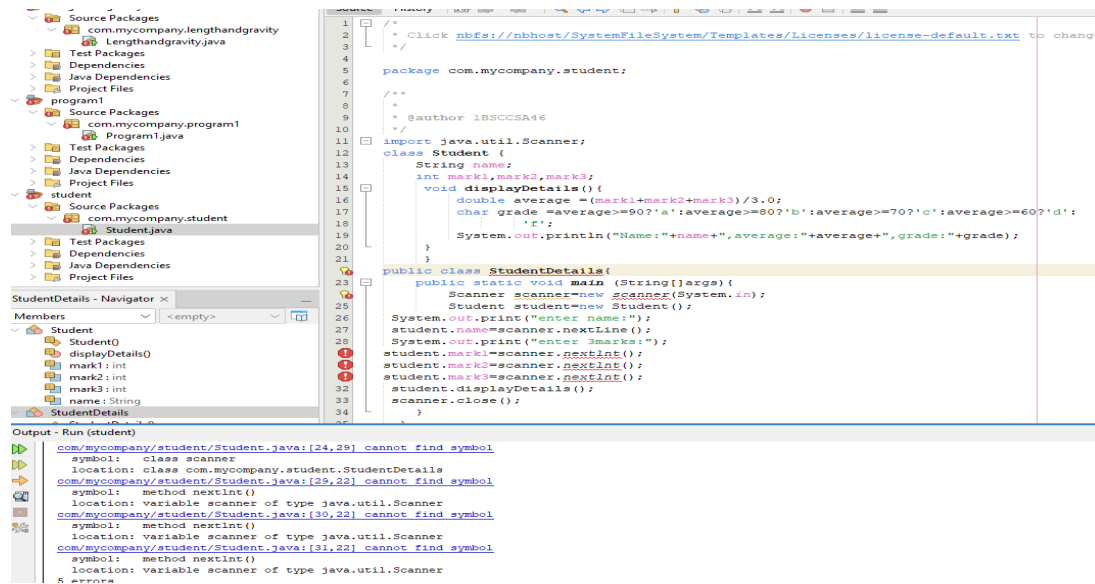


Program1

```
import java.util.Scanner;
class Student {
    String name;
    int mark1, mark2, mark3;
    void displayDetails() {
        double average = (mark1 + mark2 + mark3) / 3.0;
        char grade = average >= 90 ? 'A' : average >= 80 ? 'B' : average
        >= 70 ? 'C' : average >=
        60 ? 'D' : 'F';
        System.out.println("Name: " + name + ", Average: " + average + ",
        Grade: " + grade);
    }
}

public class StudentDetails {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        Student student = new Student();
        System.out.print("Enter name: ");
        student.name = scanner.nextLine();
        System.out.print("Enter 3 marks: ");
        student.mark1 = scanner.nextInt();
        student.mark2 = scanner.nextInt();
        student.mark3 = scanner.nextInt();
        student.displayDetails();
        scanner.close();
    }
}
```

