



(DIGITAL ASSIGNMENT - 1) ARRAY AND STRINGS

CSE1007(JAVA PROGRAMMING)LAB:L31-L32



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STRINGS AND ARRAYS IN JAVA:

STRINGS:

In Java, string is basically an object that represents sequence of char values. An array of characters works same as Java string.

Java String class provides a lot of methods to perform operations on strings such as compare(), concat(), equals(), split(), length(), replace(), compareTo(), intern(), substring() etc.

The `java.lang.String` class implements `Serializable`, `Comparable` and `CharSequence` interfaces.

Generally, String is a sequence of characters. But in Java, string is an object that represents a sequence of characters. The `java.lang.String` class is used to create a string object.

ARRAYS:

Normally, an array is a collection of similar type of elements which has contiguous memory location.

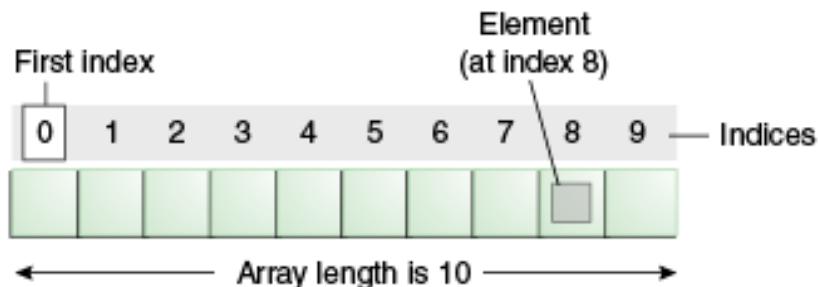
Java array is an object which contains elements of a similar data type. Additionally, the elements of an array are stored in a contiguous memory location. It is a data structure where we store similar elements. We can store only a fixed set of elements in a Java array.

Array in Java is index-based, the first element of the array is stored at the 0th index, 2nd element is stored on 1st index and so on.

Unlike C/C++, we can get the length of the array using the `length` member. In C/C++, we need to use the `sizeof` operator.

In Java, array is an object of a dynamically generated class. Java array inherits the `Object` class, and implements the `Serializable` as well as `Cloneable` interfaces. We can store primitive values or objects in an array in Java. Like C/C++, we can also create single dimensional or multidimensional arrays in Java.

Moreover, Java provides the feature of anonymous arrays which is not available in C/C++.



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ACTIVITY – 1:

QUESTION:

Find BMI of a person by getting weight and height in kg and cm respectively from user. [Formula BMI = kg/m²]

CODE:

```
import java.util.Scanner;
import java.lang.Math;

class BMI {
    public static void main(String[] args) {
        System.out.println("Enter the weight in kg:");
        Scanner in = new Scanner(System.in);
        double weight = in.nextDouble();
        System.out.println("Enter the height in cm:");
        double height = in.nextDouble();
        height = height / 100.0;
        double BMI = weight / (Math.pow(height, 2));
        System.out.println();
        System.out.println("ANIRUDH VADERA (20BCE2940)");
        System.out.println();
        System.out.println("The BMI is:");
        System.out.println(BMI);
        in.close();
    }
}
```

OUTPUT:

```
Try the new cross-platform PowerShell https://aka.ms/ps
core6

PS C:\Users\Anirudh\OneDrive\Desktop\java_codes> & 'C:
\Program Files\Java\jdk-17.0.1\bin\java.exe' '--enable-
preview' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp
' 'C:\Users\Anirudh\AppData\Roaming\Code\User\workspace
Storage\30032ff6b908f564bf959529c93335e9\redhat.java\jd
t_ws\java_codes_72fe121c\bin' 'BMI'
Enter the weight in kg:
65
Enter the height in cm:
170

ANIRUDH VADERA (20BCE2940)

The BMI is:
22.49134948096886
PS C:\Users\Anirudh\OneDrive\Desktop\java_codes> █
```

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QUESTION:

Write a program to find the simple interest

CODE:

```
import java.util.Scanner;

class SI {
    public static void main(String[] args) {
        System.out.println("Enter the principal:");
        Scanner in = new Scanner(System.in);
        double p = in.nextDouble();
        System.out.println("Enter the rate of interest per annum:");
        double r = in.nextDouble();
        System.out.println("Enter the no of years:");
        double t = in.nextDouble();
        double SI = (p * r * t) / 100;
        System.out.println();
        System.out.println("ANIRUDH VADERA (20BCE2940)");
        System.out.println();
        System.out.println("The Simple Interest is:");
        System.out.println(SI);
        in.close();
    }
}
```

OUTPUT:

```
Try the new cross-platform PowerShell https://aka.ms/powershell6

PS C:\Users\Anirudh\OneDrive\Desktop\java_codes> & 'C:\Program Files\Java\jdk-17.0.1\bin\java.exe' '--enable-preview' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\Anirudh\AppData\Roaming\Code\User\workspaceStorage\30032ff6b908f564bf959529c93335e9\redhat.java\jdt_ws\java_codes_72fe121c\bin' 'SI'
Enter the principal:
1000
Enter the rate of interest per annum:
10
Enter the no of years:
1

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The Simple Interest is:
100.0
PS C:\Users\Anirudh\OneDrive\Desktop\java_codes>
```

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QUESTION:

Write a program to display you name , register number and your cgpa

CODE:

```
class flex {  
    public static void main(String[] args) {  
        System.out.println("Anirudh Vadera");  
        System.out.println("20BCE2940");  
        System.out.println("NCGPA : 9.84 ");  
    }  
}
```

OUTPUT:

```
Windows PowerShell  
Copyright (C) Microsoft Corporation. All rights reserved.  
  
Try the new cross-platform PowerShell https://aka.ms/pscore6  
  
PS C:\Users\Anirudh\OneDrive\Desktop\java_codes> & 'C:  
:\Program Files\Java\jdk-17.0.1\bin\java.exe' '--enable-  
Open folder in new window (ctrl + click) nExceptionMessages' '-cp  
' 'C:\Users\Anirudh\AppData\Roaming\Code\User\workspace  
Storage\30032ff6b908f564bf959529c93335e9\redhat.java\jd  
t ws\java_codes 72fe121c\bin' 'flex'  
Anirudh Vadera  
20BCE2940  
NCGPA : 9.84  
PS C:\Users\Anirudh\OneDrive\Desktop\java_codes>
```

QUESTION:

Write a program to find the area of circle

CODE:

```
import java.util.Scanner;  
  
class Area {  
    public static void main(String[] args) {  
        System.out.println("Enter the value of pi:");  
        Scanner in = new Scanner(System.in);  
        double pi = in.nextDouble();
```

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```
System.out.println("Enter the radius:");
double radius = in.nextDouble();
double area = pi * radius * radius;
System.out.println();
System.out.println("ANIRUDH VADERA (20BCE2940)");
System.out.println();
System.out.println("The area is:");
System.out.println(area);
in.close();
}
}
```

OUTPUT:

```
Try the new cross-platform PowerShell https://aka.ms/powershell

PS C:\Users\Anirudh\OneDrive\Desktop\java_codes> & 'C:\Program Files\Java\jdk-17.0.1\bin\java.exe' '--enable-preview' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\Anirudh\AppData\Roaming\Code\User\workspaceStorage\30032ff6b908f564bf959529c93335e9\redhat.java\jdt_ws\java_codes_72fe121c\bin' 'Area'
Enter the value of pi:
3.14
Enter the radius:
2

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The area is:
12.56
PS C:\Users\Anirudh\OneDrive\Desktop\java_codes>
```

QUESTION:

Check if a given number is odd or even number [using if statement as well as switch case]

CODE:

```
import java.util.Scanner;

class O_E {
    public static void main(String[] args) {
        System.out.println("Enter the method:");
```

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```
System.out.println("1 : if");
System.out.println("2 : switch");
Scanner in = new Scanner(System.in);
int flag = in.nextInt();
if (flag == 1) {
    System.out.println("Enter the number:");
    int number = in.nextInt();
    System.out.println();
    System.out.println("ANIRUDH VADERA (20BCE2940)");
    System.out.println();
    if (number % 2 == 0) {
        System.out.println("The number is Even");
    } else {
        System.out.println("The number is Odd");
    }
} else {
    System.out.println("Enter the number:");
    int number = in.nextInt();
    int f = number % 2;
    System.out.println();
    System.out.println("ANIRUDH VADERA (20BCE2940)");
    System.out.println();
    switch (f) {
        case 0:
            System.out.println("The number is Even");
            break;
        case 1:
            System.out.println("The number is Odd");
            break;
    }
}
in.close();
}
```

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OUTPUT:

```
d 'c:\Users\Anirudh\OneDrive\Desktop\java_codes'; & 'C:  
\Program Files\Java\jdk-17.0.1\bin\java.exe' '--enable-  
preview' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp  
Storage\30032ff6b908f564bf959529c93335e9\redhat.java\jd  
t_ws\java_codes_72fe121c\bin' 'O_E'  
Enter the method:  
1 : if  
2 : switch  
1  
Enter the number:  
245
```

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```
The number is Odd  
PS C:\Users\Anirudh\OneDrive\Desktop\java_codes> c:; cd 'c:\Users\  
rogram Files\Java\jdk-17.0.1\bin\java.exe' '--enable-preview' '-XX:  
:\Users\Anirudh\AppData\Roaming\Code\User\workspaceStorage\30032ff6  
ava_codes_72fe121c\bin' 'O_E'  
Enter the method:  
1 : if  
2 : switch  
2  
Enter the number:  
246
```

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```
The number is Even  
PS C:\Users\Anirudh\OneDrive\Desktop\java_codes> █
```

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ACTIVITY – 2:

QUESTION:

Print the following patterns by finding the table values of stars and spaces.[Any three patterns only]

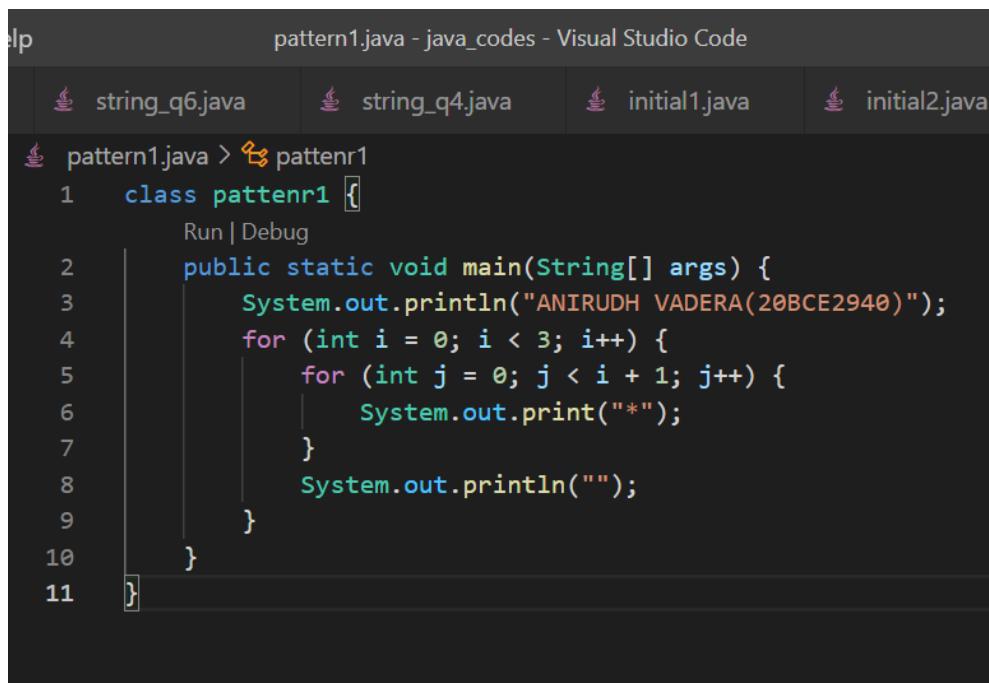
a. *

**

CODE:

```
class pattern1 {  
    public static void main(String[] args) {  
        System.out.println("ANIRUDH VADERA(20BCE2940)");  
        for (int i = 0; i < 3; i++) {  
            for (int j = 0; j < i + 1; j++) {  
                System.out.print("*");  
            }  
            System.out.println("");  
        }  
    }  
}
```

CODE SNAPSHOT:



The screenshot shows the Visual Studio Code interface with the title bar "pattern1.java - java_codes - Visual Studio Code". Below the title bar, there is a tab bar with several Java files: "string_q6.java", "string_q4.java", "initial1.java", "initial2.java", and "pattern1.java". The "pattern1.java" tab is currently active. The code editor displays the following Java code:

```
1  class pattern1 {  
2      public static void main(String[] args) {  
3          System.out.println("ANIRUDH VADERA(20BCE2940)");  
4          for (int i = 0; i < 3; i++) {  
5              for (int j = 0; j < i + 1; j++) {  
6                  System.out.print("*");  
7              }  
8              System.out.println("");  
9          }  
10     }  
11 }
```

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OUTPUT:

```
PS C:\Users\Anirudh\OneDrive\Desktop\java_codes> c:; cd 'c:\U
rogram Files\Java\jdk-17.0.1\bin\java.exe' '--enable-preview'
: \Users\Anirudh\AppData\Roaming\Code\User\workspaceStorage\300
32ff6b908f564bf959529c93335e9\redhat.java\jdt_ws\java_codes_72
fe121c\bin' 'patternr1'
ANIRUDH VADERA(20BCE2940)
*
**
***
PS C:\Users\Anirudh\OneDrive\Desktop\java_codes> □
```

QUESTION:

Print the following patterns by finding the table values of stars and spaces.[Any three patterns only]

b. * *
** **

** **
* *

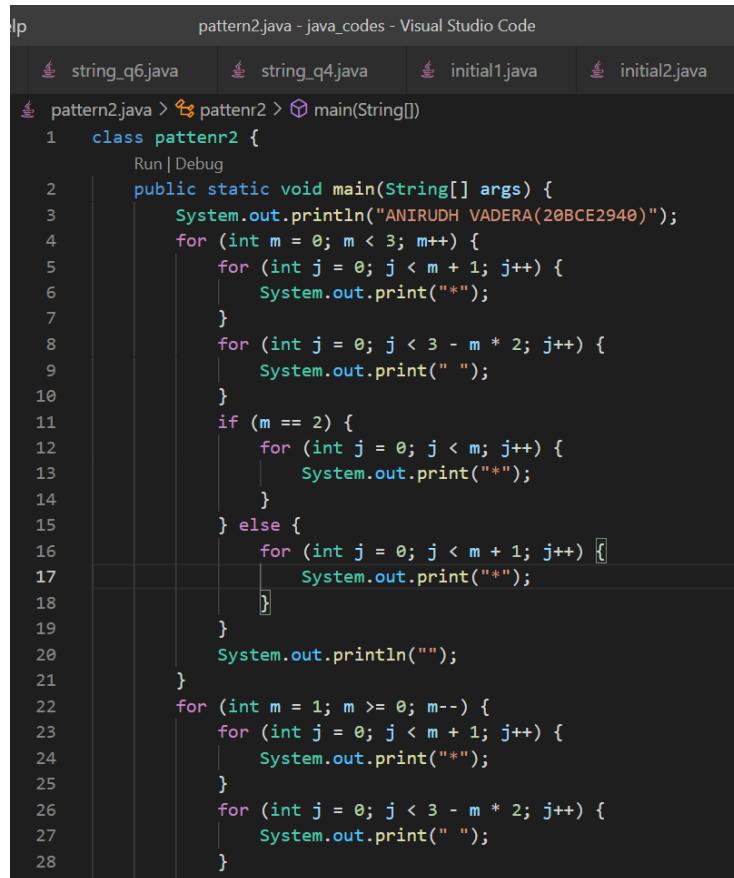
CODE:

```
class patternr2 {
    public static void main(String[] args) {
        System.out.println("ANIRUDH VADERA(20BCE2940)");
        for (int m = 0; m < 3; m++) {
            for (int j = 0; j < m + 1; j++) {
                System.out.print("*");
            }
            for (int j = 0; j < 3 - m * 2; j++) {
                System.out.print(" ");
            }
            if (m == 2) {
                for (int j = 0; j < m; j++) {
                    System.out.print("*");
                }
            } else {
                for (int j = 0; j < m + 1; j++) {
                    System.out.print("*");
                }
            }
        }
    }
}
```

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```
        }
        System.out.println("");
    }
    for (int m = 1; m >= 0; m--) {
        for (int j = 0; j < m + 1; j++) {
            System.out.print("*");
        }
        for (int j = 0; j < 3 - m * 2; j++) {
            System.out.print(" ");
        }
        if (m == 2) {
            for (int j = 0; j < m; j++) {
                System.out.print("*");
            }
        } else {
            for (int j = 0; j < m + 1; j++) {
                System.out.print("*");
            }
        }
        System.out.println("");
    }
}
}
```

CODE SNAPSHOT:



The screenshot shows the Visual Studio Code interface with the title bar "pattern2.java - java_codes - Visual Studio Code". Below the title bar, there are four tabs: "string_q6.java", "string_q4.java", "initial1.java", and "initial2.java". The "pattern2.java" tab is active, displaying the Java code for the pattern. The code is identical to the one shown in the previous code block.

