

## **Lab Report 1**

### **Submitted to:**

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Department of CSE  
Summer'24

**Course code:** CSE 2104

**Course Title:** Object Oriented Programming Lab

**Section:** 01

University of Liberal Arts Bangladesh

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**Task 01**

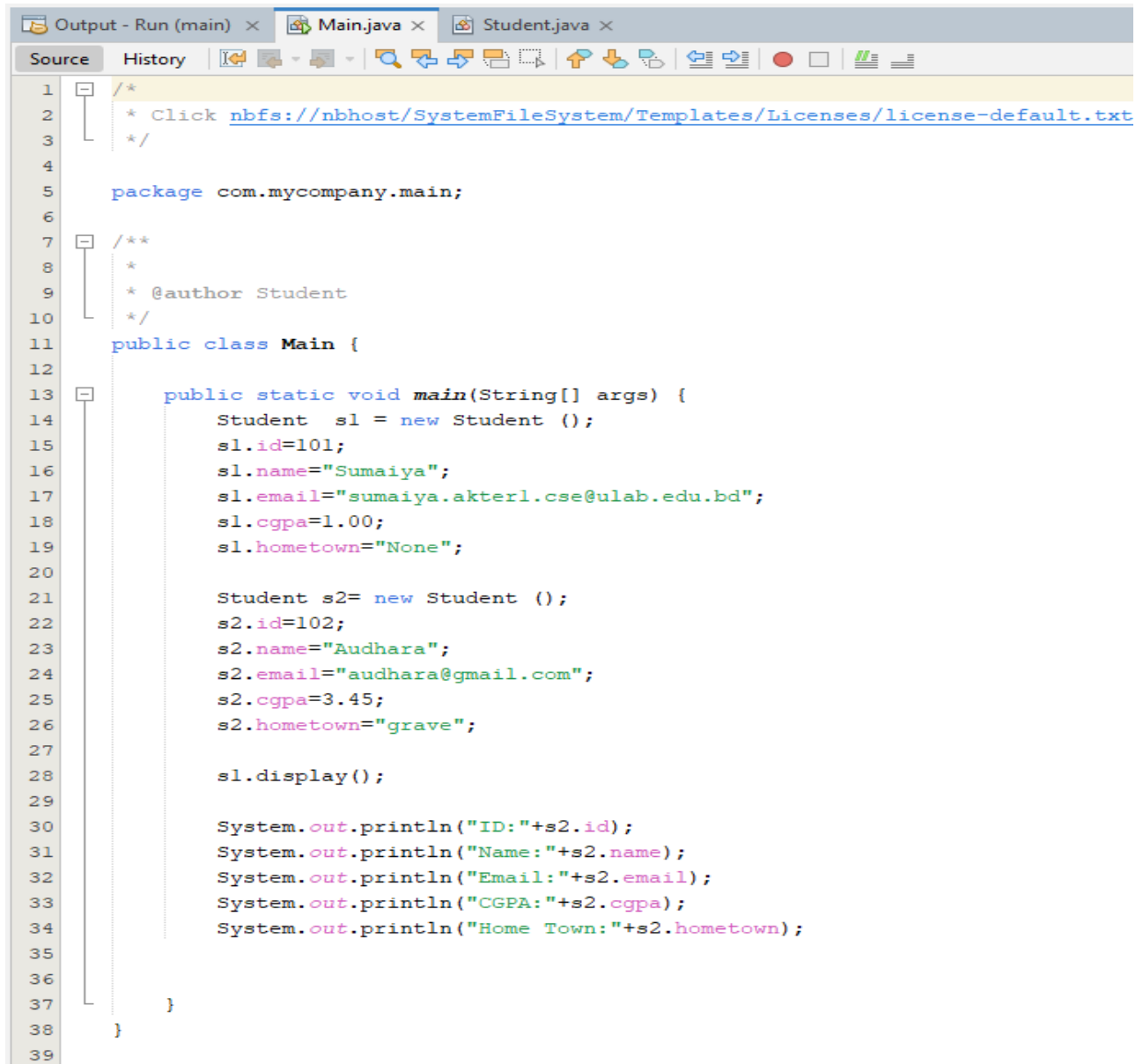
### Task Description

The task was to make a Java program in NetBeans that makes a "Student" class with properties id, name, email, cgpa and hometown. Program should contain display method these object class Two different objects of this class should be created, initialized by different property and there details be displayed using different techniques.