Output



Program2

```

package com.mycompany.mavenproject1;
import java.util.*;
class Mavenproject1{
public static void main(String args[]){
Scanner sc = new Scanner(System.in);
final double Pi = 22/7;
System.out.println("Enter the length and acceleration due to gravity");
int l = sc.nextInt();
int g = sc.nextInt();
double t = 2*Pi*Math.sqrt(l/g);
System.out.println("The time period of the pendulum is "+t);

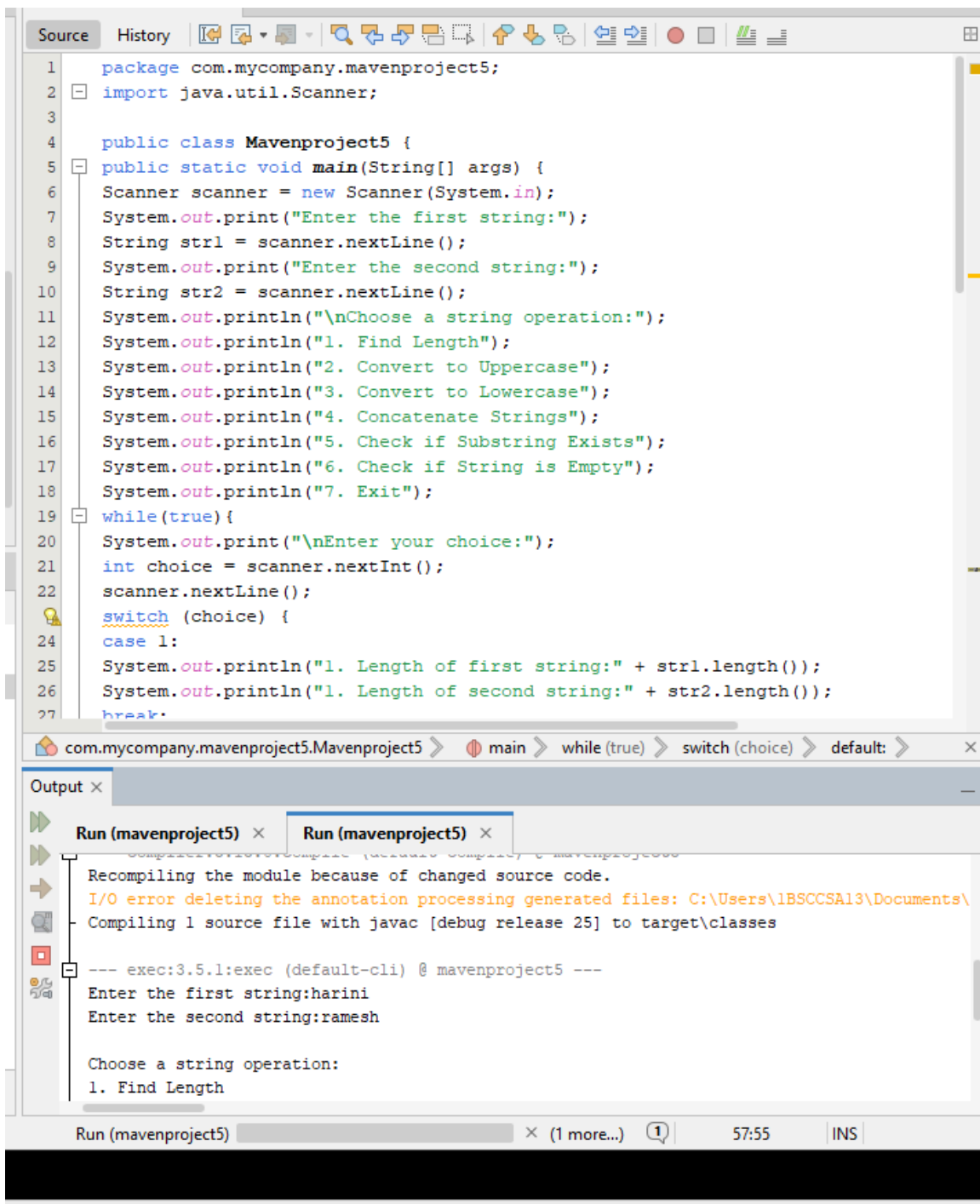
}
}

```

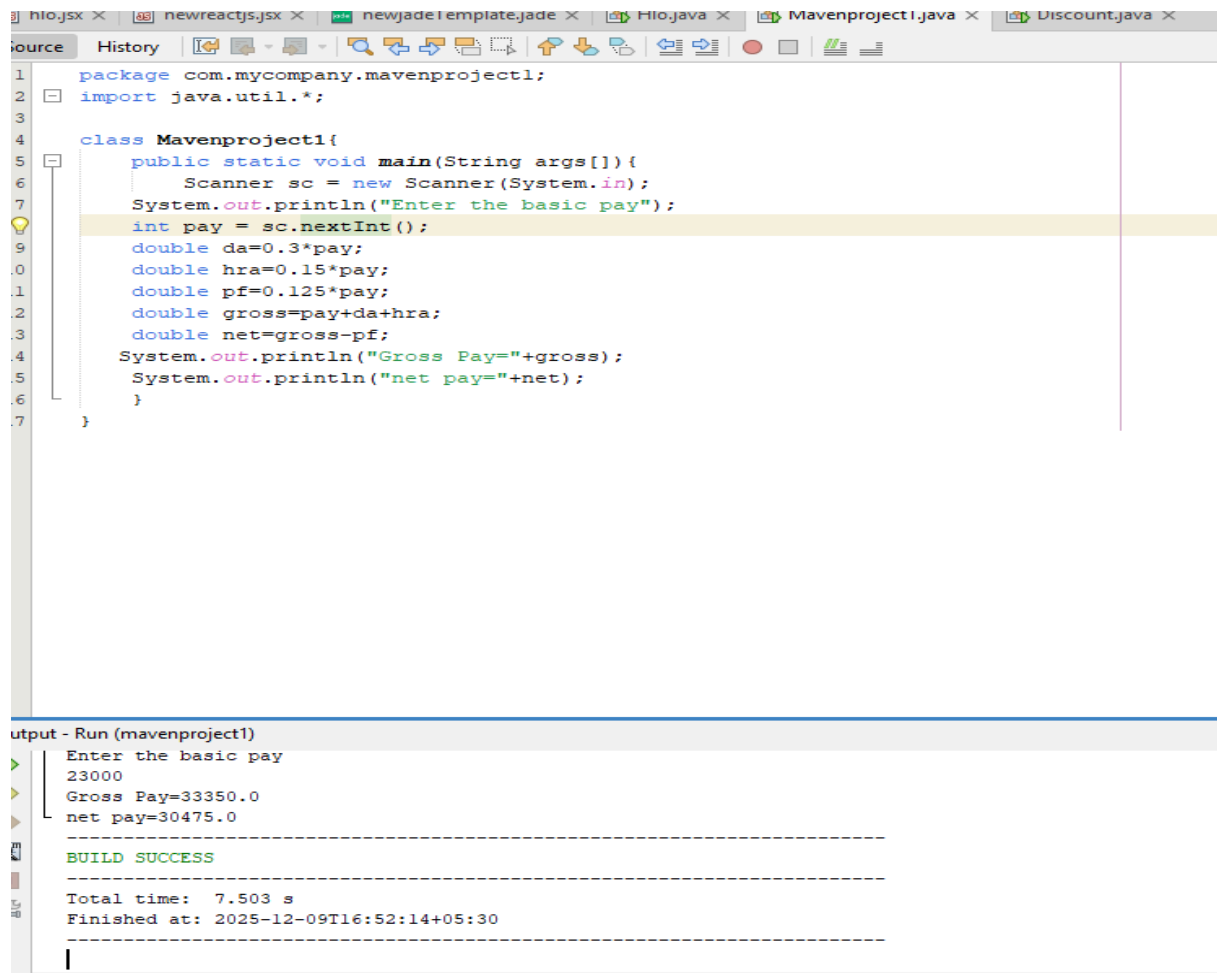
Output

```
Output - Run (mavenproject1)
--- exec:3.5.1:exec (default-cli) @ mavenproject1 ---
Enter the length and acceleration due to gravity
12
4
The time period of the pendulum is 10.392304845413264
-----
BUILD SUCCESS
-----
Total time: 6.704 s
Finished at: 2025-12-04T14:23:26+05:30
-----
|
```