```
1  class pattern2 {
2      public static void main(String[] args) {
3          System.out.println("ANIRUDH VADERA(20BCE2940)");
4          for (int m = 0; m < 3; m++) {
5              for (int j = 0; j < m + 1; j++) {
6                  System.out.print("*");
7              }
8              for (int j = 0; j < 3 - m * 2; j++) {
9                  System.out.print(" ");
10             }
11             if (m == 2) {
12                 for (int j = 0; j < m; j++) {
13                     System.out.print("*");
14                 }
15             } else {
16                 for (int j = 0; j < m + 1; j++) {
17                     System.out.print("*");
18                 }
19             }
20             System.out.println("");
21         }
22         for (int m = 1; m >= 0; m--) {
23             for (int j = 0; j < m + 1; j++) {
24                 System.out.print("*");
25             }
26             for (int j = 0; j < 3 - m * 2; j++) {
27                 System.out.print(" ");
28             }
29         }
30     }
31 }
```

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OUTPUT:

```
PS C:\Users\Anirudh\OneDrive\Desktop\java_codes> c:; cd 'c:\U
\Java\jdk-17.0.1\bin\java.exe' '--enable-preview' '-XX:+ShowCo
deDetailsInExceptionMessages' '-cp' 'C:\Users\Anirudh\AppData\
Roaming\Code\User\workspaceStorage\30032ff6b908f564bf959529c93
335e9\redhat.java\jdt_ws\java_codes_72fe121c\bin' 'patternr2'
ANIRUDH VADERA(20BCE2940)
* *
** **
*****
** **
* *

PS C:\Users\Anirudh\OneDrive\Desktop\java_codes>
```

QUESTION:

Print the following patterns by finding the table values of stars and spaces.[Any three patterns only]

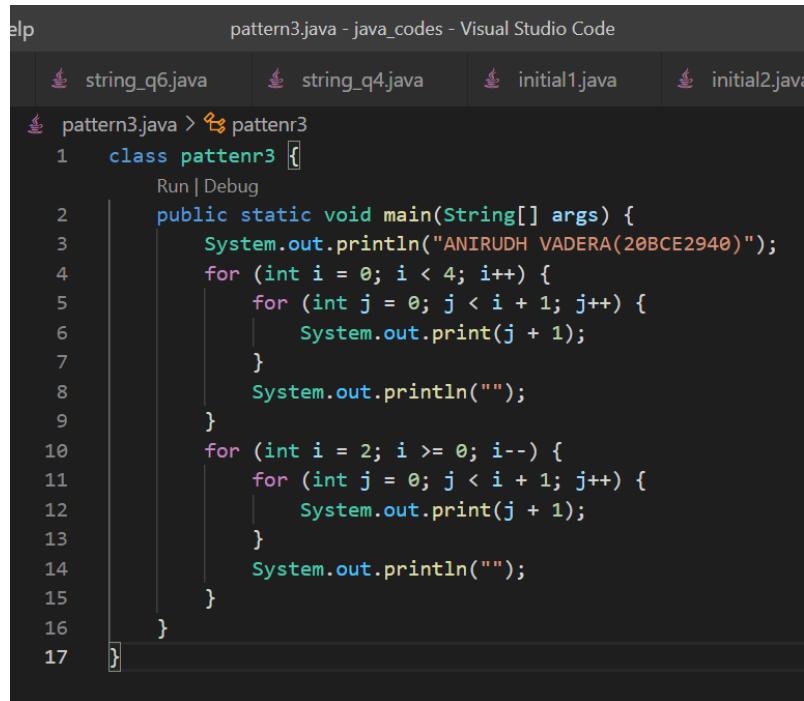
- c. 1
- 12
- 123
- 1234
- 123
- 12
- 1

CODE:

```
class patternr3 {
    public static void main(String[] args) {
        System.out.println("ANIRUDH VADERA(20BCE2940)");
        for (int i = 0; i < 4; i++) {
            for (int j = 0; j < i + 1; j++) {
                System.out.print(j + 1);
            }
            System.out.println("");
        }
        for (int i = 2; i >= 0; i--) {
            for (int j = 0; j < i + 1; j++) {
                System.out.print(j + 1);
            }
            System.out.println("");
        }
    }
}
```

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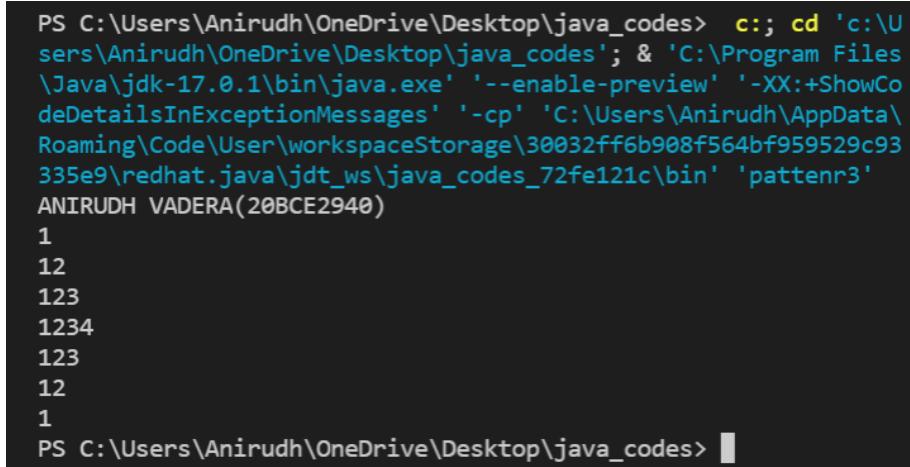
CODE SNAPSHOT:



A screenshot of the Visual Studio Code interface. The title bar says "pattern3.java - java_codes - Visual Studio Code". Below the title bar, there are tabs for "string_q6.java", "string_q4.java", "initial1.java", and "initial2.java". The main editor area contains the following Java code:

```
1  class pattern3 {
2      public static void main(String[] args) {
3          System.out.println("ANIRUDH VADERA(20BCE2940)");
4          for (int i = 0; i < 4; i++) {
5              for (int j = 0; j < i + 1; j++) {
6                  System.out.print(j + 1);
7              }
8              System.out.println("");
9          }
10         for (int i = 2; i >= 0; i--) {
11             for (int j = 0; j < i + 1; j++) {
12                 System.out.print(j + 1);
13             }
14             System.out.println("");
15         }
16     }
17 }
```

OUTPUT:



A screenshot of a terminal window. The command entered is:

```
PS C:\Users\Anirudh\OneDrive\Desktop\java_codes> c:; cd 'c:\Users\Anirudh\OneDrive\Desktop\java_codes'; & 'C:\Program Files\Java\jdk-17.0.1\bin\java.exe' '--enable-preview' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\Anirudh\AppData\Roaming\Code\User\workspaceStorage\30032ff6b908f564bf959529c93335e9\redhat.java\jdt_ws\java_codes_72fe121c\bin' 'pattern3'
```

The output shows the printed pattern:

```
ANIRUDH VADERA(20BCE2940)
1
12
123
1234
123
12
1
```

QUESTION:

Find the HCF and LCM of given numbers.

CODE:

```
import java.util.Scanner;

class hcf_lcm {
    public static void main(String[] args) {
        int temp1, temp2, x, y, temp, hcf, lcm;
```

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```
Scanner scanner = new Scanner(System.in);
System.out.print("Enter First Number: ");
x = scanner.nextInt();
System.out.print("Enter Second Number: ");
y = scanner.nextInt();

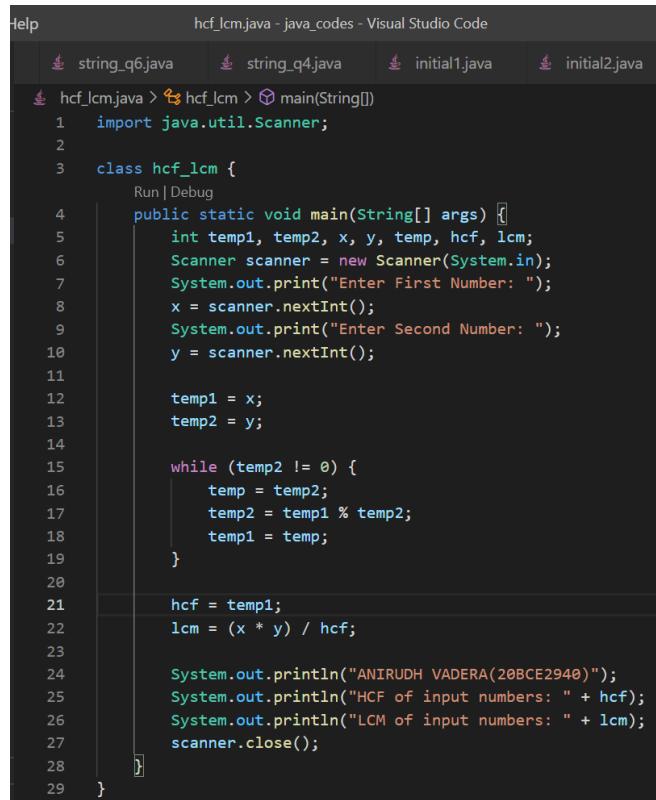
temp1 = x;
temp2 = y;

while (temp2 != 0) {
    temp = temp2;
    temp2 = temp1 % temp2;
    temp1 = temp;
}

hcf = temp1;
lcm = (x * y) / hcf;

System.out.println("ANIRUDH VADERA(20BCE2940)");
System.out.println("HCF of input numbers: " + hcf);
System.out.println("LCM of input numbers: " + lcm);
scanner.close();
}
}
```

CODE SNAPSHOT:



The screenshot shows the Visual Studio Code interface with the file 'hcf_lcm.java' open. The code is identical to the one shown in the previous code block. The code implements the Euclidean algorithm to find the HCF of two integers entered by the user. It then calculates the LCM using the formula $\text{LCM} = (\text{x} * \text{y}) / \text{HCF}$. The code uses a Scanner object to read input from the standard input stream and prints results to the standard output stream.

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OUTPUT:

```
PS C:\Users\Anirudh\OneDrive\Desktop\java_codes> cd 'c:\Users\Anirudh\OneDrive\Desktop\java_codes'; & 'C:\Program Files\deDetailsInExceptionMessages' '-cp' 'C:\Users\Anirudh\AppData\Roaming\Code\User\workspaceStorage\30032ff6b908f564bf959529c93335e9\redhat.java\jdt ws\java codes 72fe121c\bin' 'hcf_lcm'
Enter First Number: 24
Enter Second Number: 12
ANIRUDH VADERA(20BCE2940)
HCF of input numbers: 12
LCM of input numbers: 24
PS C:\Users\Anirudh\OneDrive\Desktop\java_codes>
```

QUESTION:

Ask the user to enter the marks of a student in the below order.

- **Maths, M**
- **Physics, P**
- **Chemistry, C**
- **English, E**
- **Computer Science, CS**

And calculate the metrics according to the below table.

Metric Formula :

- **Overall Average (OA)**
 - Sum of all the marks / total number of subjects
- **Engineering Average (EA)**
 - Sum of (M * 2), P and C / 4
- **Computer Science Average (CSA)**
 - CS

Print the output according to the below table:

Case Output

- **If OA > 75 and EA > CSA**
 - Probable Mech, Civil, EEE, ECE candidate
- **If OA > 75 and CSA > EA**
 - Probable CSE, IT, IS candidate
- **If OA < 75 and CSA > EA**

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- **Probable BCA candidate**
- **If OA < 75 and CSA > EA**
 - **Probable BSc candidate**

CODE:

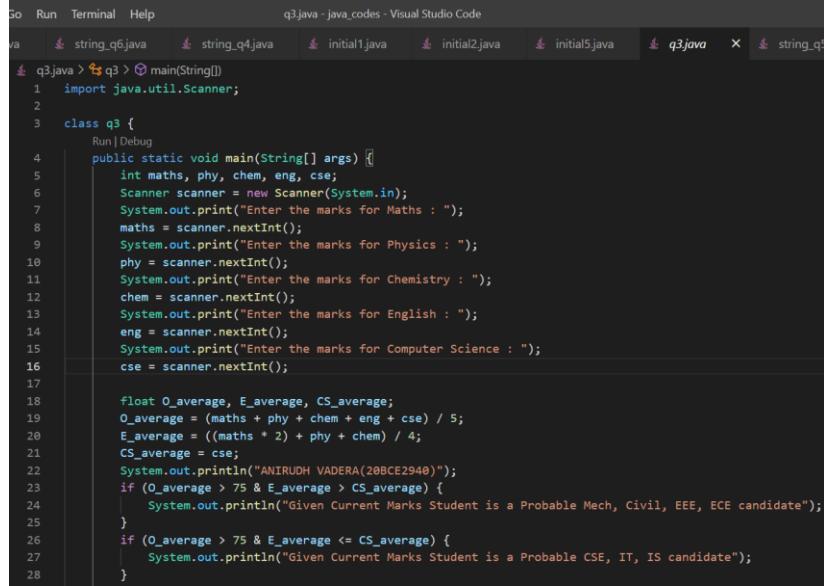
```
import java.util.Scanner;

class q3 {
    public static void main(String[] args) {
        int maths, phy, chem, eng, cse;
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter the marks for Maths : ");
        maths = scanner.nextInt();
        System.out.print("Enter the marks for Physics : ");
        phy = scanner.nextInt();
        System.out.print("Enter the marks for Chemistry : ");
        chem = scanner.nextInt();
        System.out.print("Enter the marks for English : ");
        eng = scanner.nextInt();
        System.out.print("Enter the marks for Computer Science : ");
        cse = scanner.nextInt();

        float O_average, E_average, CS_average;
        O_average = (maths + phy + chem + eng + cse) / 5;
        E_average = ((maths * 2) + phy + chem) / 4;
        CS_average = cse;
        System.out.println("ANIRUDH VADERA(20BCE2940)");
        if (O_average > 75 & E_average > CS_average) {
            System.out.println("Given Current Marks Student is a Probable
Mech, Civil, EEE, ECE candidate");
        }
        if (O_average > 75 & E_average <= CS_average) {
            System.out.println("Given Current Marks Student is a Probable CSE,
IT, IS candidate");
        }
        if (O_average < 75 & E_average < CS_average) {
            System.out.println("Given Current Marks Student is a Probable BCA
candidate");
        }
        if (O_average < 75 & E_average > CS_average) {
            System.out.println("Given Current Marks Student is a Probable BSc
candidate");
        }
        scanner.close();
    }
}
```

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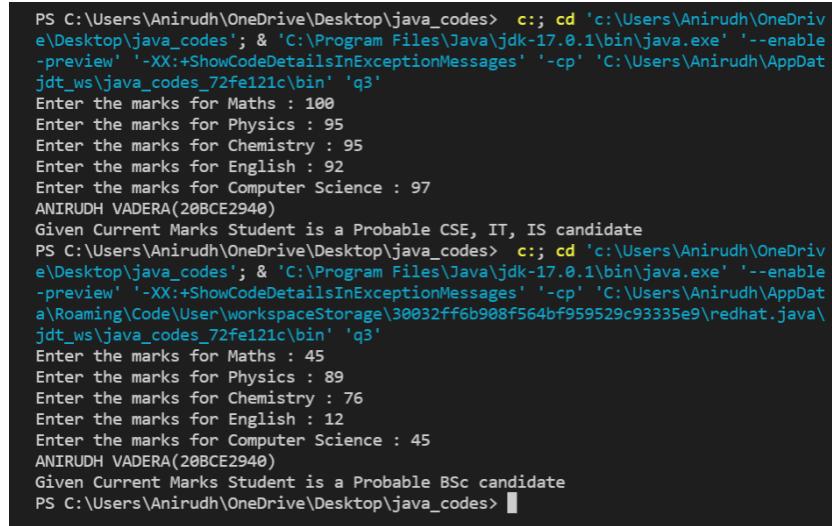
CODE SNAPSHOT:



The screenshot shows a Visual Studio Code interface with the title bar "q3.java - java_codes - Visual Studio Code". The code editor displays Java code for calculating student marks. The code includes imports for Scanner, defines a class q3 with a main method, and uses a Scanner object to read five integers representing marks in Maths, Physics, Chemistry, English, and Computer Science. It calculates three averages (O_average, E_average, CS_average) and prints the student's name and their average. It then checks if the student is a probable candidate for Mech, Civil, EEE, ECE, CSE, IT, or IS based on their average.

```
Go Run Terminal Help
q3.java - java_codes - Visual Studio Code
Java string_q6.java string_q4.java initial1.java initial2.java initial5.java q3java x string_q5.java
q3java > q3 > main(String[])
1 import java.util.Scanner;
2
3 class q3 {
4     Run | Debug
5     public static void main(String[] args) {
6         int maths, phy, chem, eng, cse;
7         Scanner scanner = new Scanner(System.in);
8         System.out.print("Enter the marks for Maths : ");
9         maths = scanner.nextInt();
10        System.out.print("Enter the marks for Physics : ");
11        phy = scanner.nextInt();
12        System.out.print("Enter the marks for Chemistry : ");
13        chem = scanner.nextInt();
14        System.out.print("Enter the marks for English : ");
15        eng = scanner.nextInt();
16        System.out.print("Enter the marks for Computer Science : ");
17        cse = scanner.nextInt();
18
19        float O_average, E_average, CS_average;
20        O_average = (maths + phy + chem + eng + cse) / 5;
21        E_average = ((maths * 2) + phy + chem) / 4;
22        CS_average = cse;
23        System.out.println("ANIRUDH VADERA(20BCE2940)");
24        if (O_average > 75 & E_average > CS_average) {
25            System.out.println("Given Current Marks Student is a Probable Mech, Civil, EEE, ECE candidate");
26        }
27        if (O_average > 75 & E_average <= CS_average) {
28            System.out.println("Given Current Marks Student is a Probable CSE, IT, IS candidate");
29        }
30    }
31 }
```