### Code Screenshot

#### Input

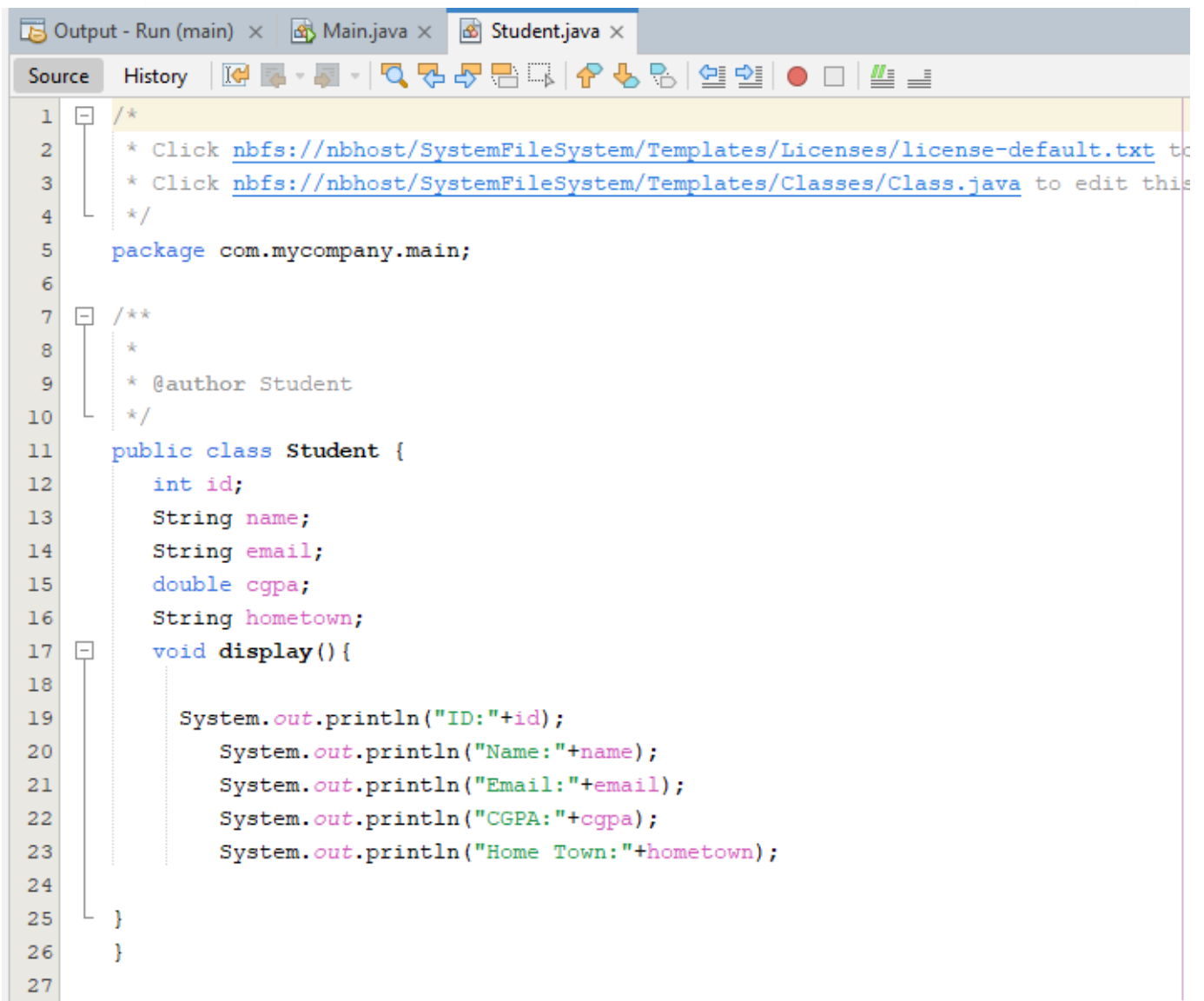
Main.java



```
1  /*
2   * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt
3   */
4
5  package com.mycompany.main;
6
7  /**
8   *
9   * @author Student
10  */
11  public class Main {
12
13      public static void main(String[] args) {
14          Student s1 = new Student ();
15          s1.id=101;
16          s1.name="Sumaiya";
17          s1.email="sumaiya.akter1.cse@ulab.edu.bd";
18          s1.cgpa=1.00;
19          s1.hometown="None";
20
21          Student s2= new Student ();
22          s2.id=102;
23          s2.name="Audhara";
24          s2.email="audhara@gmail.com";
25          s2.cgpa=3.45;
26          s2.hometown="grave";
27
28          s1.display();
29
30          System.out.println("ID: "+s2.id);
31          System.out.println("Name: "+s2.name);
32          System.out.println("Email: "+s2.email);
33          System.out.println("CGPA: "+s2.cgpa);
34          System.out.println("Home Town: "+s2.hometown);
35
36      }
37  }
38
39
```

