Java Assignment

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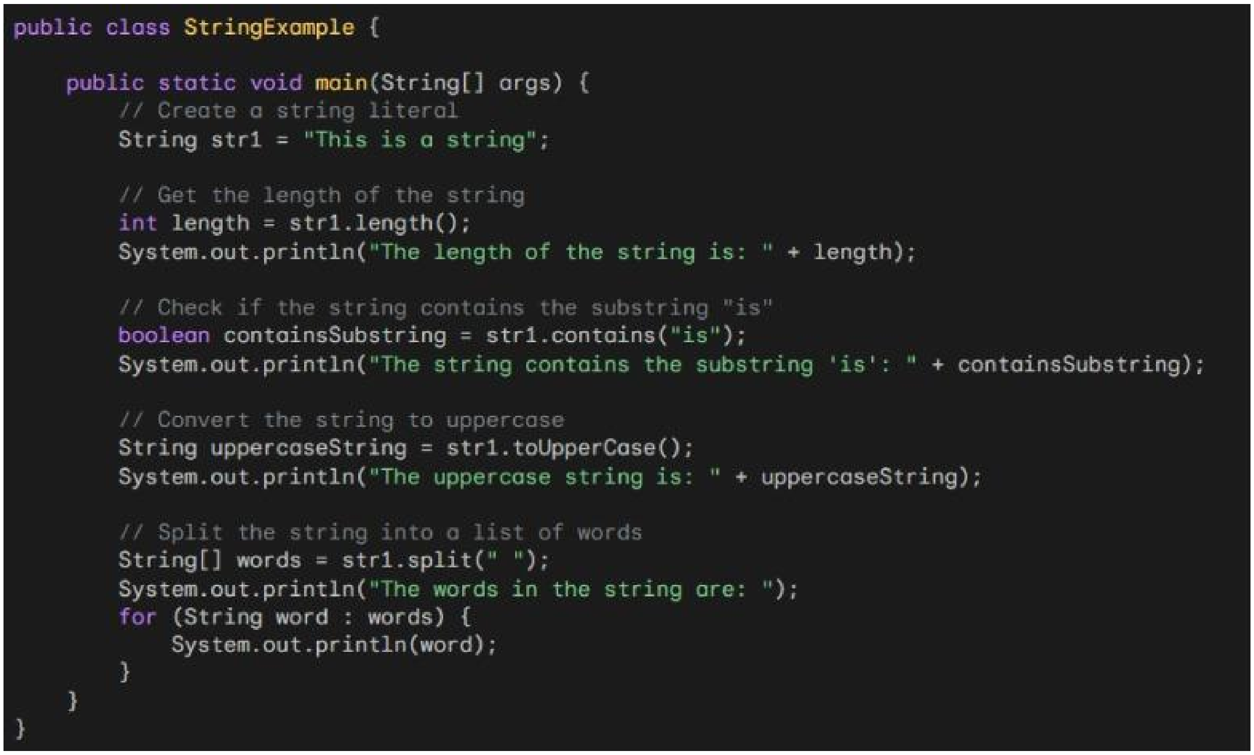
Registration No: 21BAI10029

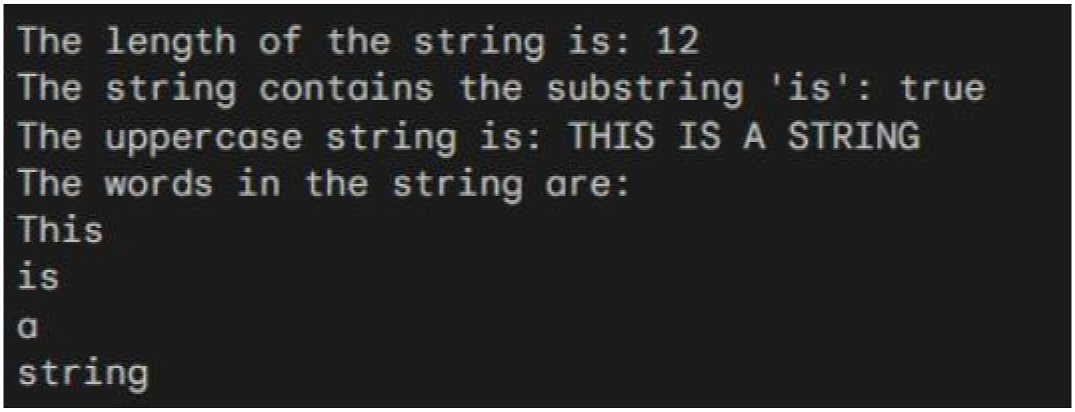
1) String Class In Java:

Code :



```java
public class StringExample {

    public static void main(String[] args) {
        // Create a string literal
        String str1 = "This is a string";

        // Get the length of the string
        int length = str1.length();
        System.out.println("The length of the string is: " + length);

        // Check if the string contains the substring "is"
        boolean containsSubstring = str1.contains("is");
        System.out.println("The string contains the substring 'is': " + containsSubstring);

        // Convert the string to uppercase
        String uppercaseString = str1.toUpperCase();
        System.out.println("The uppercase string is: " + uppercaseString);

        // Split the string into a list of words
        String[] words = str1.split(" ");
        System.out.println("The words in the string are: ");
        for (String word : words) {
            System.out.println(word);
        }
    }
}
```