Program3



Program4



The screenshot displays an IDE with several tabs at the top: hio.jsx, newreactjs.jsx, newjade template.jade, Hio.java, Mavenproject1.java, and Discount.java. The 'Mavenproject1.java' tab is active, showing the following Java code:

```
1 package com.mycompany.mavenproject1;
2 import java.util.*;
3
4 class Mavenproject1{
5     public static void main(String args[]){
6         Scanner sc = new Scanner(System.in);
7         System.out.println("Enter the basic pay");
8         int pay = sc.nextInt();
9         double da=0.3*pay;
10        double hra=0.15*pay;
11        double pf=0.125*pay;
12        double gross=pay+da+hra;
13        double net=gross-pf;
14        System.out.println("Gross Pay="+gross);
15        System.out.println("net pay="+net);
16    }
17 }
```

Below the code editor, the 'Run' output is visible, showing the program's execution with input 23000:

```
Output - Run (mavenproject1)
> Enter the basic pay
> 23000
> Gross Pay=33350.0
> net pay=30475.0
-----
BUILD SUCCESS
-----
Total time: 7.503 s
Finished at: 2025-12-09T16:52:14+05:30
-----
```

Program5

The screenshot shows an IDE with a Java source file and its output. The source file, located at `com.mycompany.discount.Discount`, contains the following code:

```
1 package com.mycompany.discount;
2 import java.util.*;
3 class Discount{
4     public static void main(String args[]){
5         Scanner sc = new Scanner(System.in);
6         System.out.println("Enter the Printed Price"); int p
7         = sc.nextInt();
8         double d = 0.1 * p;
9         double dp = p - d;
10        double gst = 0.06 * dp;
11        double amount = dp + gst;
12        System.out.println("The discount is \"\u20B9"+d +\"\nGST is \"\u20B9"+gst);
13        System.out.println("The total amount is \"\u20B9"+amount);
14    }
15 }
```

The output window, titled "Output - Run (discount)", shows the execution results:

```
Enter the Printed Price
89
The discount is ?8.9
GST is ?4.8059999999999999
The total amount is ?84.905999999999999

BUILD SUCCESS

Total time: 9.766 s
Finished at: 2025-12-09T16:40:28+05:30
```

Program6

```
Shape.java x Inheritance.java x
Source History
26 private double length,width;
27 public Rectangle(double length,double width){
28     this.length=length;
29     this.width=width;
30 }
31 @Override
32 public double calculateArea(){
33     return length*width;
34 }
35 class square extends shape{
36     private double side;
37     public square(double side){
38         this.side=side;
39     }
40 @Override
41 public double calculateArea(){
42     return side*side;
43 }
44 }
45 public class Inheritance{
46     public static void main(String[]args){
47         shape circle=new Circle(2);
48         shape rectangle=new Rectangle(4,6);
49         shape square=new square(4);
50         System.out.println("Circle Area:"+circle.calculateArea());
51         System.out.println("rectangle area:"+rectangle.calculateArea());
52         System.out.println("square area:"+square.calculateArea());
53     }
54 }
55
56

Output - Run (Inheritance)
--- exec:3.5.1:exec (default-cli) @ Inheritance ---
Circle Area:12.56
rectangle area:24.0
square area:16.0
BUILD SUCCESS
Total time: 1.735 s
```