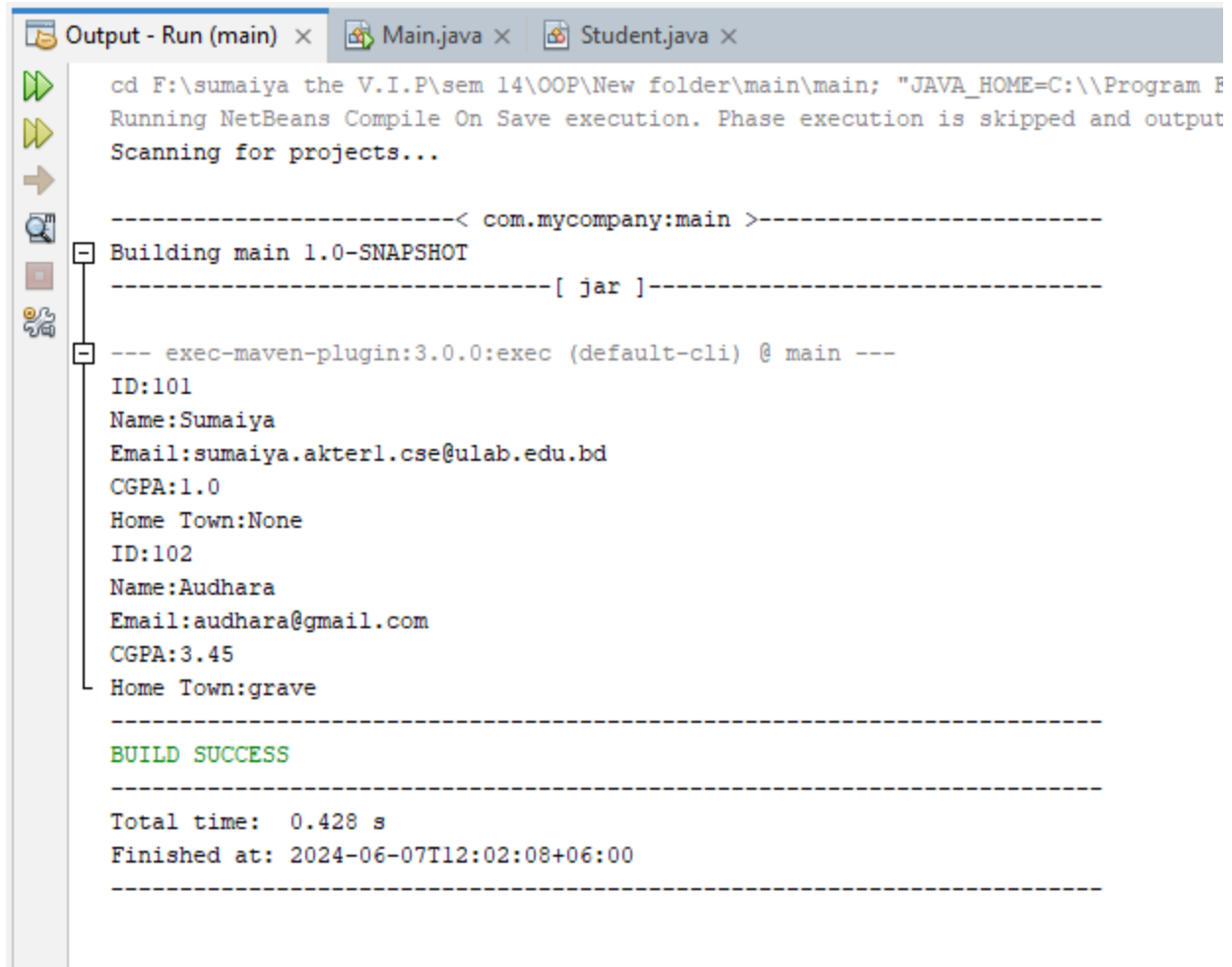
Student.java

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```
1  /*
2   * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to
3   * Click nbfs://nbhost/SystemFileSystem/Templates/Classes/Class.java to edit this
4   */
5   package com.mycompany.main;
6
7   /**
8    *
9    * @author Student
10   */
11   public class Student {
12       int id;
13       String name;
14       String email;
15       double cgpa;
16       String hometown;
17       void display() {
18
19           System.out.println("ID:"+id);
20           System.out.println("Name:"+name);
21           System.out.println("Email:"+email);
22           System.out.println("CGPA:"+cgpa);
23           System.out.println("Home Town:"+hometown);
24       }
25   }
26   }
27
```

### Output



```

Output - Run (main) × Main.java × Student.java ×
cd F:\sumaiya the V.I.P\sem 14\OOP\New folder\main\main; "JAVA_HOME=C:\\Program F
Running NetBeans Compile On Save execution. Phase execution is skipped and output
Scanning for projects...

-----< com.mycompany:main >-----
Building main 1.0-SNAPSHOT
-----[ jar ]-----

--- exec-maven-plugin:3.0.0:exec (default-cli) @ main ---
ID:101
Name:Sumaiya
Email:sumaiya.akter1.cse@ulab.edu.bd
CGPA:1.0
Home Town:None
ID:102
Name:Audhara
Email:audhara@gmail.com
CGPA:3.45
Home Town:grave