Output:



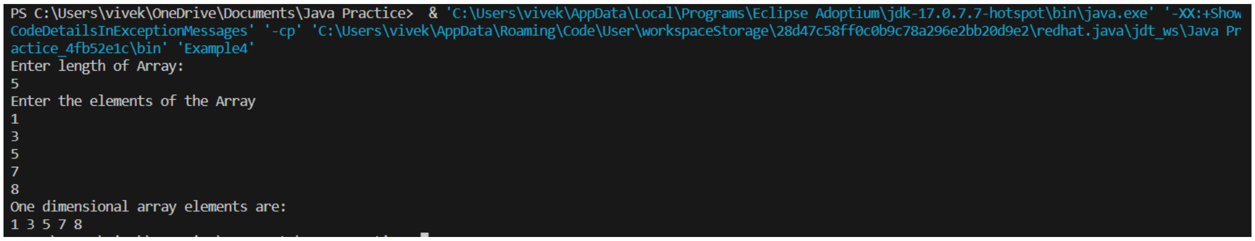
```
The length of the string is: 12
The string contains the substring 'is': true
The uppercase string is: THIS IS A STRING
The words in the string are:
This
is
a
string
```

2) One Dimensional Array In Java

Code:

```java
import java.util.Scanner;

public class Example4 {

  public static void main(String args[]) {
    try (// creating object of Scanner class
    Scanner scan = new Scanner(System.in)) {
        System.out.println("Enter length of Array: ");
        int arrLength = scan.nextInt();

        int[] anArray = new int[arrLength];
        System.out.println("Enter the elements of the Array");
        for (int i = 0; i < arrLength; i++) {
          // taking array input
          anArray[i] = scan.nextInt();
        }

        System.out.println("One dimensional array elements are:");
        for (int i = 0; i < arrLength; i++) {
          // printing array elements
          System.out.print(anArray[i] + " ");
        }
    }
  }
}
```

Output:



```
PS C:\Users\vivek\OneDrive\Documents\Java Practice>  & 'C:\Users\vivek\AppData\Local\Programs\Eclipse Adoptium\jdk-17.0.7.7-hotspot\bin\java.exe' '-XX:+Show
CodeDetailsInExceptionMessages' '-cp' 'C:\Users\vivek\AppData\Roaming\Code\User\workspaceStorage\28d47c58ff0c0b9c78a296e2bb20d9e2\redhat.java\jdt_ws\Java Pr
actice_4fb52e1c\bin' 'Example4'
Enter length of Array:
5
Enter the elements of the Array
1
3
5
7
8
One dimensional array elements are:
1 3 5 7 8
```

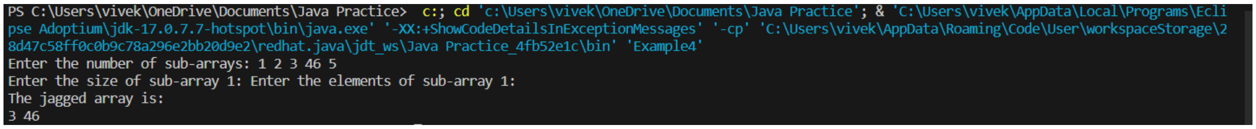
3) Jagged Array In Java

Code:

```
import java.util.Scanner;

public class Example4 {
    public static void main(String[] args) {
        Scanner scan = new Scanner(System.in);
        System.out.print("Enter the number of sub-arrays: ");
        int numberOfArrays = scan.nextInt();

        // Declare the jagged array
        int[][] jaggedArray = new int[numberOfArrays][];

        // Allocate memory to each sub-array
        for (int i = 0; i < numberOfArrays; i++) {
            System.out.print("Enter the size of sub-array " + (i + 1) + ":
");
            int sizeOfSubArray = scan.nextInt();
            jaggedArray[i] = new int[sizeOfSubArray];
        }

        // Initialize the elements of each sub-array
        for (int i = 0; i < numberOfArrays; i++) {
            System.out.println("Enter the elements of sub-array " + (i +
1) + ":");
```

```java
            for (int j = 0; j < jaggedArray[i].length; j++) {
                jaggedArray[i][j] = scan.nextInt();
            }
        }

        // Print the elements of the jagged array
        System.out.println("The jagged array is:");
        for (int i = 0; i < numberOfArrays; i++) {
            for (int j = 0; j < jaggedArray[i].length; j++) {
                System.out.print(jaggedArray[i][j] + " ");
            }
            System.out.println();
        }

        scan.close();
    }
}
```

Output:



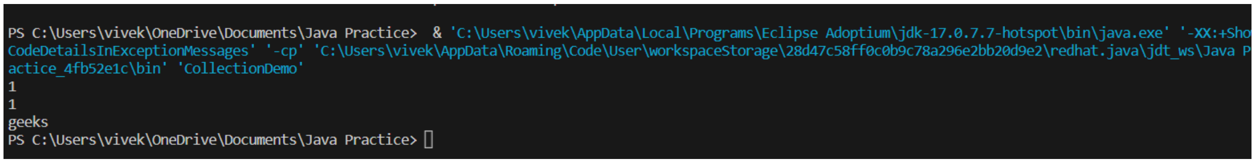
```
PS C:\Users\vivek\OneDrive\Documents\Java Practice>  c:; cd 'c:\Users\vivek\OneDrive\Documents\Java Practice'; & 'C:\Users\vivek\AppData\Local\Programs\Ecli
pse Adoptium\jdk-17.0.7.7-hotspot\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\vivek\AppData\Roaming\Code\User\workspaceStorage\2
8d47c58ff0c0b9c78a296e2bb20d9e2\redhat.java\jdt_ws\Java Practice_4fb52e1c\bin' 'Example4'
Enter the number of sub-arrays: 1 2 3 46 5
Enter the size of sub-array 1: Enter the elements of sub-array 1:
The jagged array is:
3 46
```

4) Collections in Java

Code:

```java
import java.util.*;

class CollectionDemo {

    public static void main(String[] args)
    {
        // Creating instances of the array,
        // vector and hashtable
        int arr[] = new int[] { 1, 2, 3, 4 };
        Vector<Integer> v = new Vector();
        Hashtable<Integer, String> h = new Hashtable();

        // Adding the elements into the
        // vector
        v.addElement(1);
        v.addElement(2);

        // Adding the element into the
        // hashtable
        h.put(1, "geeks");
        h.put(2, "4geeks");

        // Array instance creation requires [],
        // while Vector and hastable require ()
        // Vector element insertion requires addElement(),
        // but hashtable element insertion requires put()

        // Accessing the first element of the
        // array, vector and hashtable
        System.out.println(arr[0]);
        System.out.println(v.elementAt(0));
        System.out.println(h.get(1));

        // Array elements are accessed using [],
        // vector elements using elementAt()
        // and hashtable elements using get()
    }
}
```

Output:



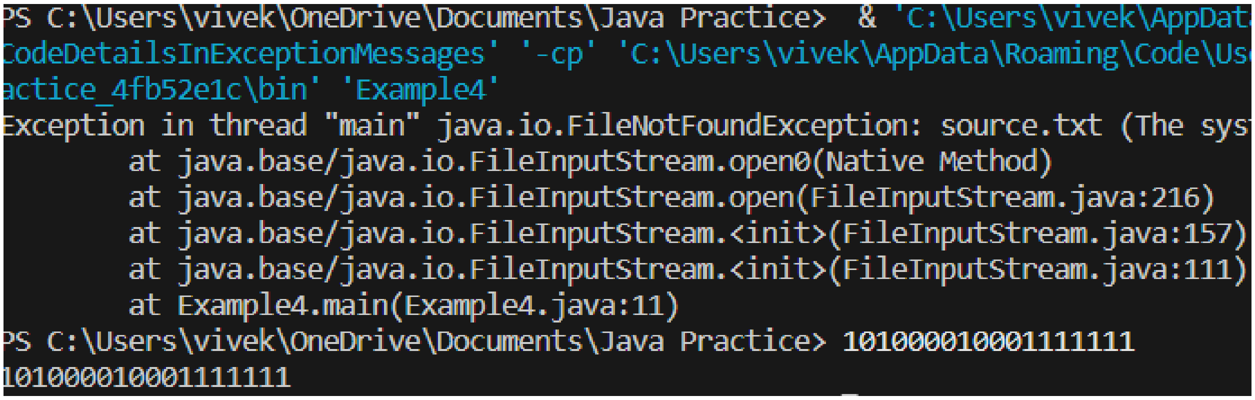
```
PS C:\Users\vivek\OneDrive\Documents\Java Practice>  & 'C:\Users\vivek\AppData\Local\Programs\Eclipse Adoptium\jdk-17.0.7.7-hotspot\bin\java.exe' '-XX:+Sho
CodeDetailsInExceptionMessages' '-cp' 'C:\Users\vivek\AppData\Roaming\Code\User\workspaceStorage\28d47c58ff0c0b9c78a296e2bb20d9e2\redhat.java\jdt_ws\Java P
actice_4fb52e1c\bin' 'CollectionDemo'
1
1
geeks
PS C:\Users\vivek\OneDrive\Documents\Java Practice> 
```

5) Byte Stream in Java

Code:

```java
import java.io.*;
public class Example4
{
    public static void main(String[] args) throws IOException
    {
        FileInputStream sourceStream = null;
        FileOutputStream targetStream = null;

        try
        {
            sourceStream = new FileInputStream("source.txt");
            targetStream = new FileOutputStream ("destination.txt");

            // Reading source file using read method
            // and write to file byte by byte using write method
            int temp;
            while ((temp = sourceStream.read()) != -1)
                targetStream.write((byte)temp);
        }
        finally
        {
            if (sourceStream != null){
                sourceStream.close();
            }
            if (targetStream != null){
                targetStream.close();
            }
        }
    }
}
```

Output:



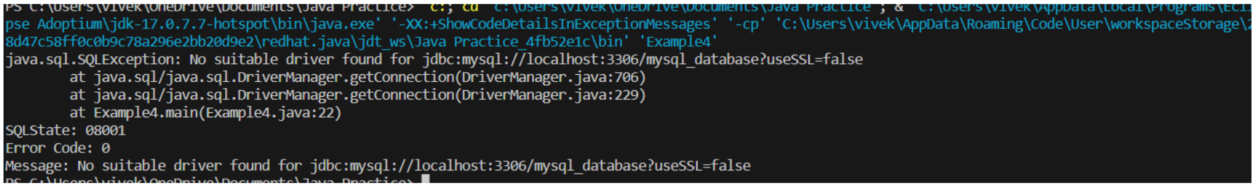
```
PS C:\Users\vivek\OneDrive\Documents\Java Practice>  & 'C:\Users\vivek\AppDat
CodeDetailsInExceptionMessages' '-cp' 'C:\Users\vivek\AppData\Roaming\Code\Us
actice_4fb52e1c\bin' 'Example4'
Exception in thread "main" java.io.FileNotFoundException: source.txt (The sys
        at java.base/java.io.FileInputStream.open0(Native Method)
        at java.base/java.io.FileInputStream.open(FileInputStream.java:216)
        at java.base/java.io.FileInputStream.<init>(FileInputStream.java:157)
        at java.base/java.io.FileInputStream.<init>(FileInputStream.java:111)
        at Example4.main(Example4.java:11)
PS C:\Users\vivek\OneDrive\Documents\Java Practice> 101000010001111111
101000010001111111
```

6) JDBC Crud Operations

Code:

```
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.PreparedStatement;
import java.sql.ResultSet;
import java.sql.SQLException;

/**
 * Select PreparedStatement JDBC Example
 *
 * @author Ramesh Fadatare
 *
 */
public class Example4 {
    private static final String QUERY = "select
id,name,email,country,password from users where id =?";

    public static void main(String[] args) {

        // using try-with-resources to avoid closing resources (boiler
plate code)

        // Step 1: Establishing a Connection
        try (Connection connection = DriverManager
.getConnection("jdbc:mysql://localhost:3306/mysql_database?useSSL=false",
"root", "root");

            // Step 2:Create a statement using connection object
            PreparedStatement preparedStatement =
connection.prepareStatement(QUERY);) {
            preparedStatement.setInt(1, 1);
            System.out.println(preparedStatement);
            // Step 3: Execute the query or update query
            ResultSet rs = preparedStatement.executeQuery();

            // Step 4: Process the ResultSet object.
            while (rs.next()) {
                int id = rs.getInt("id");
                String name = rs.getString("name");
                String email = rs.getString("email");
                String country = rs.getString("country");
                String password = rs.getString("password");
                System.out.println(id + "," + name + "," + email + "," +
country + "," + password);
            }
        } catch (SQLException e) {
            printSQLException(e);
        }
        // Step 4: try-with-resource statement will auto close the
connection.
    }

    public static void printSQLException(SQLException ex) {
        for (Throwable e: ex) {
            if (e instanceof SQLException) {
                e.printStackTrace(System.err);
                System.err.println("SQLState: " + ((SQLException)
e).getSQLState());
                System.err.println("Error Code: " + ((SQLException)
e).getErrorCode());
                System.err.println("Message: " + e.getMessage());
                Throwable t = ex.getCause();
                while (t != null) {
                    System.out.println("Cause: " + t);
                    t = t.getCause();
                }
            }
        }
    }
}
```

Output:

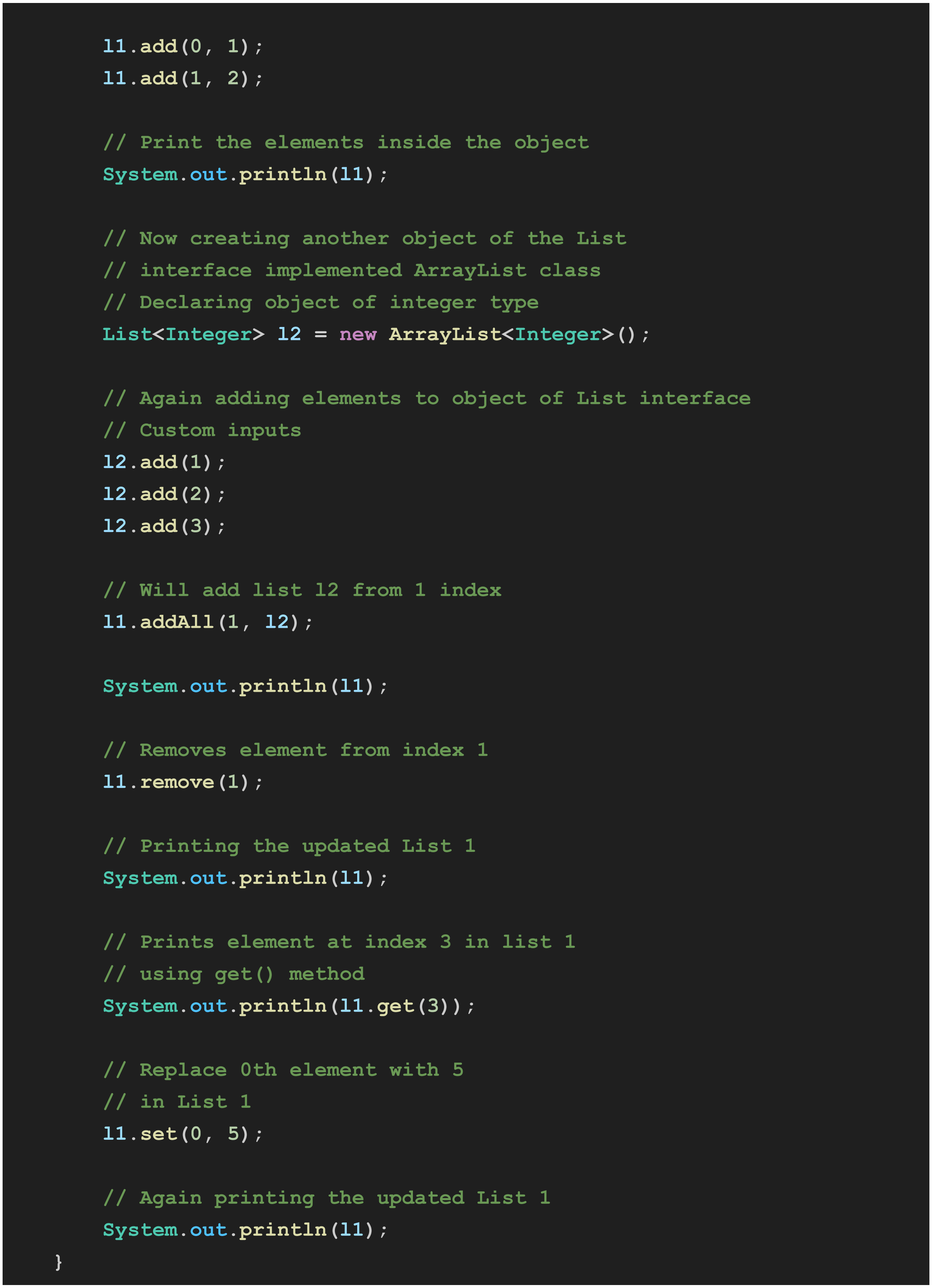


```
PS C:\Users\vivek\OneDrive\Documents\Java Practice>  c:; cd 'c:\Users\vivek\OneDrive\Documents\Java Practice'; & 'C:\Users\vivek\AppData\Local\Programs\Ecli
pse Adoptium\jdk-17.0.7.7-hotspot\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\vivek\AppData\Roaming\Code\User\workspaceStorage\2
8d47c58ff0c0b9c78a296e2bb20d9e2\redhat.java\jdt_ws\Java Practice_4fb52e1c\bin' 'Example4'
java.sql.SQLException: No suitable driver found for jdbc:mysql://localhost:3306/mysql_database?useSSL=false
        at java.sql/java.sql.DriverManager.getConnection(DriverManager.java:706)
        at java.sql/java.sql.DriverManager.getConnection(DriverManager.java:229)
        at Example4.main(Example4.java:22)
SQLState: 08001
Error Code: 0
Message: No suitable driver found for jdbc:mysql://localhost:3306/mysql_database?useSSL=false
PS C:\Users\vivek\OneDrive\Documents\Java Practice>
```

7) Java Interface

Code:

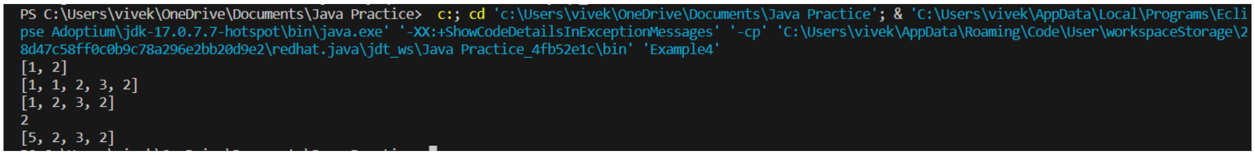
```
// Java program to Demonstrate List Interface

// Importing all utility classes
import java.util.*;

// Main class
// ListDemo class
class Example4 {

    // Main driver method
    public static void main(String[] args)
    {

        // Creating an object of List interface
        // implemented by the ArrayList class
        List<Integer> l1 = new ArrayList<Integer>();

        // Adding elements to object of List interface
        // Custom inputs
```



```java
        l1.add(0, 1);
        l1.add(1, 2);

        // Print the elements inside the object
        System.out.println(l1);

        // Now creating another object of the List
        // interface implemented ArrayList class
        // Declaring object of integer type
        List<Integer> l2 = new ArrayList<Integer>();

        // Again adding elements to object of List interface
        // Custom inputs
        l2.add(1);
        l2.add(2);
        l2.add(3);

        // Will add list l2 from 1 index
        l1.addAll(1, l2);

        System.out.println(l1);

        // Removes element from index 1
        l1.remove(1);

        // Printing the updated List 1
        System.out.println(l1);

        // Prints element at index 3 in list 1
        // using get() method
        System.out.println(l1.get(3));

        // Replace 0th element with 5
        // in List 1
        l1.set(0, 5);

        // Again printing the updated List 1
        System.out.println(l1);
    }
```

```
}
```

Output:

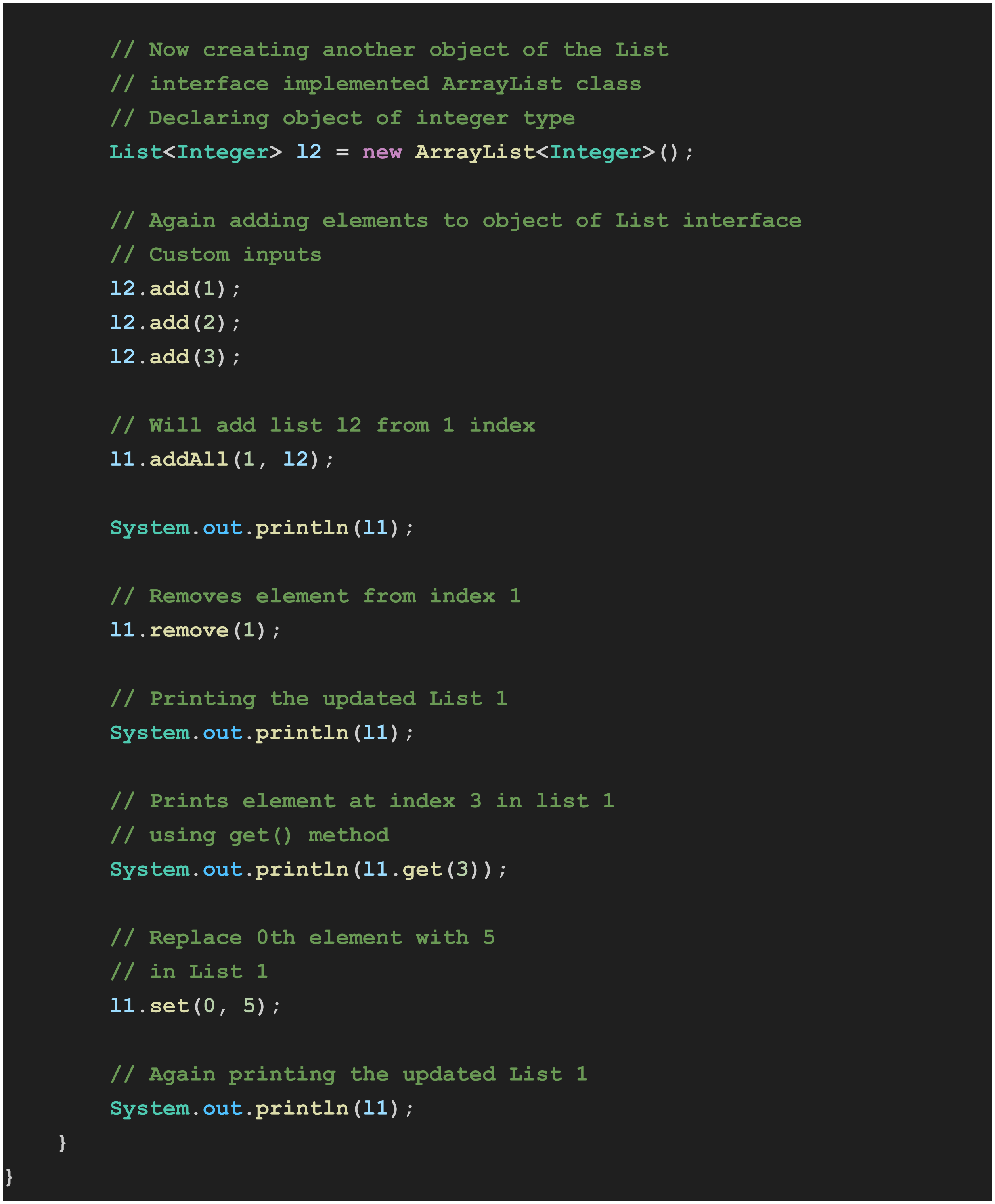


```
PS C:\Users\vivek\OneDrive\Documents\Java Practice>  c:; cd 'c:\Users\vivek\OneDrive\Documents\Java Practice'; & 'C:\Users\vivek\AppData\Local\Programs\Ecli
pse Adoptium\jdk-17.0.7.7-hotspot\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\vivek\AppData\Roaming\Code\User\workspaceStorage\2
8d47c58ff0c0b9c78a296e2bb20d9e2\redhat.java\jdt_ws\Java Practice_4fb52e1c\bin' 'Example4'
[1, 2]
[1, 1, 2, 3, 2]
[1, 2, 3, 2]
2
[5, 2, 3, 2]
```