OUTPUT:



The terminal window shows the execution of the Java program. It prompts for five marks and prints the student's name and average. It then checks the averages and prints the appropriate message for each case.

```
PS C:\Users\Anirudh\OneDrive\Desktop\java_codes> c:; cd 'c:\Users\Anirudh\OneDrive\Desktop\java_codes'; & 'C:\Program Files\Java\jdk-17.0.1\bin\java.exe' '--enable-preview' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\Anirudh\AppData\jdt_ws\java_codes_72fe121c\bin' 'q3'
Enter the marks for Maths : 100
Enter the marks for Physics : 95
Enter the marks for Chemistry : 95
Enter the marks for English : 92
Enter the marks for Computer Science : 97
ANIRUDH VADERA(20BCE2940)
Given Current Marks Student is a Probable CSE, IT, IS candidate
PS C:\Users\Anirudh\OneDrive\Desktop\java_codes> c:; cd 'c:\Users\Anirudh\OneDrive\Desktop\java_codes'; & 'C:\Program Files\Java\jdk-17.0.1\bin\java.exe' '--enable-preview' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\Anirudh\AppData\Roaming\Code\User\workspaceStorage\30032ff6b908f564bf959529c93335e9\redhat.java\jdt_ws\java_codes_72fe121c\bin' 'q3'
Enter the marks for Maths : 45
Enter the marks for Physics : 89
Enter the marks for Chemistry : 76
Enter the marks for English : 12
Enter the marks for Computer Science : 45
ANIRUDH VADERA(20BCE2940)
Given Current Marks Student is a Probable BSc candidate
PS C:\Users\Anirudh\OneDrive\Desktop\java_codes>
```

QUESTION:

Write a program to calculate the monthly Electricity bills as per the following tariff.

Minimum Rs. 200 for up to 100 units

Plus Rs. 0.60 per next 50 units consumed

Plus Rs. 1.20 per next 50 units consumed

Plus Rs. 2.40 per beyond 200 units consumed

ANIRUDH VADERA
(DIGITAL ASSIGNMENT - 1) ARRAY AND STRINGS

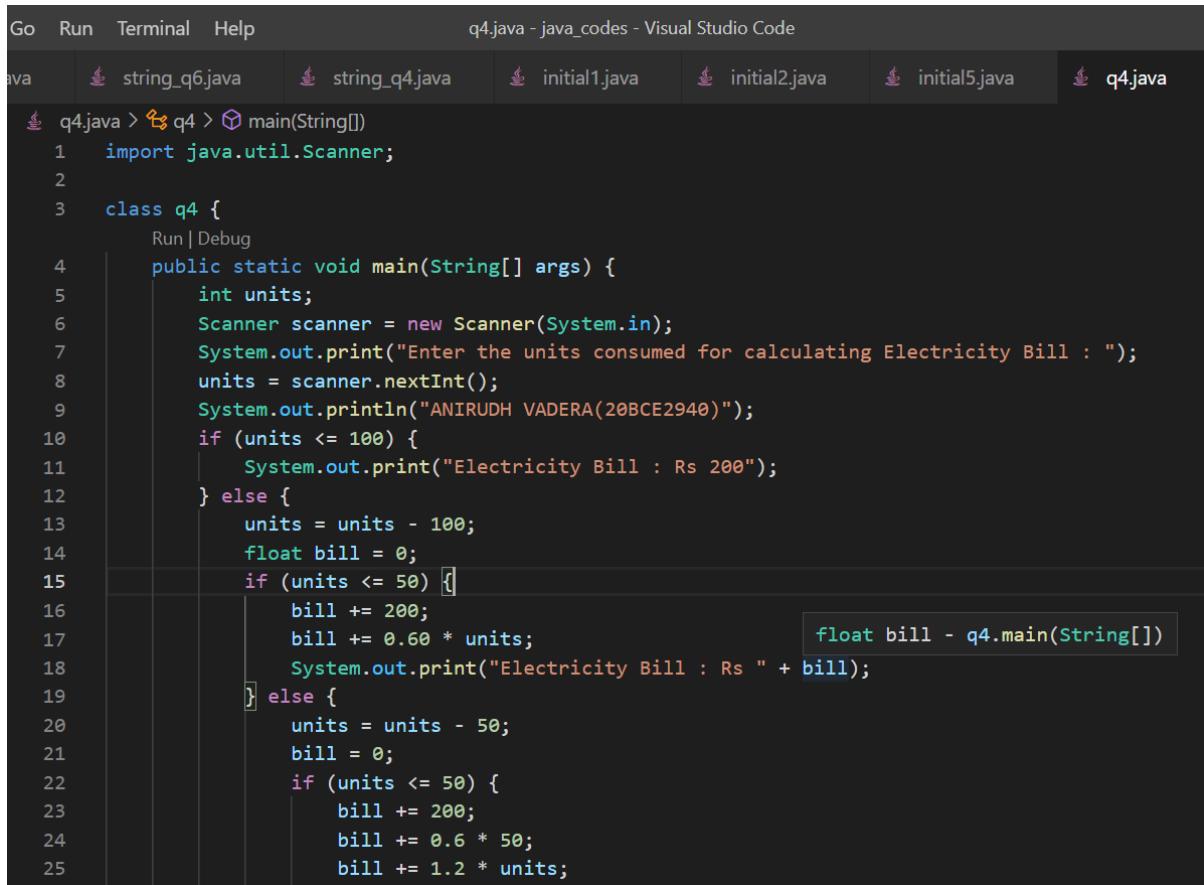
CODE:

```
import java.util.Scanner;

class q4 {
    public static void main(String[] args) {
        int units;
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter the units consumed for calculating Electricity Bill : ");
        units = scanner.nextInt();
        System.out.println("ANIRUDH VADERA(20BCE2940)");
        if (units <= 100) {
            System.out.print("Electricity Bill : Rs 200");
        } else {
            units = units - 100;
            float bill = 0;
            if (units <= 50) {
                bill += 200;
                bill += 0.60 * units;
                System.out.print("Electricity Bill : Rs " + bill);
            } else {
                units = units - 50;
                bill = 0;
                if (units <= 50) {
                    bill += 200;
                    bill += 0.6 * 50;
                    bill += 1.2 * units;
                    System.out.print("Electricity Bill : Rs " + bill);
                } else {
                    units = units - 50;
                    bill = 0;
                    if (units <= 50) {
                        bill += 200;
                        bill += 0.6 * 50;
                        bill += 1.2 * 50;
                        bill += 2.4 * units;
                        System.out.print("Electricity Bill : Rs " + bill);
                    }
                }
            }
        }
        scanner.close();
    }
}
```

ANIRUDH VADERA
(DIGITAL ASSIGNMENT - 1) ARRAY AND STRINGS

CODE SNAPSHOT:



The screenshot shows a Visual Studio Code interface with a dark theme. The top menu bar includes 'Go', 'Run', 'Terminal', and 'Help'. The title bar says 'q4.java - java_codes - Visual Studio Code'. Below the title bar, there's a tab bar with several Java files: 'string_q6.java', 'string_q4.java', 'initial1.java', 'initial2.java', 'initial5.java', and 'q4.java'. The 'q4.java' file is currently selected and has its content displayed in the main editor area. The code calculates electricity bill based on units consumed, using nested if statements and arithmetic operations.

```
q4.java > q4 > main(String[])
1 import java.util.Scanner;
2
3 class q4 {
4     public static void main(String[] args) {
5         int units;
6         Scanner scanner = new Scanner(System.in);
7         System.out.print("Enter the units consumed for calculating Electricity Bill : ");
8         units = scanner.nextInt();
9         System.out.println("ANIRUDH VADERA(20BCE2940)");
10        if (units <= 100) {
11            System.out.print("Electricity Bill : Rs 200");
12        } else {
13            units = units - 100;
14            float bill = 0;
15            if (units <= 50) {
16                bill += 200;
17                bill += 0.60 * units;
18                System.out.print("Electricity Bill : Rs " + bill);
19            } else {
20                units = units - 50;
21                bill = 0;
22                if (units <= 50) {
23                    bill += 200;
24                    bill += 0.6 * 50;
25                    bill += 1.2 * units;
26                }
27            }
28        }
29    }
30}
```

OUTPUT:



The screenshot shows a Windows PowerShell window. It starts with standard PowerShell startup messages. Then it shows the command to try the cross-platform PowerShell. Following that, it runs a Java command from the user's OneDrive desktop folder. The command includes Java options like '--enable-preview', '-XX:+ShowCodeDetailsInExceptionMessages', and '-cp'. It prompts the user for units consumed and prints the result. The output shows the user input '212', the company name 'ANIRUDH VADERA(20BCE2940)', and the calculated bill 'Electricity Bill : Rs 318.8'.

```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\Anirudh\OneDrive\Desktop\java_codes> & 'C:\Program Files\Java\jdk-17.0.1\bin\java.exe' '--enable-preview' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\Anirudh\AppData\Roaming\Code\User\workspaceStorage\30032ff6b908f564bf959529c93335e9\redhat.java\jdt_ws\java_codes_72fe121c\bin' 'q4'
Enter the units consumed for calculating Electricity Bill : 212
ANIRUDH VADERA(20BCE2940)
Electricity Bill : Rs 318.8
PS C:\Users\Anirudh\OneDrive\Desktop\java_codes>
```

QUESTION:

Develop a Java to that calculates the Addition, Subtraction, Multiplication and Division using menu driven approach. (Do...while loop)

ANIRUDH VADERA
(DIGITAL ASSIGNMENT - 1) ARRAY AND STRINGS

CODE:

```
import java.util.Scanner;

class q5 {

    static float addition(float a, float b) {
        float result = 0;
        result = a + b;
        return result;
    }

    static float subtraction(float a, float b) {
        float result = 0;
        result = a - b;
        return result;
    }

    static float multiplication(float a, float b) {
        float result = 0;
        result = a * b;
        return result;
    }

    static float division(float a, float b) {
        float result = 0;
        result = a / b;
        return result;
    }

    public static void main(String[] args) {
        float num1, num2, result;
        Scanner scanner = new Scanner(System.in);
        int flag;
        System.out.println("ANIRUDH VADERA(20BCE2940)");

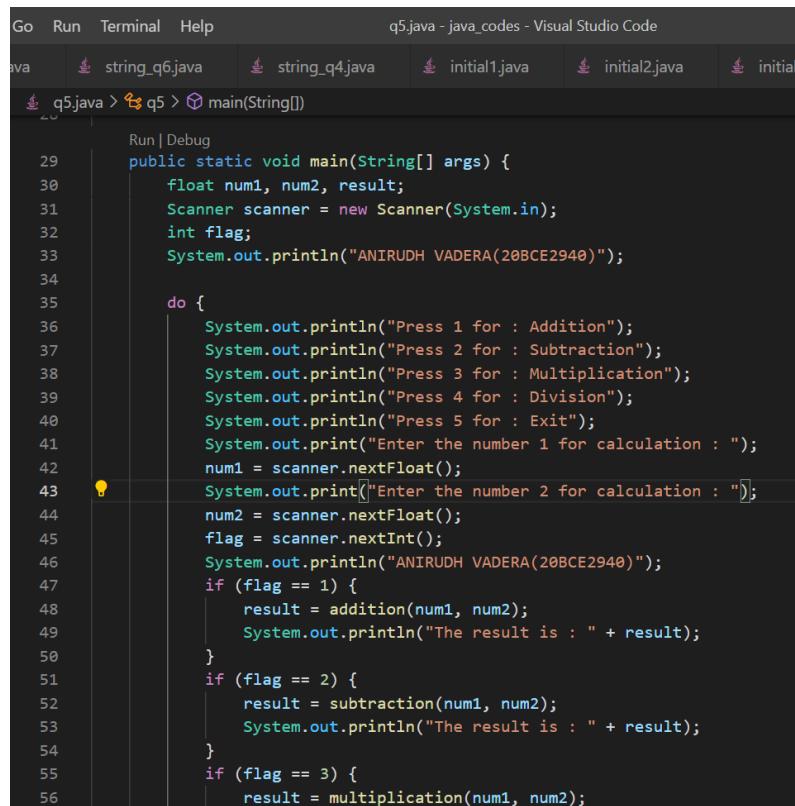
        do {
            System.out.println("Press 1 for : Addition");
            System.out.println("Press 2 for : Subtraction");
            System.out.println("Press 3 for : Multiplication");
            System.out.println("Press 4 for : Division");
            System.out.println("Press 5 for : Exit");
            System.out.print("Enter the number 1 for calculation : ");
            num1 = scanner.nextFloat();
            System.out.print("Enter the number 2 for calculation : ");
            num2 = scanner.nextFloat();
            flag = scanner.nextInt();
            System.out.println("ANIRUDH VADERA(20BCE2940)");
        }
    }
}
```

ANIRUDH VADERA
(DIGITAL ASSIGNMENT - 1) ARRAY AND STRINGS

```
if (flag == 1) {
    result = addition(num1, num2);
    System.out.println("The result is : " + result);
}
if (flag == 2) {
    result = subtraction(num1, num2);
    System.out.println("The result is : " + result);
}
if (flag == 3) {
    result = multiplication(num1, num2);
    System.out.println("The result is : " + result);
}
if (flag == 4) {
    result = division(num1, num2);
    System.out.println("The result is : " + result);
}
} while (flag != 5);
scanner.close();

}
```

CODE SNAPSHOT:



The screenshot shows a Visual Studio Code interface with the following details:

- File Explorer:** Shows files: string_q6.java, string_q4.java, initial1.java, initial2.java, and initial3.java.
- Status Bar:** Shows the path: q5.java > q5 > main(String[])
- Code Editor:** Displays the Java code for q5.java. The code is a program that performs arithmetic operations based on user input. It includes imports for Scanner and System.out, initializes variables num1, num2, and result, and prints a welcome message. A do-while loop handles user input for flag values 1 through 5, performing addition, subtraction, multiplication, or division respectively, and printing the results. The code is numbered from 29 to 56.