BUILD SUCCESS

Total time: 0.428 s
Finished at: 2024-06-07T12:02:08+06:00

```

## Practice Problems

### 01

#### Task Description

I successfully created a Java program to manage a bank account. The program includes a 'BankAccount' class with methods to deposit and withdraw money. I created two bank accounts and performed deposit and withdrawal operations, displaying the account details after each operation.

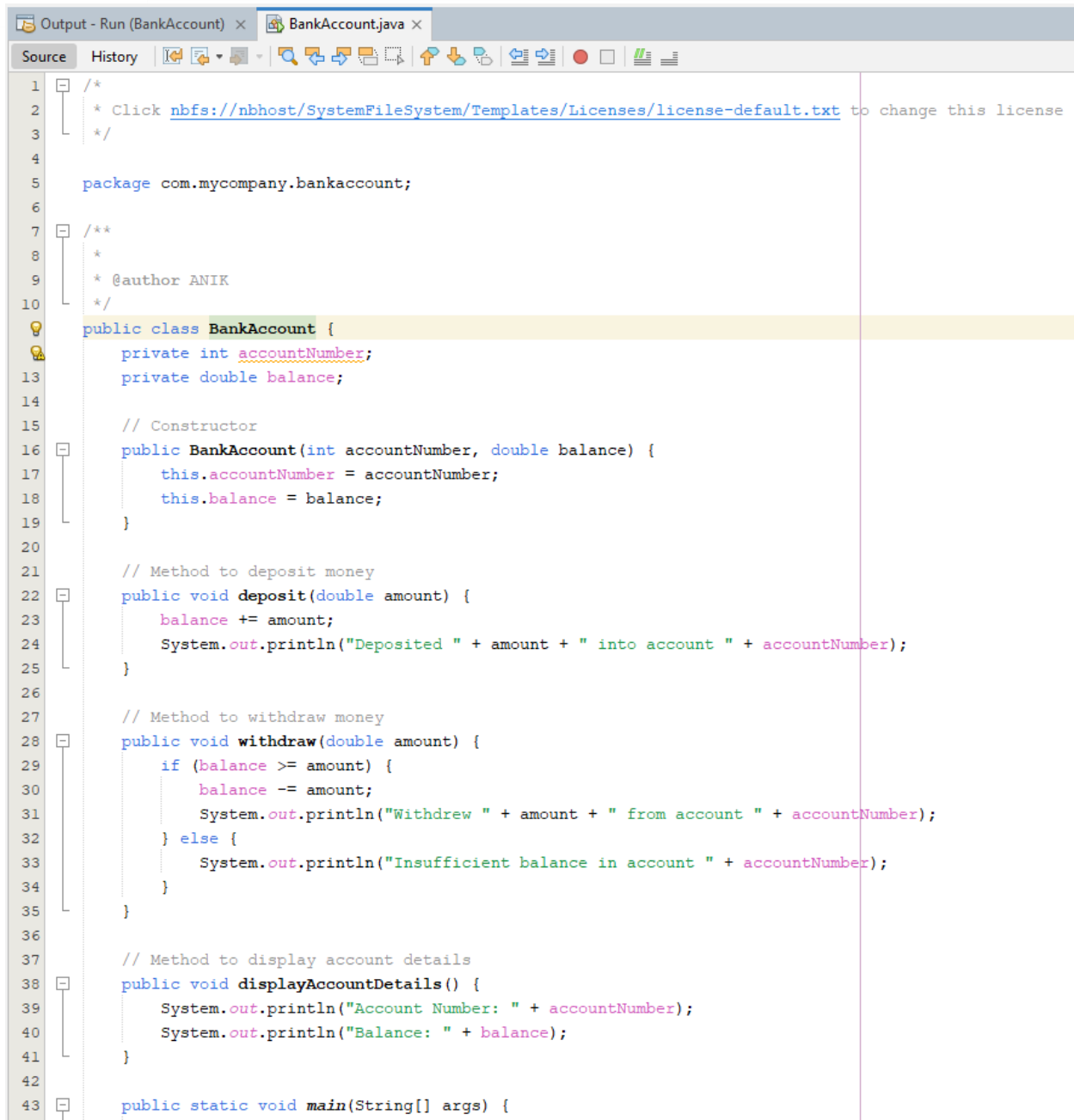
#### Code Screenshot

##### Input

BankAccount.java

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```
1  /*
2   * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change this license
3   */
4
5  package com.mycompany.bankaccount;
6
7  /**
8   *
9   * @author ANIK
10  */
11  public class BankAccount {
12      private int accountNumber;
13      private double balance;
14
15      // Constructor
16      public BankAccount(int accountNumber, double balance) {
17          this.accountNumber = accountNumber;
18          this.balance = balance;
19      }
20
21      // Method to deposit money
22      public void deposit(double amount) {
23          balance += amount;
24          System.out.println("Deposited " + amount + " into account " + accountNumber);
25      }
26
27      // Method to withdraw money
28      public void withdraw(double amount) {
29          if (balance >= amount) {
30              balance -= amount;
31              System.out.println("Withdrew " + amount + " from account " + accountNumber);
32          } else {
33              System.out.println("Insufficient balance in account " + accountNumber);
34          }
35      }
36
37      // Method to display account details
38      public void displayAccountDetails() {
39          System.out.println("Account Number: " + accountNumber);
40          System.out.println("Balance: " + balance);
41      }
42
43      public static void main(String[] args) {
```