Program7

The screenshot shows an IDE with a Java file named `INTEREST.java`. The code defines a package `com.mycompany.interest`, imports `java.util.*`, and defines a class `INTEREST` with a `main` method. The `main` method uses a `Scanner` to take input from the user, calculates the interest for each year, and prints the results. The output window shows the execution of the program with the input `300` and the resulting interest and total amount after three years.

```
1 package com.mycompany.interest;
2 import java.util.*;
3 class INTEREST{
4     public static void main(String args[]){
5         Scanner sc = new Scanner(System.in);
6         System.out.println("Enter the sum of money");
7         double sum = sc.nextInt();
8         double in1 = sum * 5 * 1/100.0;
9         System.out.println("Interest for the first year is \u20B9"+in1); sum
10        += in1;
11        double in2 = sum * 5 * 1 / 100.0;
12        System.out.println("Interest after second year is \u20B9"+in2); sum
13        += in2;
14        double in3 = sum * 5 * 1 /100.0;
15        sum += in3;
16        System.out.println("Amount after three years is \u20B9"+sum);
17    }
18 }
```

com.mycompany.interest.INTEREST

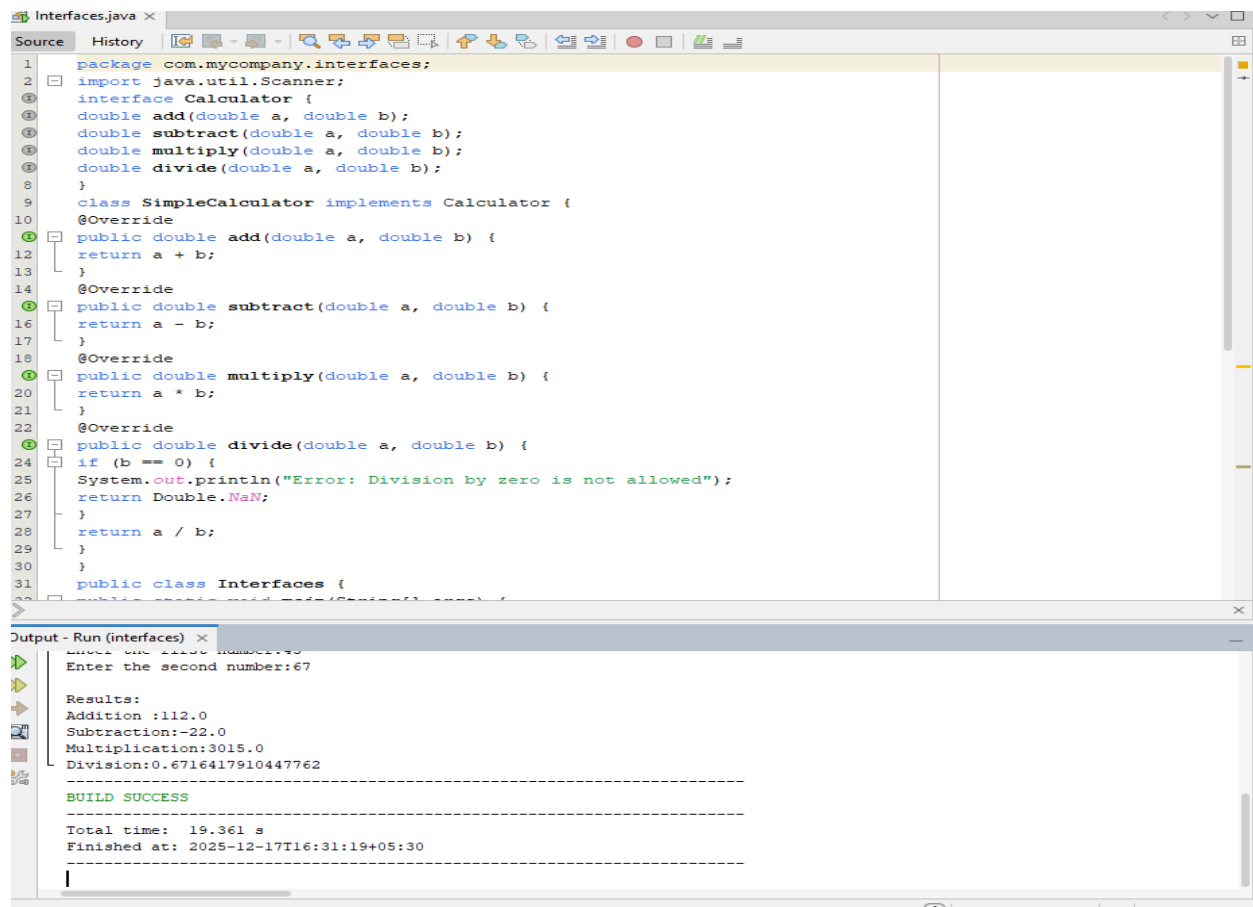
Output - Run (INTEREST)

```
--- exec:3.5.1:exec (default-cli) @ INTEREST ---
Enter the sum of money
300
Interest for the first year is ?15.0
Interest after second year is ?15.75
Amount after three years is ?347.2875

BUILD SUCCESS

Total time: 12.101 s
Finished at: 2025-12-17T17:07:35+05:30
```