ANIRUDH VADERA
(DIGITAL ASSIGNMENT - 1) ARRAY AND STRINGS

OUTPUT:

```
PS C:\Users\Anirudh\OneDrive\Desktop\java_codes> c;; cd 'c:\Users\Anirudh\Desktop\java_codes'; & 'C:\Program Files\Java\jdk-17.0.1\bin\java.exe' -preview' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\Anirudh\Roaming\Code\User\workspaceStorage\30032ff6b908f564bf959529c93335e9\redjdt_ws\java_codes_72fe121c\bin' 'q5'
ANIRUDH VADERA(20BCE2940)
Press 1 for : Addition
Press 2 for : Subtraction
Press 3 for : Multiplication
Press 4 for : Division
Press 5 for : Exit
Enter the number 1 for calculation : 10
Enter the number 2 for calculation : 20
1
ANIRUDH VADERA(20BCE2940)
The result is : 30.0
Press 1 for : Addition
Press 2 for : Subtraction
Press 3 for : Multiplication
Press 4 for : Division
Press 5 for : Exit
Enter the number 1 for calculation : 10
Enter the number 2 for calculation : 20
2
ANIRUDH VADERA(20BCE2940)
The result is : -10.0
Press 1 for : Addition
Press 2 for : Subtraction
Press 3 for : Multiplication
Press 4 for : Division
Press 5 for : Exit
Enter the number 1 for calculation : 10
Enter the number 2 for calculation : 20
3
ANIRUDH VADERA(20BCE2940)
The result is : 200.0
Press 1 for : Addition
Press 2 for : Subtraction
Press 3 for : Multiplication
Press 4 for : Division
Press 5 for : Exit
Enter the number 1 for calculation : 10
Enter the number 2 for calculation : 20
4
ANIRUDH VADERA(20BCE2940)
The result is : 0.5
Press 1 for : Addition
Press 2 for : Subtraction
Press 3 for : Multiplication
Press 4 for : Division
Press 5 for : Exit
5
ANIRUDH VADERA(20BCE2940)
PS C:\Users\Anirudh\OneDrive\Desktop\java_codes>
```

QUESTION:

Write a Java program to get the marks of 'n' students. Write a method to display the elements of array and display them in the reverse order

ANIRUDH VADERA
(DIGITAL ASSIGNMENT - 1) ARRAY AND STRINGS

CODE:

```
import java.util.Scanner;

class q6 {

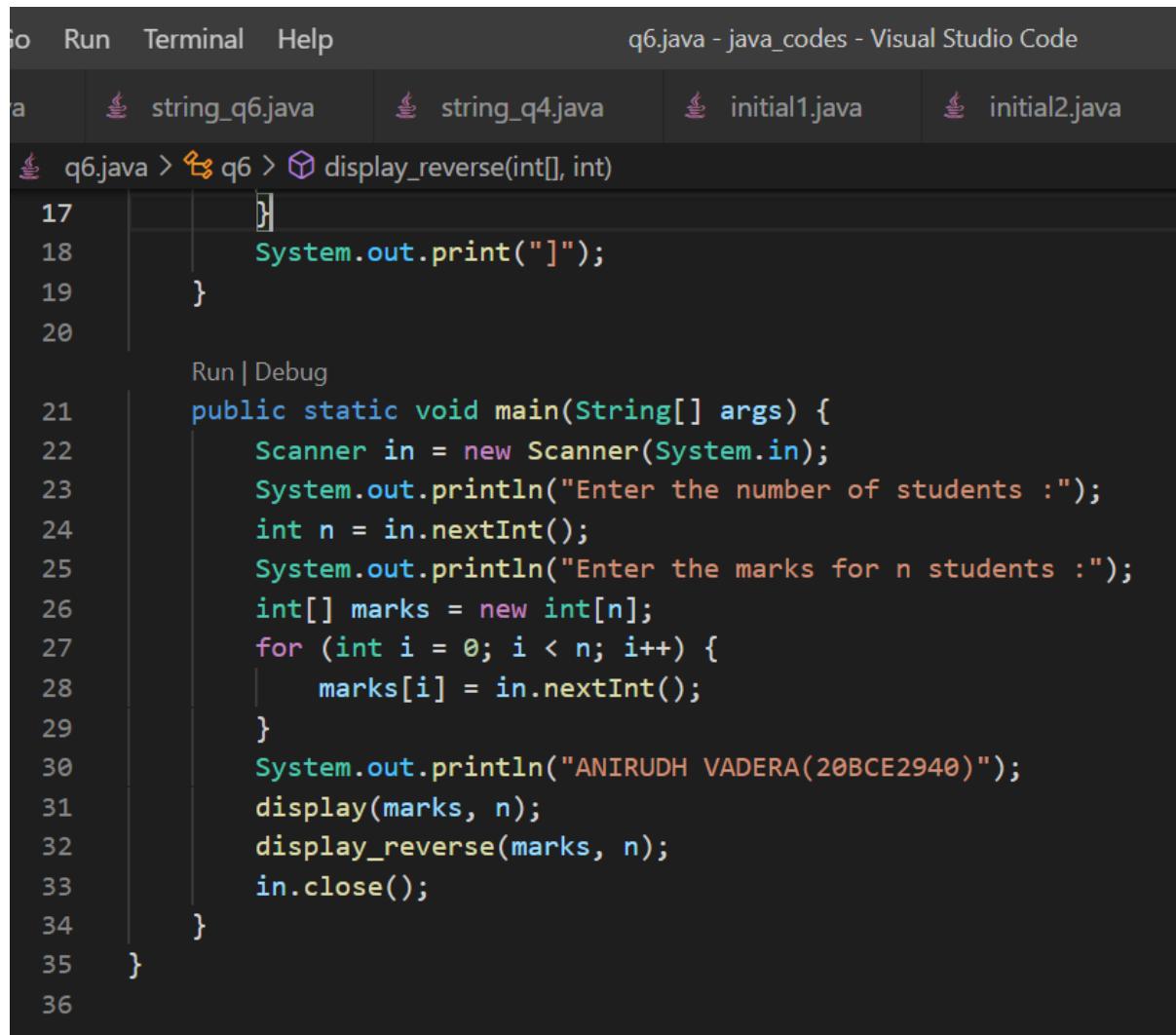
    static void display(int[] array, int length) {
        System.out.print("Marks = [ ");
        for (int i = 0; i < length; i++) {
            System.out.print(array[i] + " ");
        }
        System.out.println("]");
    }

    static void display_reverse(int[] array, int length) {
        System.out.print("Marks(Reverse) = [ ");
        for (int i = length - 1; i >= 0; i--) {
            System.out.print(array[i] + " ");
        }
        System.out.print("]");
    }

    public static void main(String[] args) {
        Scanner in = new Scanner(System.in);
        System.out.println("Enter the number of students :");
        int n = in.nextInt();
        System.out.println("Enter the marks for n students :");
        int[] marks = new int[n];
        for (int i = 0; i < n; i++) {
            marks[i] = in.nextInt();
        }
        System.out.println("ANIRUDH VADERA(20BCE2940)");
        display(marks, n);
        display_reverse(marks, n);
        in.close();
    }
}
```

CODE SNAPSHOT

ANIRUDH VADERA
(DIGITAL ASSIGNMENT - 1) ARRAY AND STRINGS



The screenshot shows a Visual Studio Code interface with the following details:

- File menu: File, Run, Terminal, Help.
- Project name: q6.java - java_codes - Visual Studio Code.
- File list: string_q6.java, string_q4.java, initial1.java, initial2.java.
- Code editor content:

```
q6.java > q6 > display_reverse(int[], int)
17     }
18     System.out.print("]");
19 }
20
Run | Debug
21 public static void main(String[] args) {
22     Scanner in = new Scanner(System.in);
23     System.out.println("Enter the number of students :");
24     int n = in.nextInt();
25     System.out.println("Enter the marks for n students :");
26     int[] marks = new int[n];
27     for (int i = 0; i < n; i++) {
28         marks[i] = in.nextInt();
29     }
30     System.out.println("ANIRUDH VADERA(20BCE2940)");
31     display(marks, n);
32     display_reverse(marks, n);
33     in.close();
34 }
35
36 }
```

OUTPUT:

```
PS C:\Users\Anirudh\OneDrive\Desktop\java_codes> c:; cd 'c:\Users\Anirudh\OneDrive\Desktop\java_codes'; & 'C:\Program Files\Java\jdk-17.0.1\bin\java.exe' '--enable-preview' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\Anirudh\AppData\Roaming\Code\User\workspaceStorage\30032ff6b908f564bf959529c93335e9\redhat.java\jdt_ws\java_codes_72fe121c\bin' 'q6'

Enter the number of students :
5
Enter the marks for n students :
25 50 75 100 125
ANIRUDH VADERA(20BCE2940)
Marks = [ 25 50 75 100 125 ]
Marks(Reverse) = [ 125 100 75 50 25 ]
PS C:\Users\Anirudh\OneDrive\Desktop\java_codes>
```

QUESTION:

Sort an array of element using bubble sort

ANIRUDH VADERA
(DIGITAL ASSIGNMENT - 1) ARRAY AND STRINGS

CODE:

```
import java.util.Scanner;

class q7 {

    static void BubbleSort(int[] array, int length) {
        int temp = 0;
        for (int i = 0; i < length - 1; i++) {
            for (int j = 0; j < (length - i - 1); j++) {
                if (array[j] > array[j + 1]) {
                    // Swapping the required elements
                    temp = array[j];
                    array[j] = array[j + 1];
                    array[j + 1] = temp;
                }
            }
        }
    }

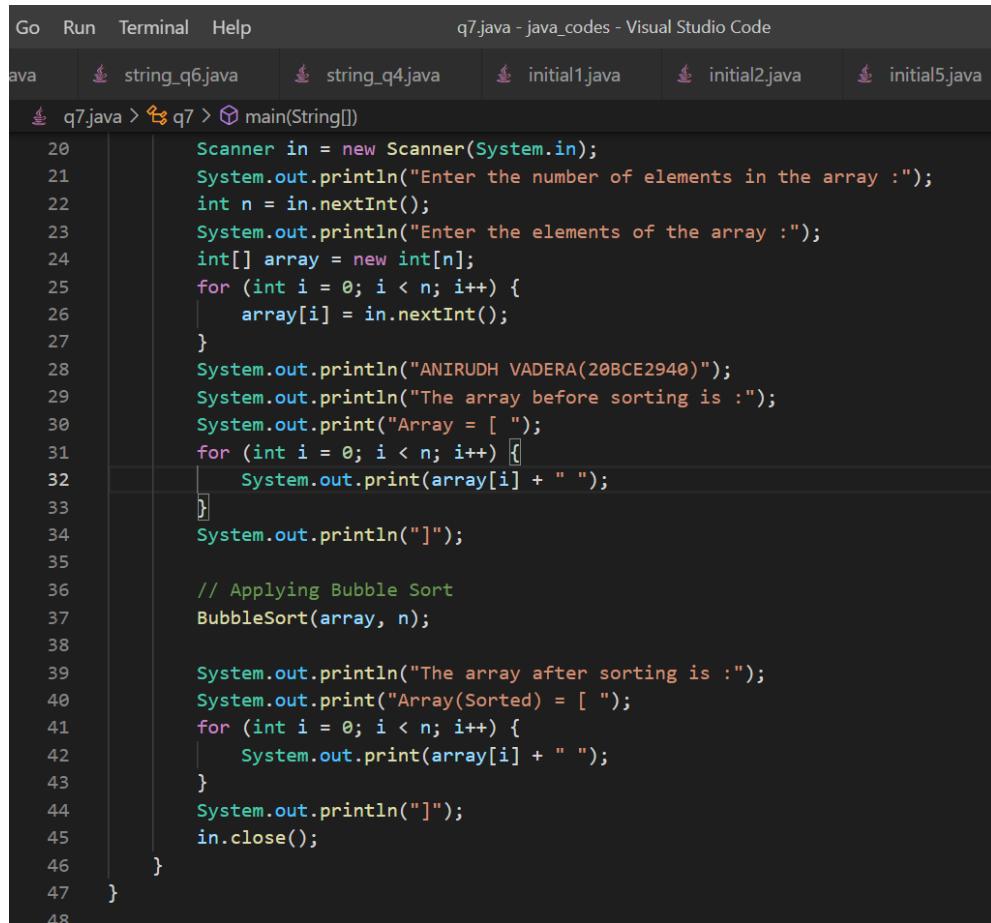
    public static void main(String[] args) {
        Scanner in = new Scanner(System.in);
        System.out.println("Enter the number of elements in the array :");
        int n = in.nextInt();
        System.out.println("Enter the elements of the array :");
        int[] array = new int[n];
        for (int i = 0; i < n; i++) {
            array[i] = in.nextInt();
        }
        System.out.println("ANIRUDH VADERA(20BCE2940)");
        System.out.println("The array before sorting is :");
        System.out.print("Array = [ ");
        for (int i = 0; i < n; i++) {
            System.out.print(array[i] + " ");
        }
        System.out.println("]");

        // Applying Bubble Sort
        BubbleSort(array, n);

        System.out.println("The array after sorting is :");
        System.out.print("Array(Sorted) = [ ");
        for (int i = 0; i < n; i++) {
            System.out.print(array[i] + " ");
        }
        System.out.println("]");
        in.close();
    }
}
```

ANIRUDH VADERA
(DIGITAL ASSIGNMENT - 1) ARRAY AND STRINGS

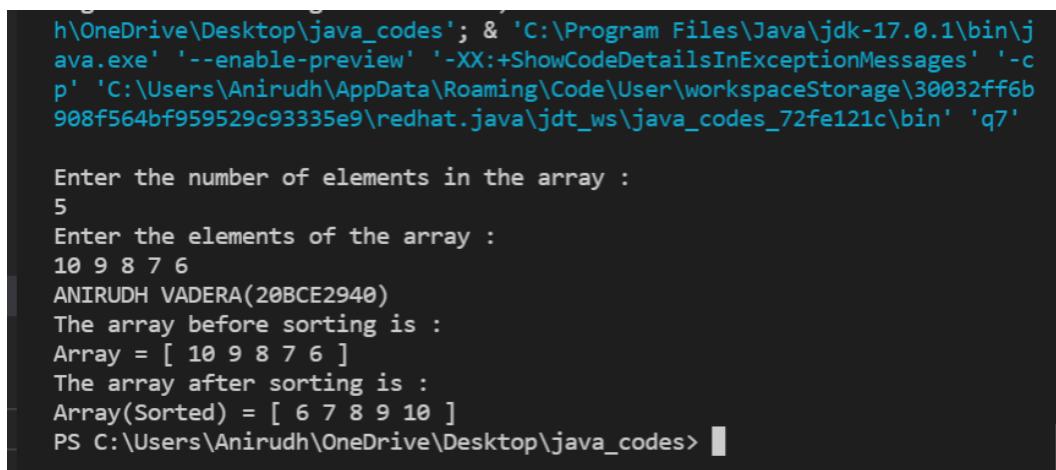
CODE SNAPSHOT:



The screenshot shows a Visual Studio Code interface with a dark theme. The top menu bar includes 'Go', 'Run', 'Terminal', and 'Help'. The title bar says 'q7.java - java_codes - Visual Studio Code'. Below the title bar, there are tabs for 'java' and several other files: 'string_q6java', 'string_q4.java', 'initial1.java', 'initial2.java', and 'initial5.java'. The main editor area contains Java code for a bubble sort algorithm. The code uses Scanner to read input from System.in, prints the array before and after sorting, and applies the bubble sort algorithm. The code is numbered from 20 to 48.

```
20     Scanner in = new Scanner(System.in);
21     System.out.println("Enter the number of elements in the array :");
22     int n = in.nextInt();
23     System.out.println("Enter the elements of the array :");
24     int[] array = new int[n];
25     for (int i = 0; i < n; i++) {
26         array[i] = in.nextInt();
27     }
28     System.out.println("ANIRUDH VADERA(20BCE2940)");
29     System.out.println("The array before sorting is :");
30     System.out.print("Array = [ ");
31     for (int i = 0; i < n; i++) {
32         System.out.print(array[i] + " ");
33     }
34     System.out.println("]");
35
36     // Applying Bubble Sort
37     BubbleSort(array, n);
38
39     System.out.println("The array after sorting is :");
40     System.out.print("Array(Sorted) = [ ");
41     for (int i = 0; i < n; i++) {
42         System.out.print(array[i] + " ");
43     }
44     System.out.println("]");
45     in.close();
46 }
47 }
48 }
```

OUTPUT:



The screenshot shows a terminal window with a dark theme. The command entered is 'java q7'. The output shows the user inputting 5 elements (10, 9, 8, 7, 6), the initial array [10 9 8 7 6], the sorted array [6 7 8 9 10], and the final message 'PS C:\Users\Anirudh\OneDrive\Desktop\java_codes>'.

```
h:\OneDrive\Desktop\java_codes'; & 'C:\Program Files\Java\jdk-17.0.1\bin\java.exe' '--enable-preview' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\Anirudh\AppData\Roaming\Code\User\workspaceStorage\30032ff6b908f564bf959529c93335e9\redhat.java\jdt_ws\java_codes_72fe121c\bin' 'q7'

Enter the number of elements in the array :
5
Enter the elements of the array :
10 9 8 7 6
ANIRUDH VADERA(20BCE2940)
The array before sorting is :
Array = [ 10 9 8 7 6 ]
The array after sorting is :
Array(Sorted) = [ 6 7 8 9 10 ]
PS C:\Users\Anirudh\OneDrive\Desktop\java_codes>
```

QUESTION:

Remove duplicate elements from a sorted array [only one array should be used]