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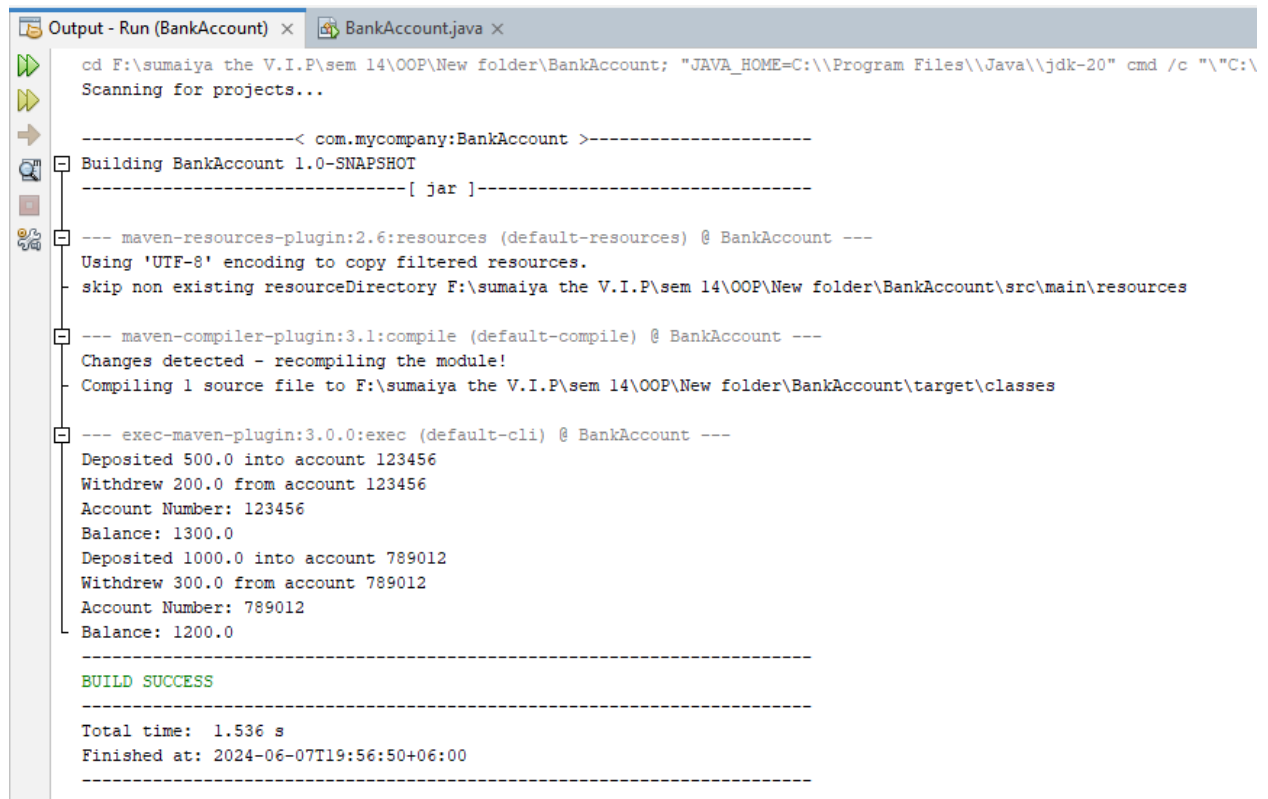
### UNIVERSITY OF LIBERAL ARTS BANGLADESH

```

44      // Create BankAccount objects
45      BankAccount account1 = new BankAccount( accountNumber: 123456, balance: 1000.0);
46      BankAccount account2 = new BankAccount( accountNumber: 789012, balance: 500.0);
47
48      // Perform deposit and withdrawal operations
49      account1.deposit( amount: 500.0);
50      account1.withdraw( amount: 200.0);
51      account1.displayAccountDetails();
52
53      account2.deposit( amount: 1000.0);
54      account2.withdraw( amount: 300.0);
55      account2.displayAccountDetails();
56  }
57  }

```

### Output



```

Output - Run (BankAccount) x BankAccount.java x
cd F:\sumaiya the V.I.P\sem 14\OOP\New folder\BankAccount; "JAVA_HOME=C:\Program Files\Java\jdk-20" cmd /c "%C:\
Scanning for projects...

-----< com.mycompany:BankAccount >-----
Building BankAccount 1.0-SNAPSHOT
-----[ jar ]-----

--- maven-resources-plugin:2.6:resources (default-resources) @ BankAccount ---
Using 'UTF-8' encoding to copy filtered resources.
skip non existing resourceDirectory F:\sumaiya the V.I.P\sem 14\OOP\New folder\BankAccount\src\main\resources

--- maven-compiler-plugin:3.1:compile (default-compile) @ BankAccount ---
Changes detected - recompiling the module!
Compiling 1 source file to F:\sumaiya the V.I.P\sem 14\OOP\New folder\BankAccount\target\classes

--- exec-maven-plugin:3.0.0:exec (default-cli) @ BankAccount ---
Deposited 500.0 into account 123456
Withdrew 200.0 from account 123456
Account Number: 123456
Balance: 1300.0
Deposited 1000.0 into account 789012
Withdrew 300.0 from account 789012
Account Number: 789012
Balance: 1200.0

BUILD SUCCESS

Total time: 1.536 s
Finished at: 2024-06-07T19:56:50+06:00

```

## 02

### Task Description:

I successfully created a Java program to manage a rectangle. The program includes a 'Rectangle' class with methods to calculate the perimeter and area. I created two rectangles and calculated their perimeter and area, displaying the results for each rectangle.