Program8



The screenshot shows an IDE window titled "Interfaces.java". The code defines a package `com.mycompany.interfaces`, imports `java.util.Scanner`, and defines an interface `Calculator` with methods `add`, `subtract`, `multiply`, and `divide`. A class `SimpleCalculator` implements these methods. The `divide` method includes a check for division by zero, printing an error message and returning `Double.NaN` if the denominator is zero. A `main` method in the `Interfaces` class uses a `Scanner` to take user input for two numbers and calls the `SimpleCalculator` methods to perform the operations. The output window shows the results of these operations for inputs 112 and 67.

```
1 package com.mycompany.interfaces;
2 import java.util.Scanner;
3 interface Calculator {
4     double add(double a, double b);
5     double subtract(double a, double b);
6     double multiply(double a, double b);
7     double divide(double a, double b);
8 }
9 class SimpleCalculator implements Calculator {
10     @Override
11     public double add(double a, double b) {
12         return a + b;
13     }
14     @Override
15     public double subtract(double a, double b) {
16         return a - b;
17     }
18     @Override
19     public double multiply(double a, double b) {
20         return a * b;
21     }
22     @Override
23     public double divide(double a, double b) {
24         if (b == 0) {
25             System.out.println("Error: Division by zero is not allowed");
26             return Double.NaN;
27         }
28         return a / b;
29     }
30 }
31 public class Interfaces {
32     public static void main(String[] args) {
33         Scanner scanner = new Scanner(System.in);
34         System.out.println("Enter the first number:");
35         double num1 = scanner.nextDouble();
36         System.out.println("Enter the second number:");
37         double num2 = scanner.nextDouble();
38         SimpleCalculator calculator = new SimpleCalculator();
39         System.out.println("Results:");
40         System.out.println("Addition :112.0");
41         System.out.println("Subtraction:-22.0");
42         System.out.println("Multiplication:3015.0");
43         System.out.println("Division:0.6716417910447762");
44     }
45 }
```

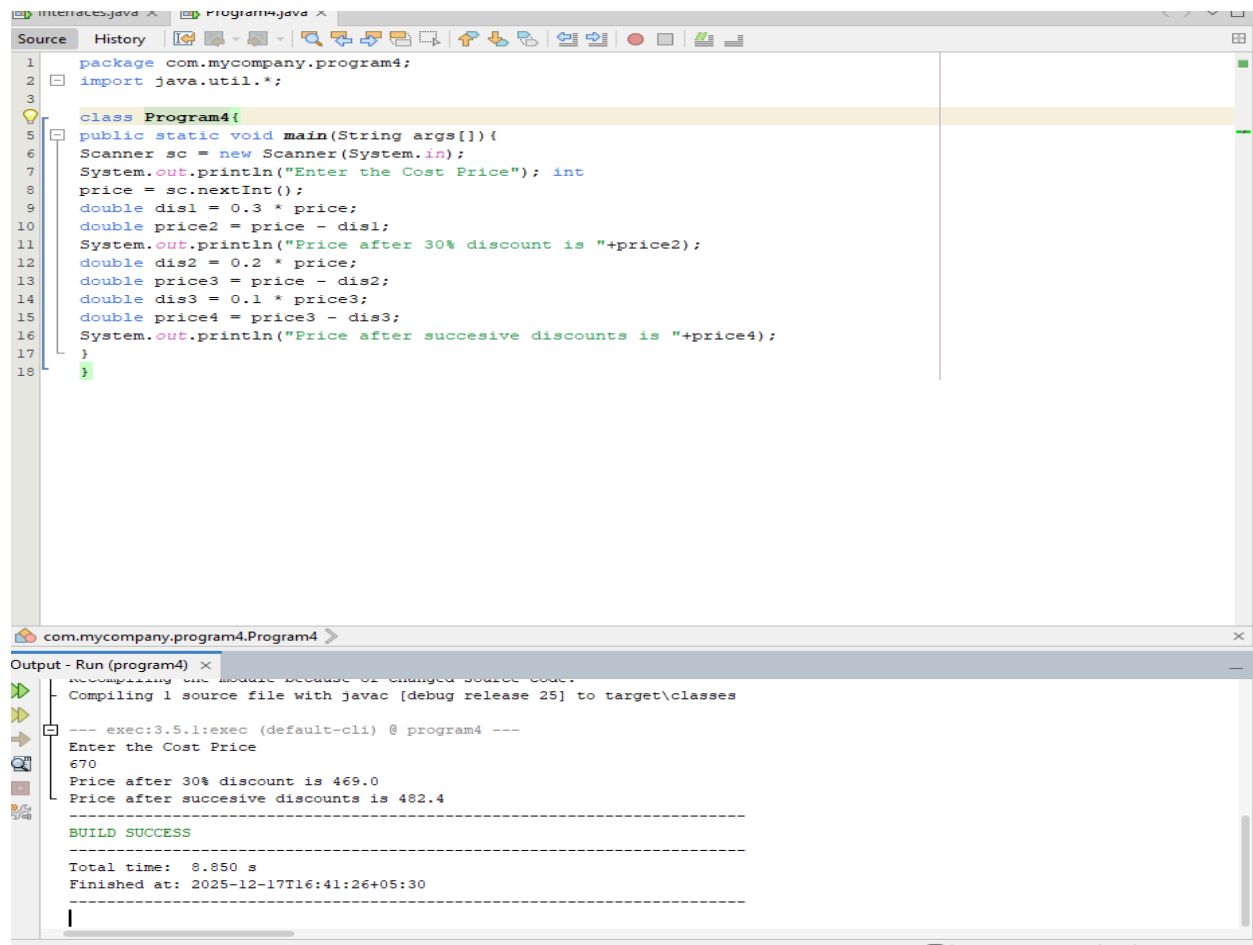
Output - Run (interfaces) x

```
Enter the first number:112
Enter the second number:67

Results:
Addition :112.0
Subtraction:-22.0
Multiplication:3015.0
Division:0.6716417910447762

-----
BUILD SUCCESS
-----
Total time: 19.361 s
Finished at: 2025-12-17T16:31:19+05:30
-----
```