8) Java Array list

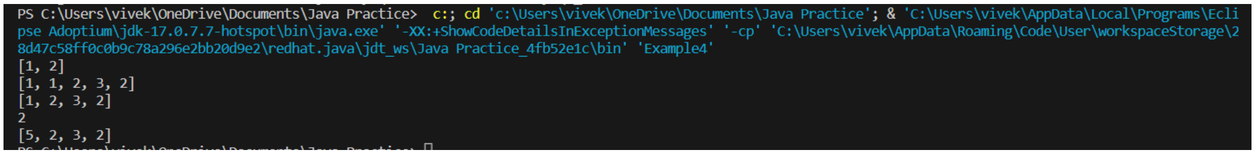
Code:

```
// Java program to Demonstrate List Interface

// Importing all utility classes
import java.util.*;

// Main class
// ListDemo class
class Example4 {

    // Main driver method
    public static void main(String[] args)
    {

        // Creating an object of List interface
        // implemented by the ArrayList class
        List<Integer> l1 = new ArrayList<Integer>();

        // Adding elements to object of List interface
        // Custom inputs

        l1.add(0, 1);
        l1.add(1, 2);

        // Print the elements inside the object
        System.out.println(l1);
```



```java
        // Now creating another object of the List
        // interface implemented ArrayList class
        // Declaring object of integer type
        List<Integer> l2 = new ArrayList<Integer>();

        // Again adding elements to object of List interface
        // Custom inputs
        l2.add(1);
        l2.add(2);
        l2.add(3);

        // Will add list l2 from 1 index
        l1.addAll(1, l2);

        System.out.println(l1);

        // Removes element from index 1
        l1.remove(1);

        // Printing the updated List 1
        System.out.println(l1);

        // Prints element at index 3 in list 1
        // using get() method
        System.out.println(l1.get(3));

        // Replace 0th element with 5
        // in List 1
        l1.set(0, 5);

        // Again printing the updated List 1
        System.out.println(l1);
    }
}
```

Output:



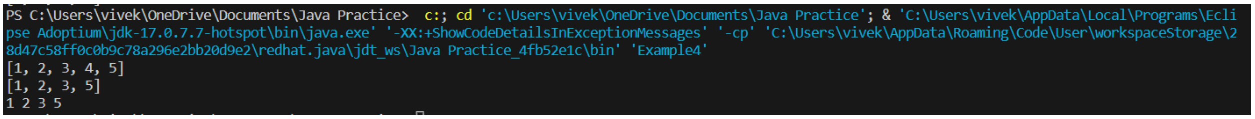
```
PS C:\Users\vivek\OneDrive\Documents\Java Practice>  c:; cd 'c:\Users\vivek\OneDrive\Documents\Java Practice'; & 'C:\Users\vivek\AppData\Local\Programs\Ecli
pse Adoptium\jdk-17.0.7.7-hotspot\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\vivek\AppData\Roaming\Code\User\workspaceStorage\2
8d47c58ff0c0b9c78a296e2bb20d9e2\redhat.java\jdt_ws\Java Practice_4fb52e1c\bin' 'Example4'
[1, 2]
[1, 1, 2, 3, 2]
[1, 2, 3, 2]
2
[5, 2, 3, 2]
PS C:\Users\vivek\OneDrive\Documents\Java Practice> 
```

9) Java Vector

Code:

```
import java.util.*;

// Main class
class Example4 {

    // Main driver method
    public static void main(String[] args)
    {
        // Size of the Vector
        int n = 5;

        // Declaring the Vector with
        // initial size n
        Vector<Integer> v = new Vector<Integer>(n);

        // Appending new elements at
        // the end of the vector
        for (int i = 1; i <= n; i++)
            v.add(i);

        // Printing elements
        System.out.println(v);

        // Remove element at index 3
        v.remove(3);

        // Displaying the vector
        // after deletion
        System.out.println(v);
        // iterating over vector elements
        // using for loop
        for (int i = 0; i < v.size(); i++)

            // Printing elements one by one
            System.out.print(v.get(i) + " ");
    }
}
```

Output:

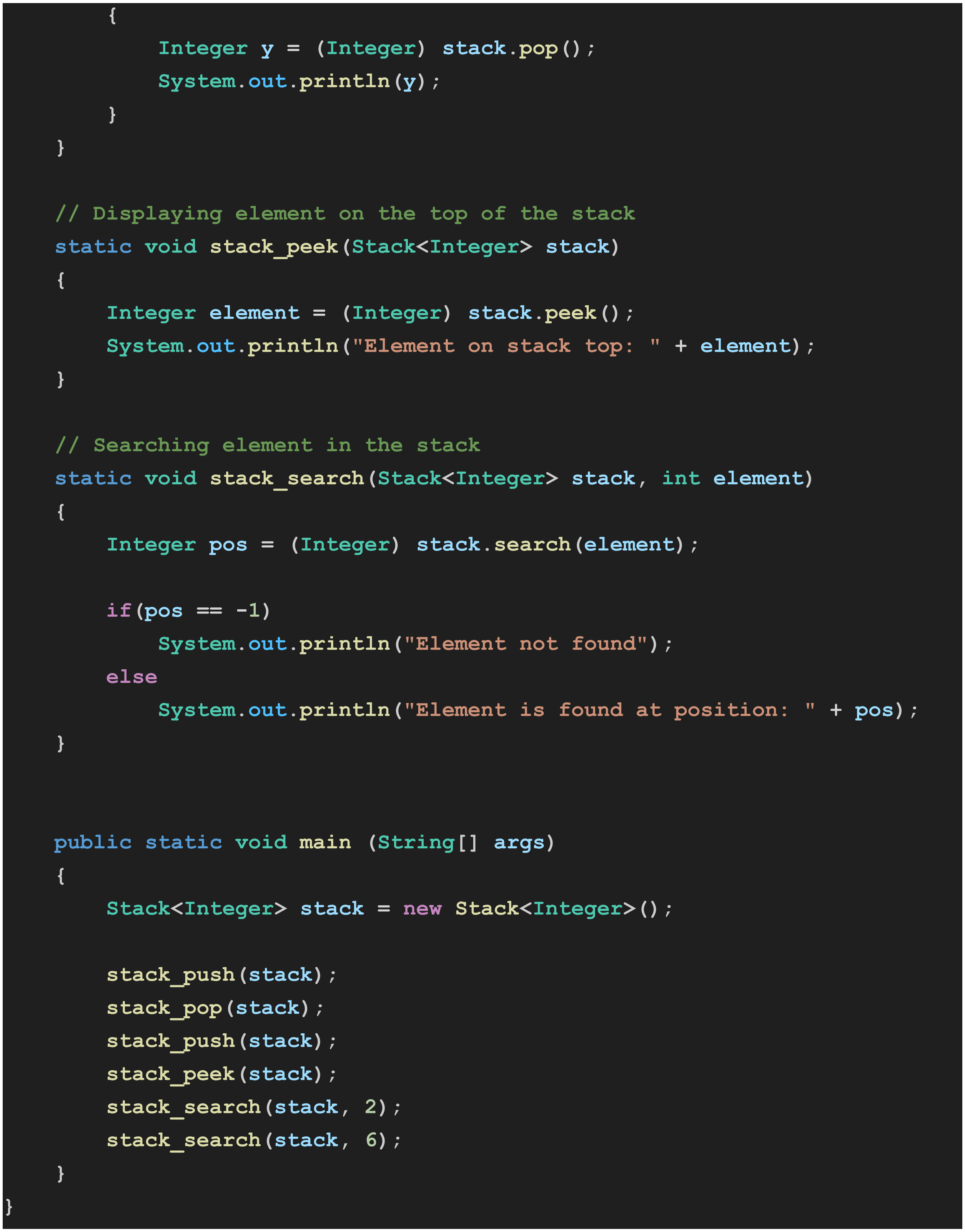


```
PS C:\Users\vivek\OneDrive\Documents\Java Practice>  c:; cd 'c:\Users\vivek\OneDrive\Documents\Java Practice'; & 'C:\Users\vivek\AppData\Local\Programs\Ecli
pse Adoptium\jdk-17.0.7.7-hotspot\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\vivek\AppData\Roaming\Code\User\workspaceStorage\2
8d47c58ff0c0b9c78a296e2bb20d9e2\redhat.java\jdt_ws\Java Practice_4fb52e1c\bin' 'Example4'
[1, 2, 3, 4, 5]
[1, 2, 3, 5]
1 2 3 5
```

10) Java Stack

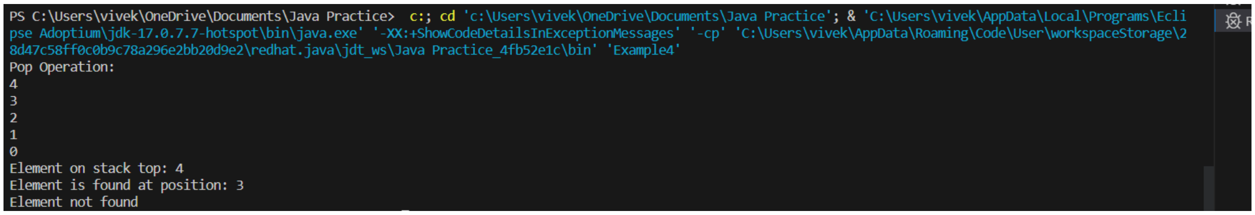
Code:

```
import java.util.*;

class Example4
{
    // Pushing element on the top of the stack
    static void stack_push(Stack<Integer> stack)
    {
        for(int i = 0; i < 5; i++)
        {
            stack.push(i);
        }
    }

    // Popping element from the top of the stack
    static void stack_pop(Stack<Integer> stack)
    {
        System.out.println("Pop Operation:");

        for(int i = 0; i < 5; i++)
```



```
        {
            Integer y = (Integer) stack.pop();
            System.out.println(y);
        }
    }

    // Displaying element on the top of the stack
    static void stack_peek(Stack<Integer> stack)
    {
        Integer element = (Integer) stack.peek();
        System.out.println("Element on stack top: " + element);
    }

    // Searching element in the stack
    static void stack_search(Stack<Integer> stack, int element)
    {
        Integer pos = (Integer) stack.search(element);

        if(pos == -1)
            System.out.println("Element not found");
        else
            System.out.println("Element is found at position: " + pos);
    }


    public static void main (String[] args)
    {
        Stack<Integer> stack = new Stack<Integer>();

        stack_push(stack);
        stack_pop(stack);
        stack_push(stack);
        stack_peek(stack);
        stack_search(stack, 2);
        stack_search(stack, 6);
    }
}
```

Output:



```
PS C:\Users\vivek\OneDrive\Documents\Java Practice>  c:; cd 'c:\Users\vivek\OneDrive\Documents\Java Practice'; & 'C:\Users\vivek\AppData\Local\Programs\Ecli
pse Adoptium\jdk-17.0.7.7-hotspot\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\vivek\AppData\Roaming\Code\User\workspaceStorage\2
8d47c58ff0c0b9c78a296e2bb20d9e2\redhat.java\jdt_ws\Java Practice_4fb52e1c\bin' 'Example4'
Pop Operation:
4
3
2
1
0
Element on stack top: 4
Element is found at position: 3
Element not found
```