## Code Screenshot

### Input

Rectangle.java



```
1  /*
2   * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt
3   */
4
5  package com.mycompany.rectangle;
6
7  /**
8   *
9   * @author ANIK
10  */
11  public class Rectangle {
12      private double length;
13      private double width;
14
15      // Constructor
16      public Rectangle(double length, double width) {
17          this.length = length;
18          this.width = width;
19      }
20
21      // Method to calculate perimeter
22      public double calculatePerimeter() {
23          return 2 * (length + width);
24      }
25
26      // Method to calculate area
27      public double calculateArea() {
28          return length * width;
29      }
30
31      public static void main(String[] args) {
32          // Create Rectangle objects
33          Rectangle rect1 = new Rectangle( length:5.0, width:3.0);
34          Rectangle rect2 = new Rectangle( length:7.0, width:4.0);
35
36          // Display perimeter and area
37          System.out.println( "Rectangle 1:");
38          System.out.println("Perimeter: " + rect1.calculatePerimeter());
39          System.out.println("Area: " + rect1.calculateArea());
40
41          System.out.println( "\nRectangle 2:");
42          System.out.println("Perimeter: " + rect2.calculatePerimeter());
43          System.out.println("Area: " + rect2.calculateArea());
44      }
45  }
```

## Output

```

Output - Run (Rectangle) x Rectangle.java x
cd F:\sumaiya the V.I.P\sem 14\OOP\New folder\Rectangle; "JAVA_HOME=C:\\P
Running NetBeans Compile On Save execution. Phase execution is skipped and
Scanning for projects...

-----< com.mycompany:Rectangle >-----
Building Rectangle 1.0-SNAPSHOT
-----[ jar ]-----

--- exec-maven-plugin:3.0.0:exec (default-cli) @ Rectangle ---
Rectangle 1:
Perimeter: 16.0
Area: 15.0

Rectangle 2:
Perimeter: 22.0
Area: 28.0

BUILD SUCCESS

Total time: 0.417 s
Finished at: 2024-06-07T20:15:57+06:00

```

## 03

### Task Description:

I successfully created a Java program to manage movie details. The program includes a 'Movie' class with properties such as title, genre, lead actor, director, release year, rating, and review. I created two movie objects and displayed their properties, including a review based on the rating.