Program9



The screenshot shows an IDE with two windows. The top window, titled 'Program4.java', contains the following Java code:

```
1 package com.mycompany.program4;
2 import java.util.*;
3
4 class Program4{
5     public static void main(String args[]){
6         Scanner sc = new Scanner(System.in);
7         System.out.println("Enter the Cost Price"); int
8         price = sc.nextInt();
9         double dis1 = 0.3 * price;
10        double price2 = price - dis1;
11        System.out.println("Price after 30% discount is "+price2);
12        double dis2 = 0.2 * price;
13        double price3 = price - dis2;
14        double dis3 = 0.1 * price3;
15        double price4 = price3 - dis3;
16        System.out.println("Price after successive discounts is "+price4);
17    }
18 }
```

The bottom window, titled 'Output - Run (program4)', shows the execution output:

```
--- exec:3.5.1:exec (default-cli) @ program4 ---
Enter the Cost Price
670
Price after 30% discount is 469.0
Price after successive discounts is 482.4
-----
BUILD SUCCESS
-----
Total time: 8.850 s
Finished at: 2025-12-17T16:41:26+05:30
-----
```

Program10

The screenshot displays an IDE with a Java source file and its execution output. The source file, located at `nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt`, contains the following code:

```
1  /**
2   * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change this license
3   */
4
5   package com.mycompany.exceptionhandling;
6
7   /**
8    *
9    * @author 1BSCCSA05
10   */
11
12   import java.util.Scanner;
13   public class Exceptionhandling {
14   public static void main(String[] args) {
15       Scanner scanner = new Scanner(System.in);
16       System.out.print("Enter first num:");
17       int num1 = scanner.nextInt();
18       System.out.print("Enter second num:");
19       int num2 = scanner.nextInt();
20       System.out.println("\nResults:");
21
22       try {
23           System.out.println("Addition:" + (num1 + num2));
24           System.out.println("Subtraction:" + (num1 - num2));
25           System.out.println("Multiplication:" + (num1 * num2));
26           System.out.println("Division:" + (num1 / num2));
27       } catch (ArithmeticException e) {
28           System.out.println("Error:" + e.getMessage());
29       } finally {
30           System.out.println("\nExecution Completed!");
31       }
32   }
33 }
```

The execution output, titled "tput - Run (Exceptionhandling)", shows the following results:

```
*****
Addition:79
Subtraction:11
Multiplication: 1530
Division:11
Execution Completed!
-----
BUILD SUCCESS
-----
Total time: 9.325 s
```

The IDE interface includes a "Check Regular Expression" button and an "Output" tab at the bottom. The status bar at the bottom right shows "12:31" and "INS".