ANIRUDH VADERA
(DIGITAL ASSIGNMENT - 1) ARRAY AND STRINGS

CODE:

```
import java.util.Scanner;

class q8 {

    static int RemoveDuplicates(int[] array) {
        int new_length = 0;
        int n = array.length;
        for (int i = 0; i < n - 1; i++) {
            if (array[i] != array[i + 1]) {
                array[new_length++] = array[i];
            }
        }
        array[new_length++] = array[n - 1];
        // Storing the new elements in the original array
        return new_length;
    }

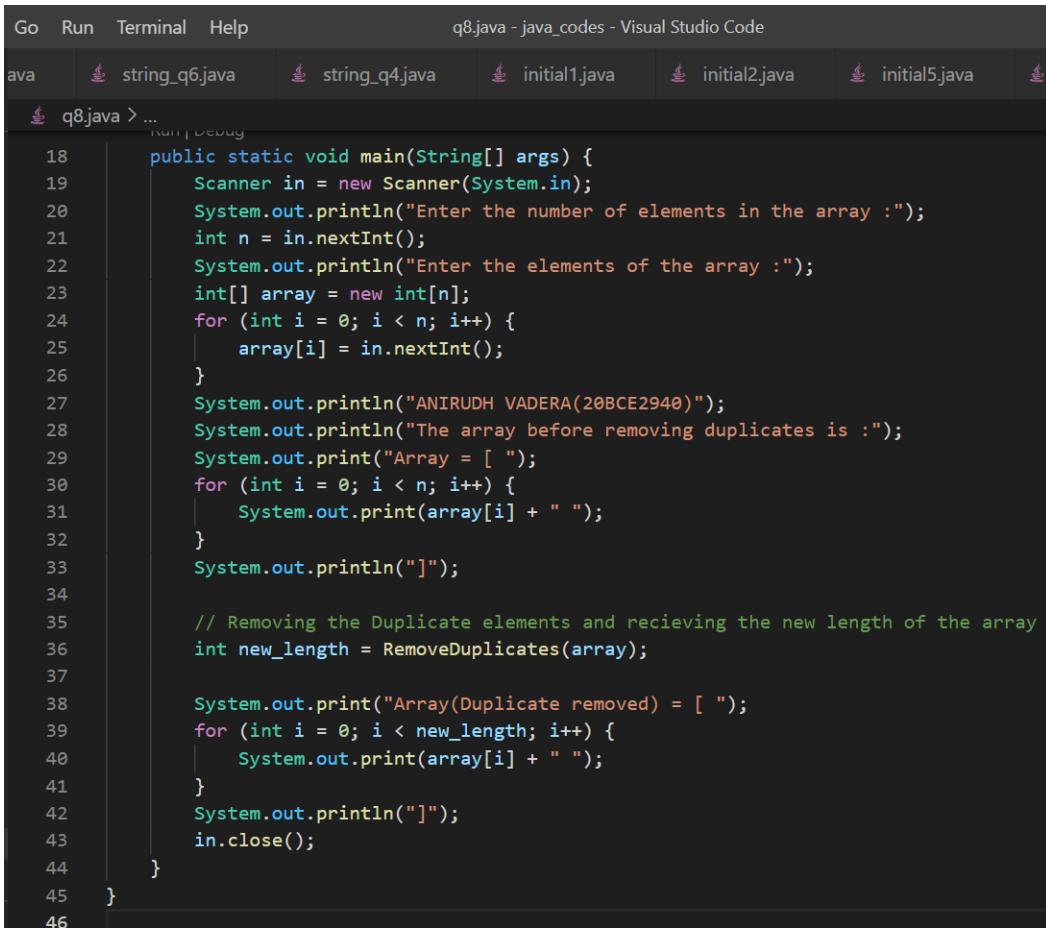
    public static void main(String[] args) {
        Scanner in = new Scanner(System.in);
        System.out.println("Enter the number of elements in the array :");
        int n = in.nextInt();
        System.out.println("Enter the elements of the array :");
        int[] array = new int[n];
        for (int i = 0; i < n; i++) {
            array[i] = in.nextInt();
        }
        System.out.println("ANIRUDH VADERA(20BCE2940)");
        System.out.println("The array before removing duplicates is :");
        System.out.print("Array = [ ");
        for (int i = 0; i < n; i++) {
            System.out.print(array[i] + " ");
        }
        System.out.println("]");

        // Removing the Duplicate elements and recieving the new length of the
        array
        int new_length = RemoveDuplicates(array);

        System.out.print("Array(Duplicate removed) = [ ");
        for (int i = 0; i < new_length; i++) {
            System.out.print(array[i] + " ");
        }
        System.out.println("]");
        in.close();
    }
}
```

ANIRUDH VADERA
(DIGITAL ASSIGNMENT - 1) ARRAY AND STRINGS

CODE SNAPSHOT:

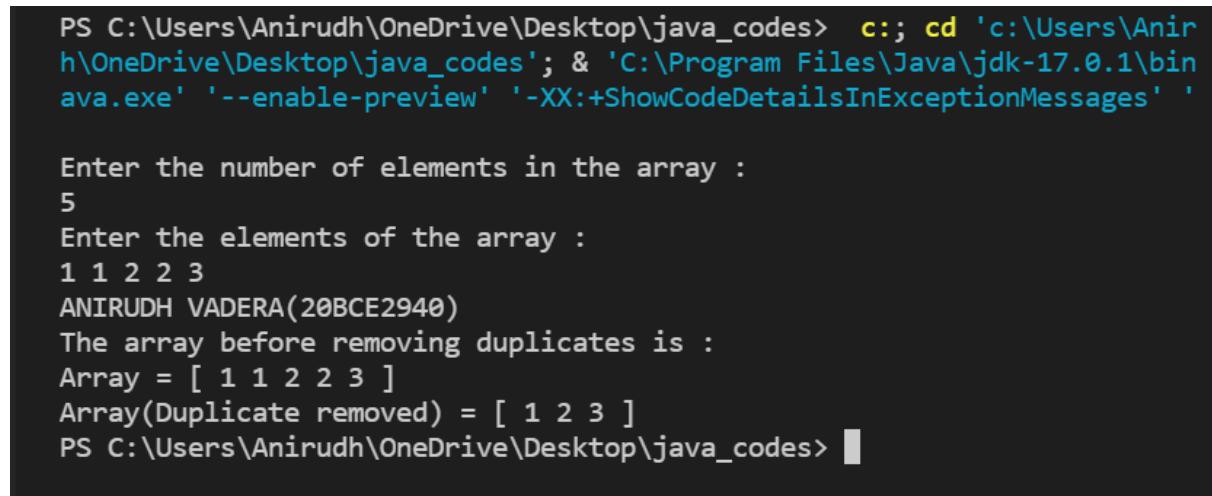


The screenshot shows a Visual Studio Code interface with a dark theme. The top menu bar includes 'Go', 'Run', 'Terminal', and 'Help'. The title bar says 'q8.java - java_codes - Visual Studio Code'. Below the title bar, there's a tab bar with several files: 'ava', 'string_q6.java', 'string_q4.java', 'initial1.java', 'initial2.java', 'initial5.java', and 'q8.java'. The main editor area contains Java code for reading user input and removing duplicates from an array.

```
public static void main(String[] args) {
    Scanner in = new Scanner(System.in);
    System.out.println("Enter the number of elements in the array :");
    int n = in.nextInt();
    System.out.println("Enter the elements of the array :");
    int[] array = new int[n];
    for (int i = 0; i < n; i++) {
        array[i] = in.nextInt();
    }
    System.out.println("ANIRUDH VADERA(20BCE2940)");
    System.out.println("The array before removing duplicates is :");
    System.out.print("Array = [ ");
    for (int i = 0; i < n; i++) {
        System.out.print(array[i] + " ");
    }
    System.out.println("]");
    // Removing the Duplicate elements and receiving the new length of the array
    int new_length = RemoveDuplicates(array);

    System.out.print("Array(Duplicate removed) = [ ");
    for (int i = 0; i < new_length; i++) {
        System.out.print(array[i] + " ");
    }
    System.out.println("]");
    in.close();
}
```

OUTPUT:



The screenshot shows a terminal window with a black background and white text. It displays the command to run the Java program and its output. The output shows the user entering the number of elements (5), the array elements (1 1 2 2 3), the student ID (ANIRUDH VADERA(20BCE2940)), the original array (Array = [1 1 2 2 3]), and the array after removing duplicates (Array(Duplicate removed) = [1 2 3]).

```
PS C:\Users\Anirudh\OneDrive\Desktop\java_codes> c:; cd 'c:\Users\Anirudh\OneDrive\Desktop\java_codes'; & 'C:\Program Files\Java\jdk-17.0.1\bin\java.exe' '--enable-preview' '-XX:+ShowCodeDetailsInExceptionMessages'

Enter the number of elements in the array :
5
Enter the elements of the array :
1 1 2 2 3
ANIRUDH VADERA(20BCE2940)
The array before removing duplicates is :
Array = [ 1 1 2 2 3 ]
Array(Duplicate removed) = [ 1 2 3 ]
PS C:\Users\Anirudh\OneDrive\Desktop\java_codes>
```

QUESTION:

Check if a given input matrix from a user is an identity matrix

ANIRUDH VADERA
(DIGITAL ASSIGNMENT - 1) ARRAY AND STRINGS

CODE:

```
import java.util.Scanner;

class q9 {

    static void Identity(int matrix[][])
    {
        int flag = 1;
        for (int i = 0; i < matrix.length; i++) {
            for (int j = 0; j < matrix[i].length; j++) {
                if (i == j) {
                    if (matrix[i][j] != 1) {
                        flag = 0;
                        break;
                    }
                } else {
                    if (matrix[i][j] != 0) {
                        flag = 0;
                        break;
                    }
                }
            }
        }
        if (flag == 0) {
            System.out.println("The entered matrix is not a Identity
matrix:");
        } else {
            System.out.println("The entered matrix is a Identity matrix:");
        }
    }

    public static void main(String[] args) {
        Scanner in = new Scanner(System.in);
        System.out.println("Enter the no of rows :");
        int r = in.nextInt();
        System.out.println("Enter the no of columns :");
        int c = in.nextInt();
        int matrix[][] = new int[r][c];
        System.out.println("Enter the elements of matrix 1 :");
        for (int i = 0; i < matrix.length; i++) {
            for (int j = 0; j < matrix[i].length; j++) {
                matrix[i][j] = in.nextInt();
            }
        }
        System.out.println("ANIRUDH VADERA(20BCE2940)");
        System.out.println("The matrix entered is :");
        for (int i = 0; i < matrix.length; i++) {
            for (int j = 0; j < matrix[i].length; j++) {
```

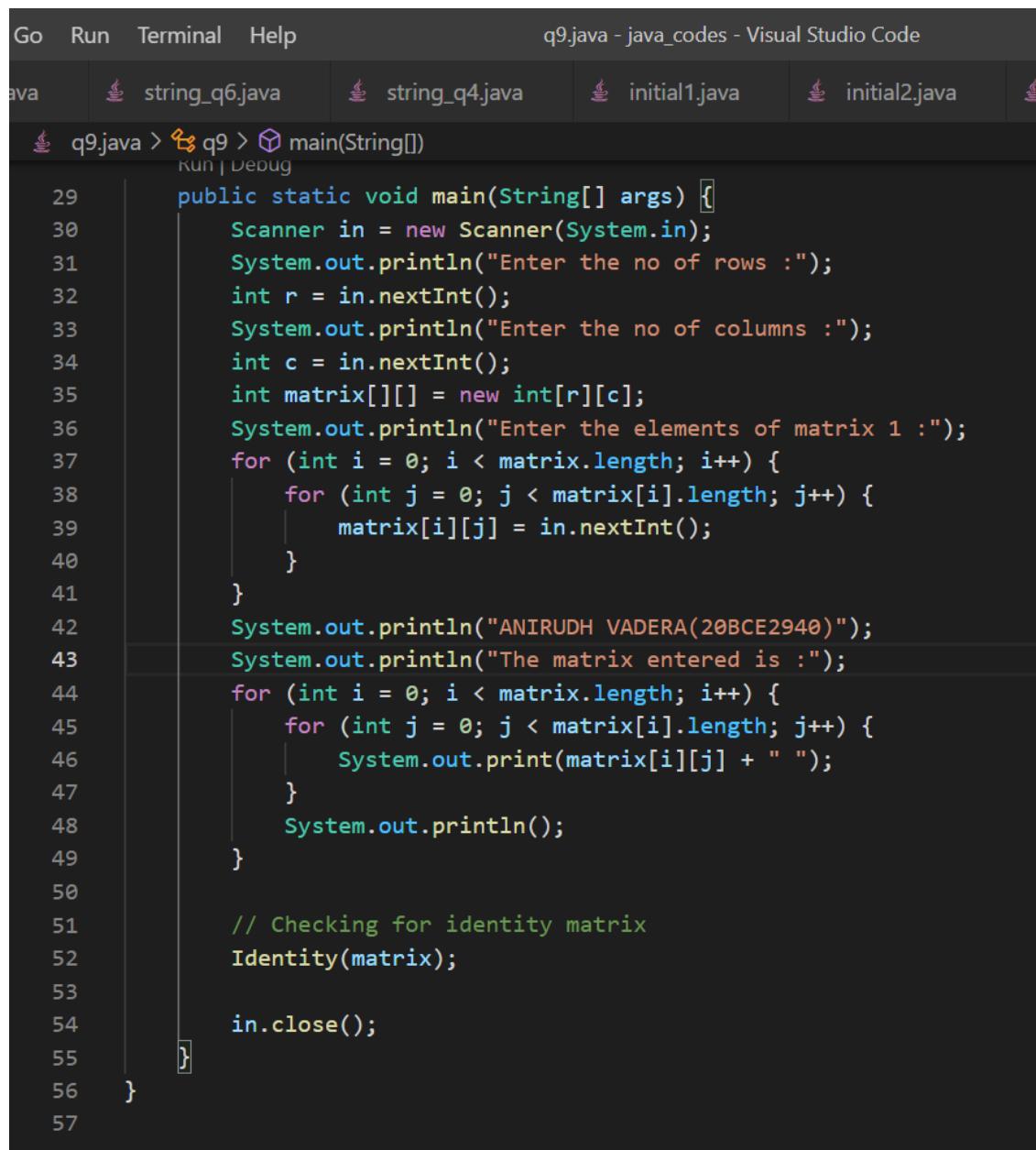
ANIRUDH VADERA
(DIGITAL ASSIGNMENT - 1) ARRAY AND STRINGS

```
        System.out.print(matrix[i][j] + " ");
    }
    System.out.println();
}

// Checking for identity matrix
Identity(matrix);

in.close();
}
}
```

CODE SNAPSHOT:



The screenshot shows the Visual Studio Code interface with the file `q9.java` open. The menu bar includes `Go`, `Run`, `Terminal`, and `Help`. The title bar indicates the file is `q9.java - java_codes - Visual Studio Code`. The code editor displays the Java code for reading a matrix from the user and checking if it is an identity matrix. The code uses `Scanner` to read integers from standard input and `System.out` to print the matrix and its identity status.

```
Go Run Terminal Help
q9.java - java_codes - Visual Studio Code

Java string_q6.java string_q4.java initial1.java initial2.java

q9.java > q9 > main(String[])
Run | Debug

29 public static void main(String[] args) {
30     Scanner in = new Scanner(System.in);
31     System.out.println("Enter the no of rows :");
32     int r = in.nextInt();
33     System.out.println("Enter the no of columns :");
34     int c = in.nextInt();
35     int matrix[][] = new int[r][c];
36     System.out.println("Enter the elements of matrix 1 :");
37     for (int i = 0; i < matrix.length; i++) {
38         for (int j = 0; j < matrix[i].length; j++) {
39             matrix[i][j] = in.nextInt();
40         }
41     }
42     System.out.println("ANIRUDH VADERA(20BCE2940)");
43     System.out.println("The matrix entered is :");
44     for (int i = 0; i < matrix.length; i++) {
45         for (int j = 0; j < matrix[i].length; j++) {
46             System.out.print(matrix[i][j] + " ");
47         }
48         System.out.println();
49     }
50
51     // Checking for identity matrix
52     Identity(matrix);
53
54     in.close();
55 }
56
57 }
```

ANIRUDH VADERA
(DIGITAL ASSIGNMENT - 1) ARRAY AND STRINGS

OUTPUT:

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

ExceptionMessages' '-cp' 'C:\Users\Anirudh\AppData\Roaming\Code\User\wo
rkspaceStorage\30032ff6b908f564bf959529c93335e9\redhat.java\jdt_ws\java
_codes_72fe121c\bin' 'q9'
Enter the no of rows :
3
Enter the no of columns :
3
Enter the elements of matrix 1 :
1 0 0
0 1 0
0 0 1
ANIRUDH VADERA(20BCE2940)
The matrix entered is :
1 0 0
0 1 0
0 0 1
The entered matrix is a Identity matrix:
PS C:\Users\Anirudh\OneDrive\Desktop\java_codes> & 'C:\Program Files\J
ava\jdk-17.0.1\bin\java.exe' '--enable-preview' '-XX:+ShowCodeDetailsIn
ExceptionMessages' '-cp' 'C:\Users\Anirudh\AppData\Roaming\Code\User\wo
rkspaceStorage\30032ff6b908f564bf959529c93335e9\redhat.java\jdt_ws\java
_codes_72fe121c\bin' 'q9'
Enter the no of rows :
3
Enter the no of columns :
3
Enter the elements of matrix 1 :
1 1 0
0 1 0
0 1 1
ANIRUDH VADERA(20BCE2940)
The matrix entered is :
1 1 0
0 1 0
0 1 1
The entered matrix is not a Identity matrix:
PS C:\Users\Anirudh\OneDrive\Desktop\java_codes>
```

QUESTION:

Display the addition result of two matrices

ANIRUDH VADERA
(DIGITAL ASSIGNMENT - 1) ARRAY AND STRINGS

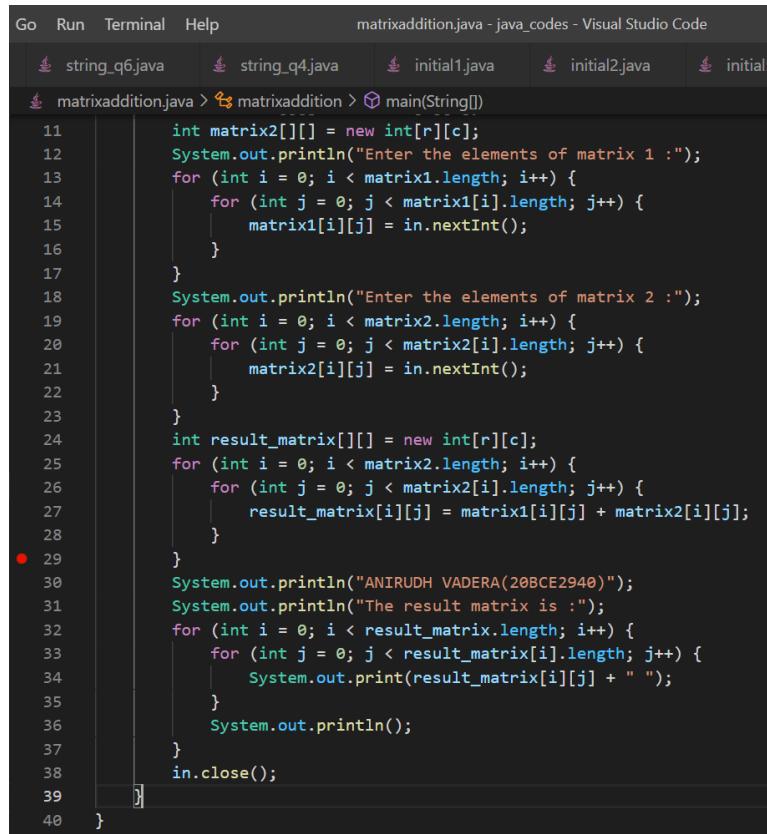
CODE:

```
import java.util.Scanner;

class matrixaddition {
    public static void main(String[] args) {
        Scanner in = new Scanner(System.in);
        System.out.println("Enter the no of rows :");
        int r = in.nextInt();
        System.out.println("Enter the no of columns :");
        int c = in.nextInt();
        int matrix1[][] = new int[r][c];
        int matrix2[][] = new int[r][c];
        System.out.println("Enter the elements of matrix 1 :");
        for (int i = 0; i < matrix1.length; i++) {
            for (int j = 0; j < matrix1[i].length; j++) {
                matrix1[i][j] = in.nextInt();
            }
        }
        System.out.println("Enter the elements of matrix 2 :");
        for (int i = 0; i < matrix2.length; i++) {
            for (int j = 0; j < matrix2[i].length; j++) {
                matrix2[i][j] = in.nextInt();
            }
        }
        int result_matrix[][] = new int[r][c];
        for (int i = 0; i < matrix2.length; i++) {
            for (int j = 0; j < matrix2[i].length; j++) {
                result_matrix[i][j] = matrix1[i][j] + matrix2[i][j];
            }
        }
        System.out.println("ANIRUDH VADERA(20BCE2940)");
        System.out.println("The result matrix is :");
        for (int i = 0; i < result_matrix.length; i++) {
            for (int j = 0; j < result_matrix[i].length; j++) {
                System.out.print(result_matrix[i][j] + " ");
            }
            System.out.println();
        }
        in.close();
    }
}
```

ANIRUDH VADERA
(DIGITAL ASSIGNMENT - 1) ARRAY AND STRINGS

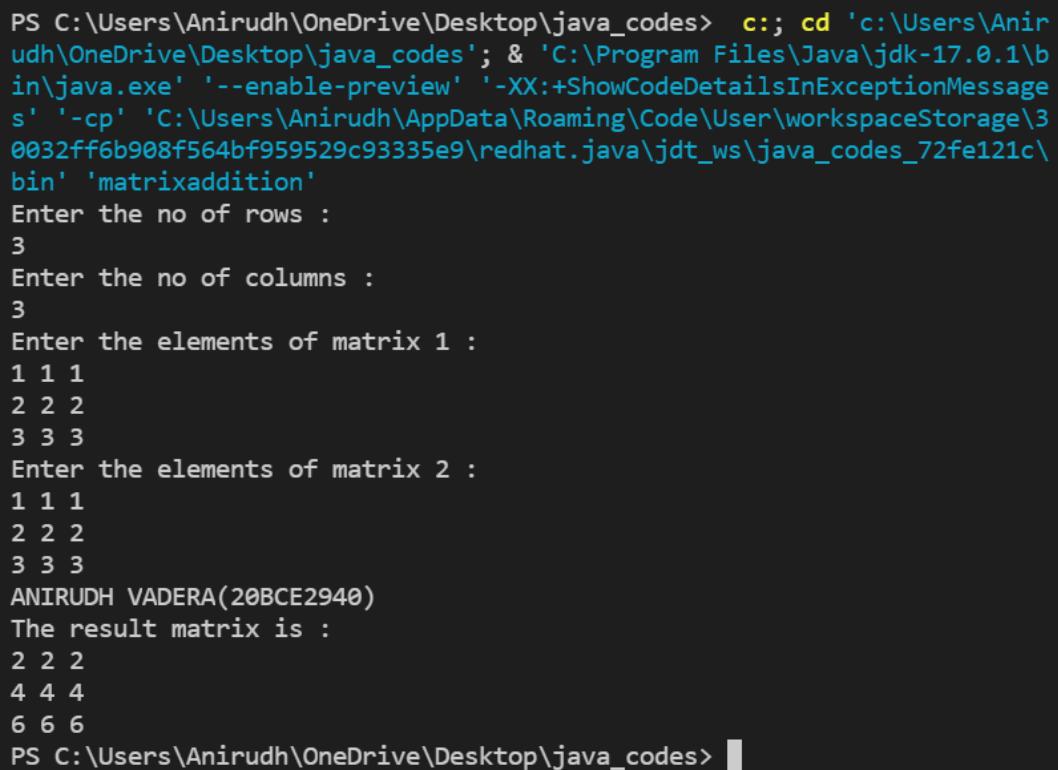
CODE SNAPSHOT:



A screenshot of the Visual Studio Code interface. The title bar shows "matrixaddition.java - java_codes - Visual Studio Code". The editor pane displays Java code for matrix addition. The code uses nested loops to input elements from the user and calculate the sum of corresponding matrix elements to produce a result matrix. A red dot on line 29 indicates a break point.

```
Go Run Terminal Help
matrixaddition.java - java_codes - Visual Studio Code
string_q6.java string_q4.java initial1.java initial2.java initial3.java
matrixaddition.java > main(String[])
11     int matrix2[][] = new int[r][c];
12     System.out.println("Enter the elements of matrix 1 :");
13     for (int i = 0; i < matrix1.length; i++) {
14         for (int j = 0; j < matrix1[i].length; j++) {
15             matrix1[i][j] = in.nextInt();
16         }
17     }
18     System.out.println("Enter the elements of matrix 2 :");
19     for (int i = 0; i < matrix2.length; i++) {
20         for (int j = 0; j < matrix2[i].length; j++) {
21             matrix2[i][j] = in.nextInt();
22         }
23     }
24     int result_matrix[][] = new int[r][c];
25     for (int i = 0; i < matrix2.length; i++) {
26         for (int j = 0; j < matrix2[i].length; j++) {
27             result_matrix[i][j] = matrix1[i][j] + matrix2[i][j];
28         }
29     }
30     System.out.println("ANIRUDH VADERA(20BCE2940)");
31     System.out.println("The result matrix is :");
32     for (int i = 0; i < result_matrix.length; i++) {
33         for (int j = 0; j < result_matrix[i].length; j++) {
34             System.out.print(result_matrix[i][j] + " ");
35         }
36         System.out.println();
37     }
38     in.close();
39 }
40 }
```

OUTPUT:



A screenshot of a terminal window showing the execution of the Java program. The user enters the dimensions (3x3), inputs the elements for both matrices, and the program outputs the resulting matrix.

```
PS C:\Users\Anirudh\OneDrive\Desktop\java_codes> c:; cd 'c:\Users\Anirudh\OneDrive\Desktop\java_codes'; & 'C:\Program Files\Java\jdk-17.0.1\bin\java.exe' '--enable-preview' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\Anirudh\AppData\Roaming\Code\User\workspaceStorage\30032ff6b908f564bf959529c93335e9\redhat.java\jdt_ws\java_codes_72fe121c\bin' 'matrixaddition'
Enter the no of rows :
3
Enter the no of columns :
3
Enter the elements of matrix 1 :
1 1 1
2 2 2
3 3 3
Enter the elements of matrix 2 :
1 1 1
2 2 2
3 3 3
ANIRUDH VADERA(20BCE2940)
The result matrix is :
2 2 2
4 4 4
6 6 6
PS C:\Users\Anirudh\OneDrive\Desktop\java_codes>
```

ANIRUDH VADERA
(DIGITAL ASSIGNMENT - 1) ARRAY AND STRINGS

ACTIVITY – 3:

QUESTION:

Write a Method that receives a jagged array containing marks scored by a student in various semesters. For instance the marks in the jagged array are as shown below

```
40 80 30 99  
20 55  
31 44 55 67  
87 45 66
```

Receive the jagged array in a method and write code to display the number of subjects the student has passed (marks ≥ 40) and the number of subjects the student has failed (marks <40). Use an enhanced for loop in the code

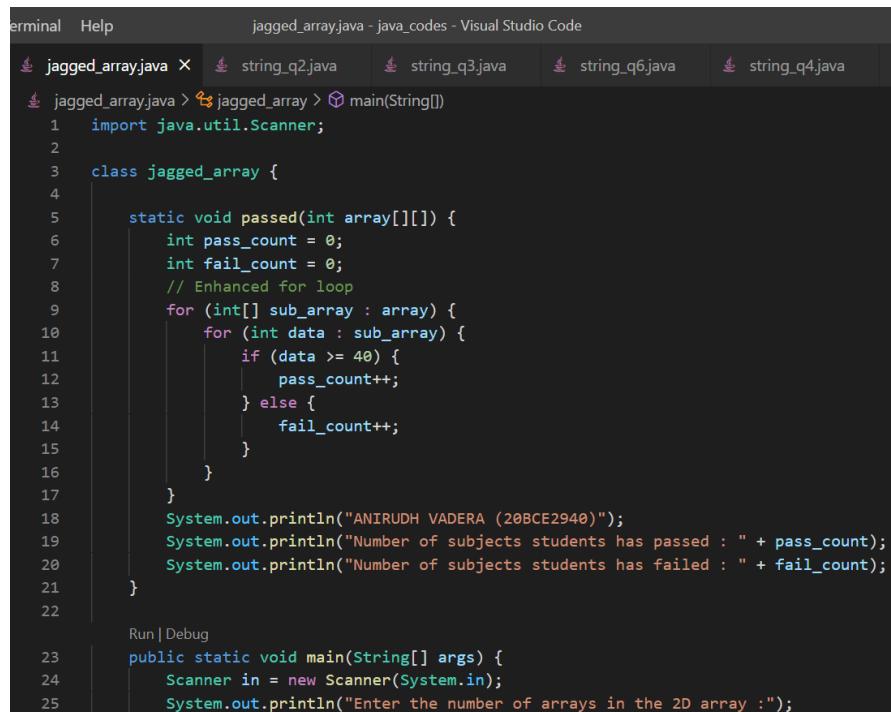
CODE:

```
import java.util.Scanner;  
  
class Jagged_array {  
  
    static void passed(int array[][]){  
        int pass_count = 0;  
        int fail_count = 0;  
        // Enhanced for loop  
        for (int[] sub_array : array) {  
            for (int data : sub_array) {  
                if (data >= 40) {  
                    pass_count++;  
                } else {  
                    fail_count++;  
                }  
            }  
        }  
        System.out.println("ANIRUDH VADERA (20BCE2940)");  
        System.out.println("Number of subjects students has passed : " +  
pass_count);  
        System.out.println("Number of subjects students has failed : " +  
fail_count);  
    }  
  
    public static void main(String[] args) {  
        Scanner in = new Scanner(System.in);  
        System.out.println("Enter the number of arrays in the 2D array :");  
        int n = in.nextInt();  
        int jagged_array[][] = new int[n][];
```

ANIRUDH VADERA
(DIGITAL ASSIGNMENT - 1) ARRAY AND STRINGS

```
System.out.println("Enter the size of each array :");
for (int i = 0; i < n; i++) {
    int x = in.nextInt();
    jagged_array[i] = new int[x];
}
System.out.println("Enter the elements of each array in the 2D array
:");
for (int i = 0; i < jagged_array.length; i++) {
    System.out.println("Array :" + (i + 1));
    for (int j = 0; j < jagged_array[i].length; j++) {
        jagged_array[i][j] = in.nextInt();
    }
}
in.close();
System.out.println("The 2D array is :");
for (int i = 0; i < jagged_array.length; i++) {
    System.out.print("[");
    for (int j = 0; j < jagged_array[i].length; j++) {
        System.out.print(" " + jagged_array[i][j]);
    }
    System.out.print(" ]");
    System.out.println();
}
passed(jagged_array);
}
```

CODE SNAPSHOT:



The screenshot shows the Visual Studio Code interface with the jagged_array.java file open in the editor. The code implements a method to calculate the number of students who passed or failed based on their marks. It uses nested loops to iterate through the 2D array and prints the results.

```
terminal Help jagged_array.java - java_codes - Visual Studio Code
jagged_array.java x string_q2.java string_q3.java string_q6.java string_q4.java
jagged_array.java > jagged_array > main(String[])
1 import java.util.Scanner;
2
3 class jagged_array {
4
5     static void passed(int array[][]) {
6         int pass_count = 0;
7         int fail_count = 0;
8         // Enhanced for loop
9         for (int[] sub_array : array) {
10             for (int data : sub_array) {
11                 if (data >= 40) {
12                     pass_count++;
13                 } else {
14                     fail_count++;
15                 }
16             }
17         }
18         System.out.println("ANIRUDH VADERA (20BCE2940)");
19         System.out.println("Number of subjects students has passed : " + pass_count);
20         System.out.println("Number of subjects students has failed : " + fail_count);
21     }
22
23     public static void main(String[] args) {
24         Scanner in = new Scanner(System.in);
25         System.out.println("Enter the number of arrays in the 2D array :");
```

ANIRUDH VADERA
(DIGITAL ASSIGNMENT - 1) ARRAY AND STRINGS

OUTPUT:

```
[ 40 80 30 99 ]
[ 20 55 ]
[ 31 44 55 67 ]
[ 87 45 66 ]
```

QUESTION:

Read the Register Number and Mobile Number of a student. If the Register Number does not contain exactly 9 characters or if the Mobile Number does not contain exactly 10 characters, display appropriate error message. If the Mobile Number contains any character other than a digit, display appropriate error message. If the Register Number contains any character other than digits and alphabets, display appropriate error message. If they are valid, print the message ‘valid’ else ‘invalid’

CODE:

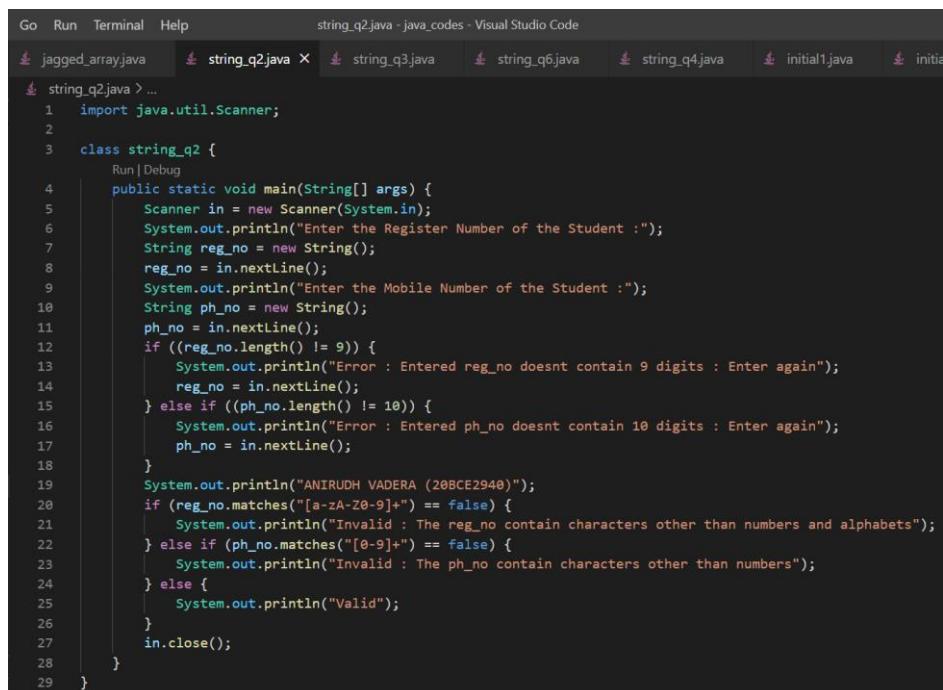
```
import java.util.Scanner;

class string_q2 {
    public static void main(String[] args) {
        Scanner in = new Scanner(System.in);
        System.out.println("Enter the Register Number of the Student :");
```

ANIRUDH VADERA
(DIGITAL ASSIGNMENT - 1) ARRAY AND STRINGS