### Code Screenshot

#### Input

Movie.java



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```

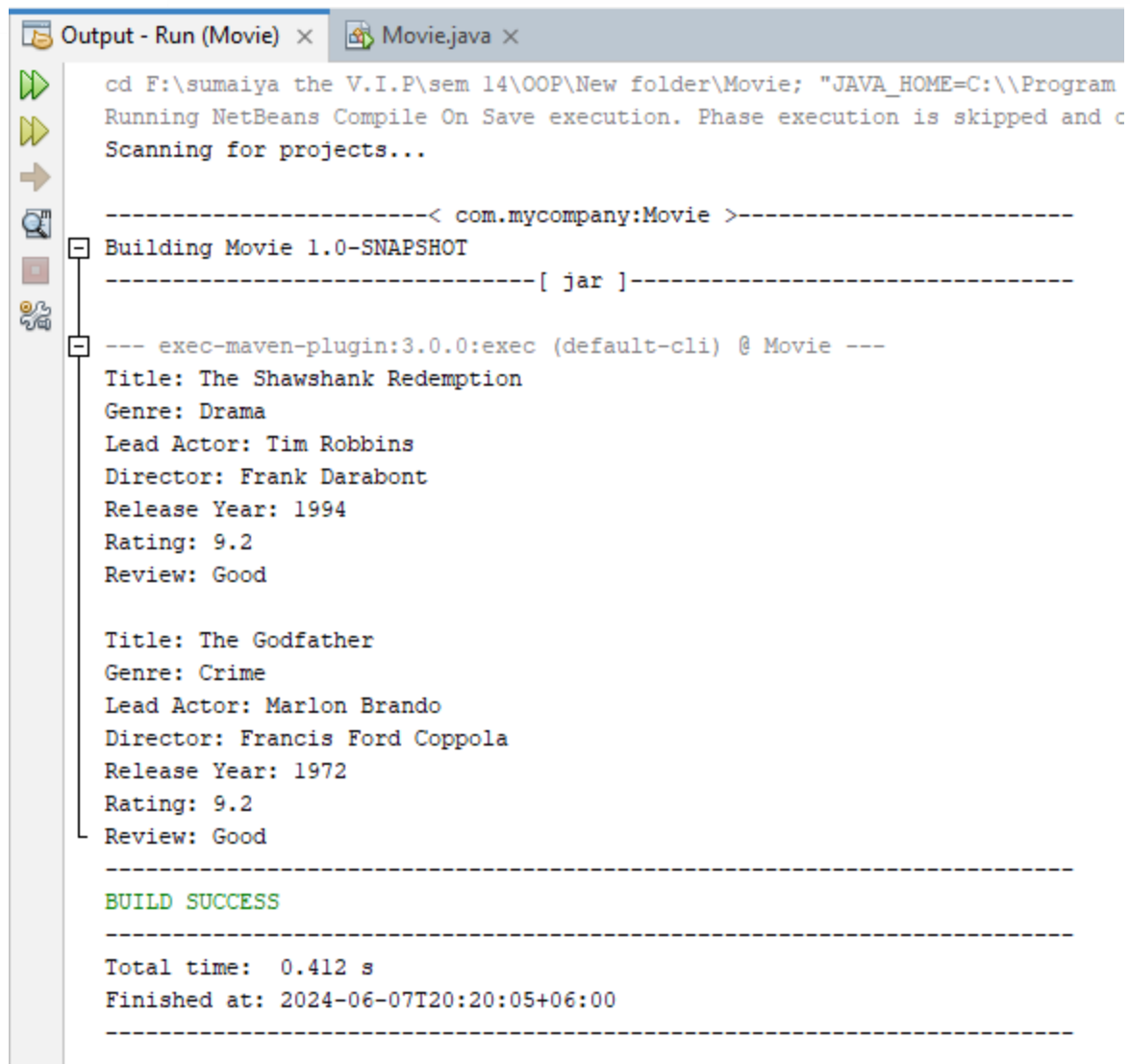
1  /*
2   * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change this license
3   */
4
5   package com.mycompany.movie;
6
7   /**
8    *
9    * @author ANIK
10   */
11  public class Movie {
12      private String title;
13      private String genre;
14      private String leadActor;
15      private String director;
16      private int releaseYear;
17      private double rating;
18      private String review;
19
20      // Constructor
21      public Movie(String title, String genre, String leadActor, String director, int releaseYear, double rating) {
22          this.title = title;
23          this.genre = genre;
24          this.leadActor = leadActor;
25          this.director = director;
26          this.releaseYear = releaseYear;
27          this.rating = rating;
28
29          if (rating < 5) {
30              this.review = "Not Good";
31          } else {
32              this.review = "Good";
33          }
34      }
35
36      // Method to display movie details
37      public void displayMovieDetails() {
38          System.out.println("Title: " + title);
39          System.out.println("Genre: " + genre);
40          System.out.println("Lead Actor: " + leadActor);
41          System.out.println("Director: " + director);
42          System.out.println("Release Year: " + releaseYear);
43          System.out.println("Rating: " + rating);