Program11

```

package com.mycompany.compound;

/**
 * @author 1BSCCSA05
 */
import java.util.*;
class Compound{
public static void main(String args[]){
Scanner sc = new Scanner(System.in);
System.out.println("Enter the sum of money");
double sum = sc.nextInt();
double in1 = sum * 5 * 1/100.0;
System.out.println("Interest for the first year is \n20B9"+in1); sum
+= in1;
double in2 = sum * 5 * 1 / 100.0;
System.out.println("Interest after second year is \n20B9"+in2); sum
+= in2;
double in3 = sum * 5 * 1 /100.0;
sum += in3;
System.out.println("Amount after three years is \n20B9"+sum);
}
}

```

out - Run (compound)

```

--- exec:3.5.1:exec (default-cli) @ compound ---
Enter the sum of money
20000
Interest for the first year is ?1000.0
Interest after second year is ?1050.0
Amount after three years is ?23152.5
-----
BUILD SUCCESS

```

Program12

```
Source History
1 package math_operations;
2 // Calculator class in the
3 public class Object{
4     public int add(int a, int b) {
5         return a + b;
6     }
7     public int subtract(int a, int b) {
8         return a - b;
9     }
10    public int multiply(int a, int b) {
11        return a * b;
12    }
13    public double divide(int a, int b) {
14        if (b != 0) {
15            return a / b;
16        } else {
17            System.out.println("Cannot divide by zero");
18            return Double.NaN;
19        }
20    }
21    // MathUtils class in the math_operations package
22    package math_operations;
23    public class Object{
24        public double calculateSquareRoot(double num) {
25            if (num >= 0) {
26                return Math.sqrt(num);
27            } else {
28                System.out.println("Cannot calculate square root of a negative number");
29                return Double.NaN;
30            }
31        }
32    }
33    // Main class for testing the math operations package
34    public class Object{
35        public static void main(String[] args) {
36
Output - Run (Inheritance)
> COMPILATION ERROR :
> -----
> com/mycompany/inheritance/object.java:[24,1] class, interface, enum, or record expected
> 1 error
> -----
> BUILD FAILURE
> -----
> Total time: 1.475 s
> Finished at: 2025-12-29T13:14:04+05:30
```

Program13

The screenshot displays an IDE with a Java source file and its execution output. The source code defines a package, imports Scanner, and implements a main method that prompts for two numbers and performs arithmetic operations with exception handling. The output window shows the results of these operations and a successful build status.

```
1  /*
2   * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change this license
3   */
4
5   package com.mycompany.exceptionhandling;
6
7   /**
8    *
9    * @author lBSCCSA05
10   */
11  import java.util.Scanner;
12  public class Exceptionhandling {
13      public static void main(String[] args) {
14          Scanner scanner = new Scanner (System.in);
15          System.out.print("Enter first num:");
16          int num1 = scanner.nextInt();
17          System.out.print("Enter second num:");
18          int num2 = scanner.nextInt();
19          System.out.println("\nResults:");
20
21          try {
22              System.out.println("Addition:" + (num1 + num2));
23              System.out.println("Subtraction:" + (num1 - num2));
24              System.out.println("Multiplication: " + (num1 * num2));
25              System.out.println("Division:" + (num1 / num2));
26          } catch (ArithmeticException e) {
27              System.out.println("Error:"+e.getMessage());
28          } finally {
29              System.out.println("\nExecution Completed!");
30          }
31      }
32  }
```

tput - Run (Exceptionhandling)

```
.....
Addition:79
Subtraction:11
Multiplication: 1530
Division:1

Execution Completed!
-----
BUILD SUCCESS
-----
Total time:  9.325 s
```

Check Regular Expression Output 1 12:31 INS

Program14

```

package com.mycompany.compound;

/**
 *
 * @author IBSCCSA05
 */
import java.util.*;
class Compound{
public static void main(String args[]){
Scanner sc = new Scanner(System.in);
System.out.println("Enter the sum of money");
double sum = sc.nextInt();
double in1 = sum * 5 * 1/100.0;
System.out.println("Interest for the first year is \n20B9"+in1); sum
+= in1;
double in2 = sum * 5 * 1 / 100.0;
System.out.println("Interest after second year is \n20B9"+in2); sum
+= in2;
double in3 = sum * 5 * 1 /100.0;
sum += in3;
System.out.println("Amount after three years is \n20B9"+sum);
}
}

```

out - Run (compound)

```

--- exec:3.5.1:exec (default-cli) @ compound ---
Enter the sum of money
20000
Interest for the first year is ?1000.0
Interest after second year is ?1050.0
Amount after three years is ?23152.5
-----
BUILD SUCCESS

```

Program15

```
1  /*
2  * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change this license
3  * Click nbfs://nbhost/SystemFileSystem/Templates/Classes/Class.java to edit this template
4  */
5  package com.mycompany.compound;
6
7  /**
8   *
9   * @author 1BSCCSA05
10  */
11  class shares {
12  public static void main(String args[]){
13  int num = (2000 * 100)/(10 * 10);
14  System.out.println("Number of shares currently held is "+num); int
15  want = 3000 - num;
16  System.out.println("No. of Shares needed to reach 3000 is"+want);
17  }
18  }
19
```