```
String reg_no = new String();
reg_no = in.nextLine();
System.out.println("Enter the Mobile Number of the Student :");
String ph_no = new String();
ph_no = in.nextLine();
if ((reg_no.length() != 9)) {
    System.out.println("Error : Entered reg_no doesnt contain 9 digits
: Enter again");
    reg_no = in.nextLine();
} else if ((ph_no.length() != 10)) {
    System.out.println("Error : Entered ph_no doesnt contain 10 digits
: Enter again");
    ph_no = in.nextLine();
}
System.out.println("ANIRUDH VADERA (20BCE2940)");
if (reg_no.matches("[a-zA-Z0-9]+") == false) {
    System.out.println("Invalid : The reg_no contain characters other
than numbers and alphabets");
} else if (ph_no.matches("[0-9]+") == false) {
    System.out.println("Invalid : The ph_no contain characters other
than numbers");
} else {
    System.out.println("Valid");
}
in.close();
}
```

CODE SNAPSHOT:



The screenshot shows the Visual Studio Code interface with the file "string_q2.java" open in the editor. The code is identical to the one shown in the previous code block, handling user input for a student's registration number and mobile phone number, performing validation checks, and printing the results.

ANIRUDH VADERA
(DIGITAL ASSIGNMENT - 1) ARRAY AND STRINGS

OUTPUT:

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

PS C:\Users\Anirudh\OneDrive\Desktop\java_codes> & 'C:\Program Files\Java\jdk-17.0.1\bin\java.exe' '--enable-preview' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\Anirudh\AppData\Roaming\Code\User\workspaceStorage\30032ff6b908f564bf959529c93335e9\redhat.java\jdt_ws\java_codes_72fe121c\bin' 'string_q2'
Enter the Register Number of the Student :
20BCE2940
Enter the Mobile Number of the Student :
123
Error : Entered ph_no doesnt contain 10 digits : Enter again
ANIRUDH VADERA (20BCE2940)
Valid
PS C:\Users\Anirudh\OneDrive\Desktop\java_codes> c;; cd 'c:\Users\Anirudh\OneDrive\Desktop\java_codes'; & 'C:\Program Files\Java\jdk-17.0.1\bin\java.exe' '--enable-preview' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\Anirudh\AppData\Roaming\Code\User\workspaceStorage\30032ff6b908f564bf959529c93335e9\redhat.java\jdt_ws\java_codes_72fe121c\bin' 'string_q2'
Enter the Register Number of the Student :
20BCE
Enter the Mobile Number of the Student :
Error : Entered reg_no doesnt contain 9 digits : Enter again
20BCE2940
ANIRUDH VADERA (20BCE2940)
Valid

PS C:\Users\Anirudh\OneDrive\Desktop\java_codes> c;; cd 'c:\Users\Anirudh\OneDrive\Desktop\java_codes'; & 'C:\Program Files\Java\jdk-17.0.1\bin\java.exe' '--enable-preview' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\Anirudh\AppData\Roaming\Code\User\workspaceStorage\30032ff6b908f564bf959529c93335e9\redhat.java\jdt_ws\java_codes_72fe121c\bin' 'string_q2'
Enter the Register Number of the Student :
20BCE23@@
Enter the Mobile Number of the Student :
1234567890
ANIRUDH VADERA (20BCE2940)
Invalid : The reg_no contain characters other than numbers and alphabets
PS C:\Users\Anirudh\OneDrive\Desktop\java_codes> c;; cd 'c:\Users\Anirudh\OneDrive\Desktop\java_codes'; & 'C:\Program Files\Java\jdk-17.0.1\bin\java.exe' '--enable-preview' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\Anirudh\AppData\Roaming\Code\User\workspaceStorage\30032ff6b908f564bf959529c93335e9\redhat.java\jdt_ws\java_codes_72fe121c\bin' 'string_q2'
Enter the Register Number of the Student :
20BCE2940
Enter the Mobile Number of the Student :
123@567890
ANIRUDH VADERA (20BCE2940)
Invalid : The ph_no contain characters other than numbers

PS C:\Users\Anirudh\OneDrive\Desktop\java_codes> c;; cd 'c:\Users\Anirudh\OneDrive\Desktop\java_codes'; & 'C:\Program Files\Java\jdk-17.0.1\bin\java.exe' '--enable-preview' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\Anirudh\AppData\Roaming\Code\User\workspaceStorage\30032ff6b908f564bf959529c93335e9\redhat.java\jdt_ws\java_codes_72fe121c\bin' 'string_q2'
Enter the Register Number of the Student :
20BCE2940
Enter the Mobile Number of the Student :
1234567890
ANIRUDH VADERA (20BCE2940)
Valid
PS C:\Users\Anirudh\OneDrive\Desktop\java_codes>
```

ANIRUDH VADERA
(DIGITAL ASSIGNMENT - 1) ARRAY AND STRINGS

QUESTION:

- . Read an array of 5 names from the user. The input name format is Dr. Bontu, Dr. Gladys, Dr. Kavitha.
- . Read search name from the user. The user may enter just the name like Bontu, Gladys and Kavitha.
- . Check if the name entered by the user is present in the array of names.
- . If the name is found then display “Name Found” or else display “Name not Found” .

CODE:

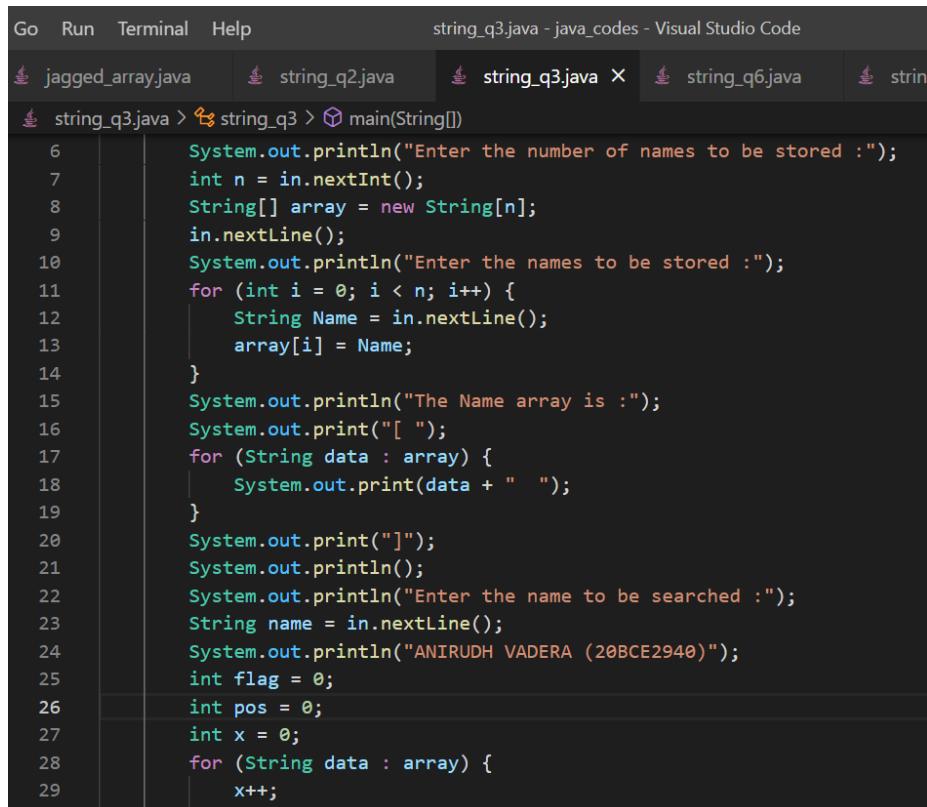
```
import java.util.Scanner;

class string_q3 {
    public static void main(String[] args) {
        Scanner in = new Scanner(System.in);
        System.out.println("Enter the number of names to be stored :");
        int n = in.nextInt();
        String[] array = new String[n];
        in.nextLine();
        System.out.println("Enter the names to be stored :");
        for (int i = 0; i < n; i++) {
            String Name = in.nextLine();
            array[i] = Name;
        }
        System.out.println("The Name array is :");
        System.out.print("[ ");
        for (String data : array) {
            System.out.print(data + " ");
        }
        System.out.print("]");
        System.out.println();
        System.out.println("Enter the name to be searched :");
        String name = in.nextLine();
        System.out.println("ANIRUDH VADERA (20BCE2940)");
        int flag = 0;
        int pos = 0;
        int x = 0;
        for (String data : array) {
            x++;
            if (data.matches("Dr. " + name)) {
                System.out.println("JHo");
                flag = 1;
                pos = x;
                break;
            } else {
                flag = 0;
            }
        }
        if (flag == 0) {
```

ANIRUDH VADERA
(DIGITAL ASSIGNMENT - 1) ARRAY AND STRINGS

```
        System.out.println("Name Not Found");
    } else {
        System.out.println("Name Found at position : " + pos);
    }
in.close();
}
}
```

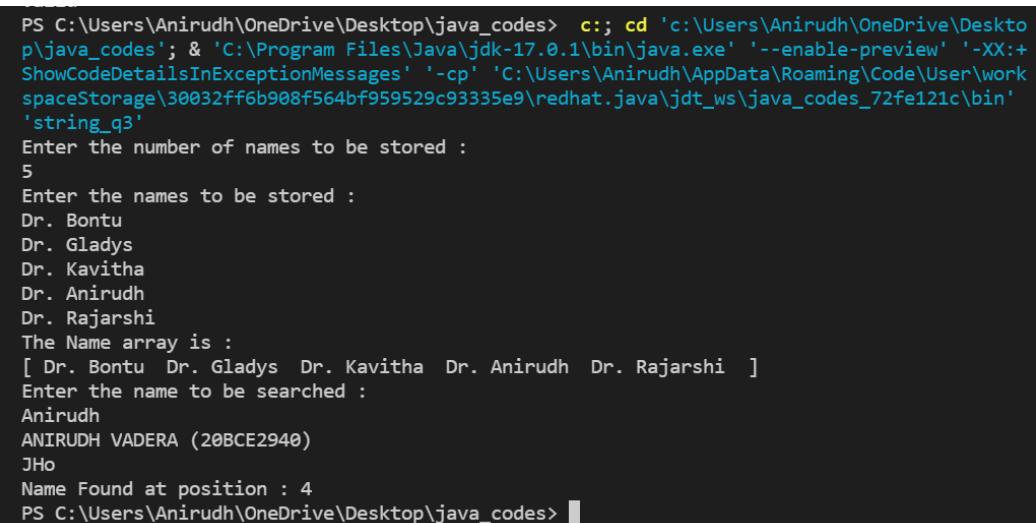
CODE SNAPSHOT:



A screenshot of the Visual Studio Code interface. The title bar says "string_q3.java - java_codes - Visual Studio Code". The left sidebar shows several Java files: "jagged_array.java", "string_q2.java", "string_q3.java" (which is the active tab), "string_q6.java", and "string_q7.java". The main editor area displays the Java code for "string_q3.java". The code is a program that reads names from standard input, stores them in an array, and then searches for a specific name.

```
Go Run Terminal Help
string_q3.java - java_codes - Visual Studio Code
jagged_array.java string_q2.java string_q3.java X string_q6.java string_q7.java
string_q3.java > string_q3 > main(String[])
6     System.out.println("Enter the number of names to be stored :");
7     int n = in.nextInt();
8     String[] array = new String[n];
9     in.nextLine();
10    System.out.println("Enter the names to be stored :");
11    for (int i = 0; i < n; i++) {
12        String Name = in.nextLine();
13        array[i] = Name;
14    }
15    System.out.println("The Name array is :");
16    System.out.print("[ ");
17    for (String data : array) {
18        System.out.print(data + " ");
19    }
20    System.out.print("]");
21    System.out.println();
22    System.out.println("Enter the name to be searched :");
23    String name = in.nextLine();
24    System.out.println("ANIRUDH VADERA (20BCE2940)");
25    int flag = 0;
26    int pos = 0;
27    int x = 0;
28    for (String data : array) {
29        x++;
```

OUTPUT:



A screenshot of a terminal window showing the execution of the Java program "string_q3". The terminal path is "PS C:\Users\Anirudh\OneDrive\Desktop\java_codes>". The program prompts for the number of names (5), then asks for names which are entered as Dr. Bontu, Dr. Gladys, Dr. Kavitha, Dr. Anirudh, and Dr. Rajarshi. It then prints the array of names and asks for a search term (JHo). The program outputs that the name was found at position 4.

```
PS C:\Users\Anirudh\OneDrive\Desktop\java_codes> c:; cd 'c:\Users\Anirudh\OneDrive\Desktop\java_codes'; & 'C:\Program Files\Java\jdk-17.0.1\bin\java.exe' '--enable-preview' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\Anirudh\AppData\Roaming\Code\User\workspaceStorage\30032ff6b908f564bf959529c93335e9\redhat.java\jdt_ws\java_codes_72fe121c\bin' 'string_q3'
Enter the number of names to be stored :
5
Enter the names to be stored :
Dr. Bontu
Dr. Gladys
Dr. Kavitha
Dr. Anirudh
Dr. Rajarshi
The Name array is :
[ Dr. Bontu Dr. Gladys Dr. Kavitha Dr. Anirudh Dr. Rajarshi ]
Enter the name to be searched :
Anirudh
ANIRUDH VADERA (20BCE2940)
JHo
Name Found at position : 4
PS C:\Users\Anirudh\OneDrive\Desktop\java_codes>
```

ANIRUDH VADERA
(DIGITAL ASSIGNMENT - 1) ARRAY AND STRINGS

```
PS C:\Users\Anirudh\OneDrive\Desktop\java_codes> c:; cd 'c:\Users\Anirudh\OneDrive\Desktop\java_codes'; & 'C:\Program Files\Java\jdk-17.0.1\bin\java.exe' '--enable-preview' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\Anirudh\AppData\Roaming\Code\User\workspaceStorage\30032ff6b908f564bf959529c93335e9\redhat.java\jdt_ws\java_codes_72fe121c\bin' 'string_q3'
Enter the number of names to be stored :
5
Enter the names to be stored :
Dr. Bontu
Dr. Gladys
Dr. Kavitha
Dr. Anirudh
Dr. Rajarshi
The Name array is :
[ Dr. Bontu Dr. Gladys Dr. Kavitha Dr. Anirudh Dr. Rajarshi ]
Enter the name to be searched :
Vansh
ANIRUDH VADERA (20BCE2940)
Name Not Found
PS C:\Users\Anirudh\OneDrive\Desktop\java_codes>
```

QUESTION:

Read a sentence from the user and display the count of the word VIT used in the sentence. If the word VIT is not present in the sentence then display the message “No such word in the Sentence” Message

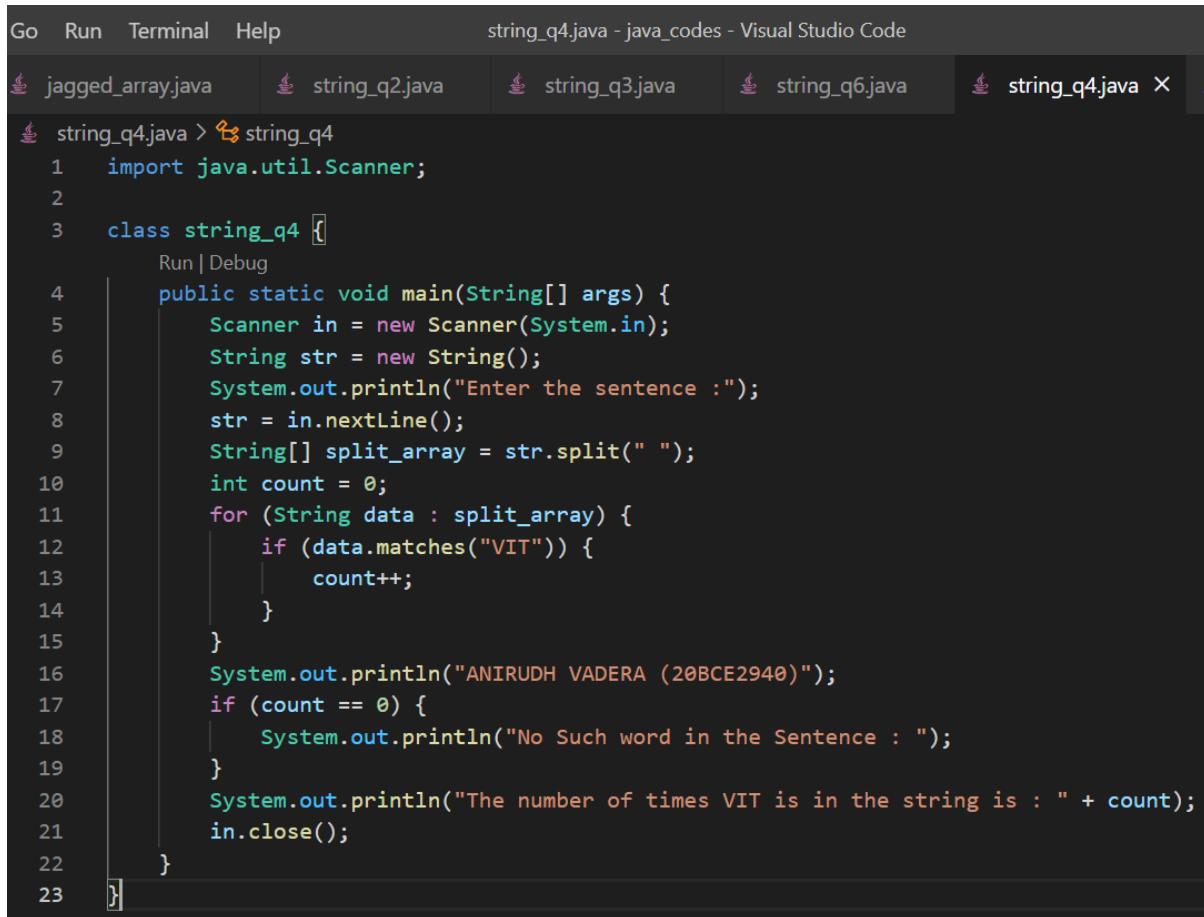
CODE:

```
import java.util.Scanner;

class string_q4 {
    public static void main(String[] args) {
        Scanner in = new Scanner(System.in);
        String str = new String();
        System.out.println("Enter the sentence :");
        str = in.nextLine();
        String[] split_array = str.split(" ");
        int count = 0;
        for (String data : split_array) {
            if (data.matches("VIT")) {
                count++;
            }
        }
        System.out.println("ANIRUDH VADERA (20BCE2940)");
        if (count == 0) {
            System.out.println("No Such word in the Sentence : ");
        }
        System.out.println("The number of times VIT is in the string is : " +
        count);
        in.close();
    }
}
```