44
45          System.out.println("Review: " + review);
46      }
47
48      public static void main(String[] args) {
49          // Create Movie objects
50          Movie movie1 = new Movie("The Shawshank Redemption", "Drama", "Tim Robbins", "Frank Darabont", 1994, 9.2);
51          Movie movie2 = new Movie("The Godfather", "Crime", "Marlon Brando", "Francis Ford Coppola", 1972, 9.2);
52
53          // Display movie details
54          movie1.displayMovieDetails();
55          System.out.println();
56          movie2.displayMovieDetails();
57      }
58  }

```

### Output

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The screenshot shows the NetBeans IDE with two tabs: 'Output - Run (Movie)' and 'Movie.java'. The 'Output' tab is active, displaying the following text:

```
cd F:\sumaiya the V.I.P\sem 14\OOP\New folder\Movie; "JAVA_HOME=C:\\Program
Running NetBeans Compile On Save execution. Phase execution is skipped and c
Scanning for projects...

-----< com.mycompany:Movie >-----
Building Movie 1.0-SNAPSHOT
-----[ jar ]-----

--- exec-maven-plugin:3.0.0:exec (default-cli) @ Movie ---
Title: The Shawshank Redemption
Genre: Drama
Lead Actor: Tim Robbins
Director: Frank Darabont
Release Year: 1994
Rating: 9.2
Review: Good

Title: The Godfather
Genre: Crime
Lead Actor: Marlon Brando
Director: Francis Ford Coppola
Release Year: 1972
Rating: 9.2
Review: Good

BUILD SUCCESS

Total time: 0.412 s
Finished at: 2024-06-07T20:20:05+06:00
```