Output - Run (compound)

```
--- exec:3.5.1:exec (default-cli) @ compound ---
Enter the sum of money
15000
Interest for the first year is ?750.0
Interest after second year is ?787.5
Amount after three years is ?17364.375
-----
BUILD SUCCESS
```

Program16


```

/*
 * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change this license
 */

package com.mycompany.time;

/**
 *
 * @author 1BSCCSA05
 */
import java.util.*;
class Time{
public static void main(String args[]){
Scanner sc = new Scanner(System.in);
System.out.println("Enter time in seconds"); int
sec = sc.nextInt();
int hour = sec/3600;
sec = sec % 3600;
int min = sec / 60;
sec = sec % 60;
System.out.println(hour+" Hours "+min+"Minutes "+sec+" Seconds" );
}
}

```

```

t- Run (time)
Recompiling the module because of changed source code
· Compiling 1 source file with javac [debug release 25] to target\classes

] --- exec:3.5.1:exec (default-cli) @ time ---
Enter time in seconds
2456
· 0 Hours 40Minutes 56 Seconds
-----
BUILD SUCCESS

```

Program17

```
1  /*
2  * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change this license
3  */
4
5  package com.mycompany.swap;
6
7  /**
8   *
9   * @author lBSCCSA05
10  */
11  import java.util.*;
12  class SWAP{
13  public static void main(String args[]){
14  Scanner sc = new Scanner(System.in);
15  System.out.println("Enter value of A"); int a
16  = sc.nextInt();
17  System.out.println("Enter value of B"); int b
18  = sc.nextInt();
19  a = a+b;
20  b = a-b ;
21  a = a-b;
22  System.out.println("A = "+a+"\nB ="+b);
23  }
24  }
25
```

Output - Run (SWAP)

```
Enter value of A
56
Enter value of B
34
A = 34
B =56
BUILD SUCCESS
```

Program18

```
6
7  /**
8   *
9   * @author lBSCCSA46
10  */
11  import java.io.*;
12  public class Linked{
13  public static void main(String[] args) {
14  try (FileOutputStream fos = new FileOutputStream("file.txt")) {
15  fos.write("Hello, World!".getBytes());
16  } catch (IOException e) {
17  System.out.println("Error:" + e.getMessage());
18  }
19  }
20
21  }
22
```

com.mycompany.linked.Linked >

Output - Run (linked) x

```
> skip non existing resourceDirectory C:\Users\lBSCCSA46\Documents\NetBeansProjects\linked\src\main\resources
--- compiler:3.13.0:compile (default-compile) @ linked ---
Recompiling the module because of changed source code.
Compiling 1 source file with javac [debug release 25] to target\classes
--- exec:3.5.1:exec (default-cli) @ linked ---
-----
BUILD SUCCESS
-----
Total time: 3.556 s
Finished at: 2026-01-03T16:11:35+05:30
-----
```

Program19

```
source History
import java.util.*;
public class Stack {
    public static void main(String[] args) {
        Stack<Integer> stack = new Stack<>();
        Scanner scanner = new Scanner(System.in);
        System.out.println("\nStack Operations:");
        System.out.println("1. Push");
        System.out.println("2. Pop");
        System.out.println("3. Peek");
        System.out.println("4. Display Stack");
        System.out.println("5. Exit");
        while (true) {
            System.out.print("\nEnter your choice:");
            int choice = scanner.nextInt();
            switch (choice) {
                case 1:
                    System.out.print("Enter a number to push:");
                    int num = scanner.nextInt();
                    stack.push(num);
                    System.out.println(num + " pushed onto the stack.");
                    break;
                case 2:
                    if (!stack.isEmpty()) {
                        int pop = stack.pop();
                        System.out.println("Popped element: " + pop);
                    } else {
                        System.out.println("Stack is empty. Nothing to pop.");
                    }
                    break;
                case 3:
                    if (!stack.isEmpty()) {
                        System.out.println("Top element: " + stack.peek());
                    } else {
                        System.out.println("Stack is empty.");
                    }
            }
        }
    }
}

tpout - Run (stack)
--- resources:3.3.1:resources (default-resources) @ stack ---
skip non existing resourceDirectory C:\Users\IBSCSA46\Documents\NetBeansProjects\stack\src\main\resources
--- compiler:3.13.0:compile (default-compile) @ stack ---
Recompiling the module because of changed source code.
Compiling 1 source file with javac [debug release 25] to target\classes
-----
|COMPILATION ERROR :
-----
com/mycompany/stack/Stack.java:[14,7] type com.mycompany.stack.Stack does not take parameters
com/mycompany/stack/Stack.java:[14,34] cannot infer type arguments for com.mycompany.stack.Stack
```