ANIRUDH VADERA
(DIGITAL ASSIGNMENT - 1) ARRAY AND STRINGS

CODE SNAPSHOT:



The screenshot shows a Visual Studio Code interface with the title bar "string_q4.java - java_codes - Visual Studio Code". The code editor contains the following Java code:

```
Go Run Terminal Help
string_q4.java - java_codes - Visual Studio Code

jagged_array.java string_q2.java string_q3.java string_q6.java string_q4.java X

string_q4.java > string_q4

1 import java.util.Scanner;
2
3 class string_q4 {
4     public static void main(String[] args) {
5         Scanner in = new Scanner(System.in);
6         String str = new String();
7         System.out.println("Enter the sentence :");
8         str = in.nextLine();
9         String[] split_array = str.split(" ");
10        int count = 0;
11        for (String data : split_array) {
12            if (data.matches("VIT")) {
13                count++;
14            }
15        }
16        System.out.println("ANIRUDH VADERA (20BCE2940)");
17        if (count == 0) {
18            System.out.println("No Such word in the Sentence : ");
19        }
20        System.out.println("The number of times VIT is in the string is : " + count);
21        in.close();
22    }
23 }
```

OUTPUT:

```
PS C:\Users\Anirudh\OneDrive\Desktop\java_codes> c:; cd 'c:\Users\Anirudh\OneDrive\Desktop\java_codes'; & 'C:\Program Files\Java\jdk-17.0.1\bin\java.exe' '--enable-preview' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\Anirudh\AppData\Roaming\Code\User\workspaceStorage\30032ff6b908f564bf959529c93335e9\redhat.java\jdt_ws\java_codes_72fe121c\bin' 'string_q4'
Enter the sentence :
VIT is a great University. VIT is Wonderfull
ANIRUDH VADERA (20BCE2940)
The number of times VIT is in the string is : 2
PS C:\Users\Anirudh\OneDrive\Desktop\java_codes>
```

```
PS C:\Users\Anirudh\OneDrive\Desktop\java_codes> c:; cd 'c:\Users\Anirudh\OneDrive\Desktop\java_codes'; & 'C:\Program Files\Java\jdk-17.0.1\bin\java.exe' '--enable-preview' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\Anirudh\AppData\Roaming\Code\User\workspaceStorage\30032ff6b908f564bf959529c93335e9\redhat.java\jdt_ws\java_codes_72fe121c\bin' 'string_q4'
Enter the sentence :
Hello how are you?
ANIRUDH VADERA (20BCE2940)
No Such word in the Sentence :
The number of times VIT is in the string is : 0
PS C:\Users\Anirudh\OneDrive\Desktop\java_codes>
```

ANIRUDH VADERA
(DIGITAL ASSIGNMENT - 1) ARRAY AND STRINGS

QUESTION:

Read an array of 5 Registration Numbers from the user. Display the count of students who are from SCOPE and SENSE school by processing the registration numbers. The registration numbers of students from SCOPE school will contain BCE to be part of the registration number and the registration numbers of students from SENSE school will contain BEC to be part of the registration numbers. If the user doesn't enter any registration number corresponding to SCOPE or SENSE school then display the message that "There are no Students from SCOPE and SENSE school".

Sample registration numbers for SCOPE School – 11BCE2333, 12BCE9877

Sample registration numbers for SENSE School – 11BEC4423, 12BEC7655

CODE:

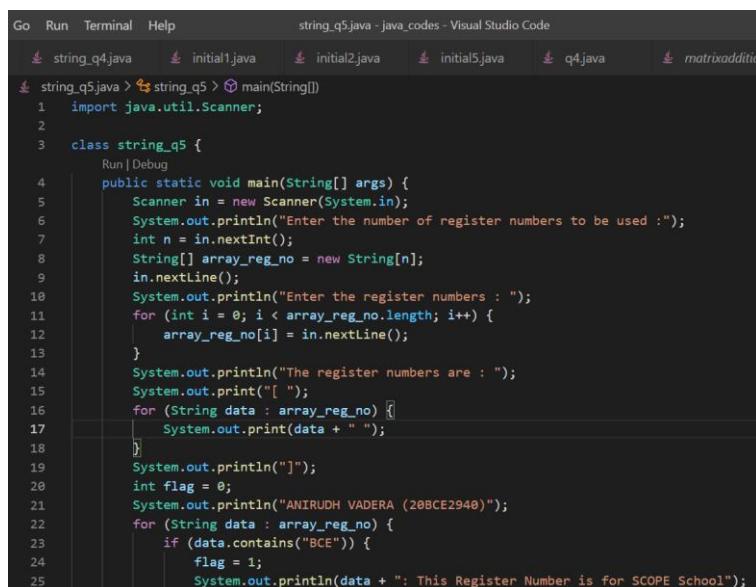
```
import java.util.Scanner;

class string_q5 {
    public static void main(String[] args) {
        Scanner in = new Scanner(System.in);
        System.out.println("Enter the number of register numbers to be used : ");
        int n = in.nextInt();
        String[] array_reg_no = new String[n];
        in.nextLine();
        System.out.println("Enter the register numbers : ");
        for (int i = 0; i < array_reg_no.length; i++) {
            array_reg_no[i] = in.nextLine();
        }
        System.out.println("The register numbers are : ");
        System.out.print("[ ");
        for (String data : array_reg_no) {
            System.out.print(data + " ");
        }
        System.out.println("]");
        int flag = 0;
        System.out.println("ANIRUDH VADERA (20BCE2940)");
        for (String data : array_reg_no) {
            if (data.contains("BCE")) {
                flag = 1;
                System.out.println(data + ": This Register Number is for SCOPE
School");
            } else if (data.contains("BEC")) {
                flag = 2;
                System.out.println(data + ": This Register Number is for SENSE
School");
            } else {
        }
```

ANIRUDH VADERA
(DIGITAL ASSIGNMENT - 1) ARRAY AND STRINGS

```
        System.out.println(data + ": This Register Number is not from
SCOPE either SENSE School");
    }
}
if (flag == 0) {
    System.out.println("There are no students from SCOPE and SENSE
School");
}
in.close();
}
}
```

CODE SNAPSHOT:



The screenshot shows the Visual Studio Code interface with the file 'string_q5.java' open. The code is a Java program that prompts the user for the number of register numbers and then for each number. It prints all entered numbers and then checks if any contain the substring 'BCE'. If found, it sets a flag and prints a message indicating the number is from SCOPE School. If no 'BCE' is found, it prints a message indicating no students are from both schools.

```
Go Run Terminal Help
string_q4.java initial1.java initial2.java initial5.java q4.java matrixadditio
string_q5.java > string_q5 > main(String[])
1 import java.util.Scanner;
2
3 class string_q5 {
4     public static void main(String[] args) {
5         Scanner in = new Scanner(System.in);
6         System.out.println("Enter the number of register numbers to be used :");
7         int n = in.nextInt();
8         String[] array_reg_no = new String[n];
9         in.nextLine();
10        System.out.println("Enter the register numbers : ");
11        for (int i = 0; i < array_reg_no.length; i++) {
12            array_reg_no[i] = in.nextLine();
13        }
14        System.out.println("The register numbers are : ");
15        System.out.print("[ ");
16        for (String data : array_reg_no) {
17            System.out.print(data + " ");
18        }
19        System.out.println("]");
20        int flag = 0;
21        System.out.println("ANIRUDH VADERA (20BCE2940)");
22        for (String data : array_reg_no) {
23            if (data.contains("BCE")) {
24                flag = 1;
25                System.out.println(data + ": This Register Number is for SCOPE School");
26            }
27        }
28    }
29 }
```

OUTPUT:

```
PS C:\Users\Anirudh\OneDrive\Desktop\java_codes> c;; cd 'c:\Users\Anirudh\OneDrive\Desktop\java_codes'; & 'C:\Program Files\Java\jdk-17.0.1\bin\java.exe' '--enable-preview' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\Anirudh\AppData\Roaming\Code\User\workspaceStorage\30032ff6b908f564bf959529c93335e9\redhat.java\jdt_ws\java_codes_72fe121c\bin' 'string_q5'
Enter the number of register numbers to be used :
5
Enter the register numbers :
20BCE2940
20BCE2941
20BCE2942
20BEC2940
20BEC2941
The register numbers are :
[ 20BCE2940 20BCE2941 20BCE2942 20BEC2940 20BEC2941 ]
ANIRUDH VADERA (20BCE2940)
20BCE2940: This Register Number is for SCOPE School
20BCE2941: This Register Number is for SCOPE School
20BCE2942: This Register Number is for SCOPE School
20BEC2940: This Register Number is for SENSE School
20BEC2941: This Register Number is for SENSE School
PS C:\Users\Anirudh\OneDrive\Desktop\java_codes>
```

ANIRUDH VADERA
(DIGITAL ASSIGNMENT - 1) ARRAY AND STRINGS

```
PS C:\Users\Anirudh\OneDrive\Desktop\java_codes> c;; cd 'c:\Users\Anirudh\OneDrive\Desktop\java_codes'; & 'C:\Program Files\Java\jdk-17.0.1\bin\java.exe' '--enable-preview' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\Anirudh\AppData\Roaming\Code\User\workspaceStorage\30032ff6b908f564bf959529c93335e9\redhat.java\jdt_ws\java_codes_72fe121c\bin' 'string_q5'
Enter the number of register numbers to be used :
5
Enter the register numbers :
20BCT2940
20BCT2941
20BCT2942
20BCT2943
20BCT2944
The register numbers are :
[ 20BCT2940 20BCT2941 20BCT2942 20BCT2943 20BCT2944 ]
ANIRUDH VADERA (20BCE2940)
20BCT2940: This Register Number is not from SCOPE either SENSE School
20BCT2941: This Register Number is not from SCOPE either SENSE School
20BCT2942: This Register Number is not from SCOPE either SENSE School
20BCT2943: This Register Number is not from SCOPE either SENSE School
20BCT2944: This Register Number is not from SCOPE either SENSE School
There are no students from SCOPE and SENSE School
PS C:\Users\Anirudh\OneDrive\Desktop\java_codes>
```

QUESTION:

Read a string and represent that in binary. Convert the string to hexadecimal characters and convert the hexadecimal characters to binary.

CODE:

```
import java.util.Scanner;
import java.math.BigInteger;

class string_q6 {

    static int StrToBinary(String s) {
        int n = s.length();
        int length = 0;
        for (int i = 0; i < n; i++) {
            int val = Integer.valueOf(s.charAt(i));
            // Convert ASCII value to binary
            String bin = "";
            while (val > 0) {
                if (val % 2 == 1) {
                    bin += '1';
                } else
                    bin += '0';
                val /= 2;
            }
            length = bin.length();
            bin = reverse(bin);
            System.out.print(bin + " ");
        }
    }
}
```

ANIRUDH VADERA
(DIGITAL ASSIGNMENT - 1) ARRAY AND STRINGS

```
        }
        return length;
    }

    static String reverse(String input) {
        char[] a = input.toCharArray();
        int r = 0;
        r = a.length - 1;
        for (int l = 0; l < r; l++, r--) {
            char temp = a[l];
            a[l] = a[r];
            a[r] = temp;
        }
        return String.valueOf(a);
    }

    static String StrtoHex(String str) {
        String hex = new String("");
        for (int i = 0; i < str.length(); i++) {
            char ch = str.charAt(i);
            int in = (int) ch;
            String part = Integer.toHexString(in);
            hex += part;
        }
        return hex;
    }

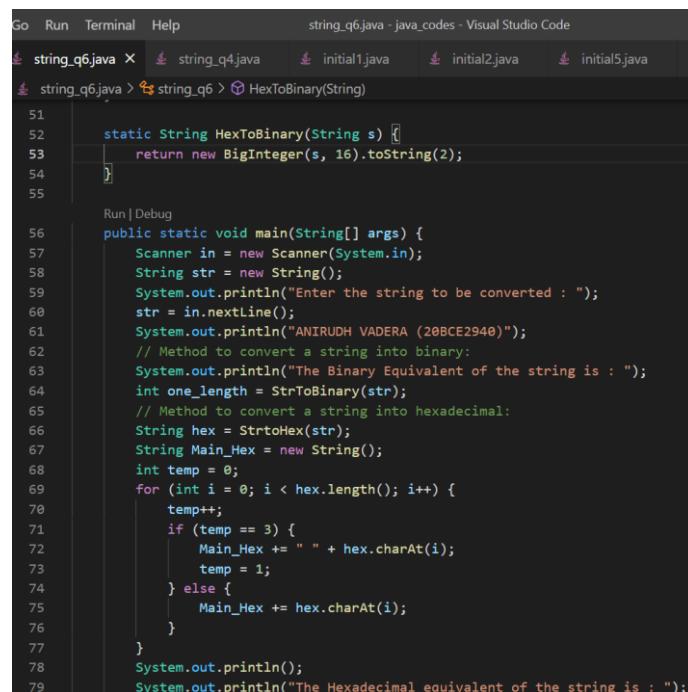
    static String HexToBinary(String s) {
        return new BigInteger(s, 16).toString(2);
    }

    public static void main(String[] args) {
        Scanner in = new Scanner(System.in);
        String str = new String();
        System.out.println("Enter the string to be converted : ");
        str = in.nextLine();
        System.out.println("ANIRUDH VADERA (20BCE2940)");
        // Method to convert a string into binary:
        System.out.println("The Binary Equivalent of the string is : ");
        int one_length = StrToBinary(str);
        // Method to convert a string into hexadecimal:
        String hex = StrtoHex(str);
        String Main_Hex = new String();
        int temp = 0;
        for (int i = 0; i < hex.length(); i++) {
            temp++;
        }
    }
}
```

ANIRUDH VADERA
(DIGITAL ASSIGNMENT - 1) ARRAY AND STRINGS

```
if (temp == 3) {
    Main_Hex += " " + hex.charAt(i);
    temp = 1;
} else {
    Main_Hex += hex.charAt(i);
}
}
System.out.println();
System.out.println("The Hexadecimal equivalent of the string is : ");
System.out.println(Main_Hex);
String HextoBinary = HexToBinary(hex);
String Main_Bin = new String();
temp = 0;
for (int i = 0; i < HextoBinary.length(); i++) {
    temp++;
    if ((temp - 1) == one_length) {
        Main_Bin += " ";
        temp = 0;
    } else {
        Main_Bin += HextoBinary.charAt(i);
    }
}
System.out.println("The Binary equivalent of the Hexadecimal String is
: ");
System.out.println(Main_Bin);
in.close();
}
}
```

CODE SNAPSHOT:



The screenshot shows the Visual Studio Code interface with the file 'string_q6.java' open. The code implements a method to convert a hexadecimal string to binary and prints the results. The code is identical to the one provided in the previous snippet.

```
Go Run Terminal Help
string_q6.java - java_codes - Visual Studio Code
string_q6.java > string_q6 > HexToBinary(String)
static String HexToBinary(String s) {
    return new BigInteger(s, 16).toString(2);
}
public static void main(String[] args) {
    Scanner in = new Scanner(System.in);
    String str = new String();
    System.out.println("Enter the string to be converted : ");
    str = in.nextLine();
    System.out.println("ANIRUDH VADERA (20BCE2940)");
    // Method to convert a string into binary:
    System.out.println("The Binary Equivalent of the string is : ");
    int one_length = StrToInt(str);
    // Method to convert a string into hexadecimal:
    String hex = StrToHex(str);
    String Main_Hex = new String();
    int temp = 0;
    for (int i = 0; i < hex.length(); i++) {
        temp++;
        if (temp == 3) {
            Main_Hex += " " + hex.charAt(i);
            temp = 1;
        } else {
            Main_Hex += hex.charAt(i);
        }
    }
    System.out.println();
    System.out.println("The Hexadecimal equivalent of the string is : ");
```

ANIRUDH VADERA
(DIGITAL ASSIGNMENT - 1) ARRAY AND STRINGS

OUTPUT:

```
PS C:\Users\Anirudh\OneDrive\Desktop\java_codes> c:: cd 'c:\Users\Anirudh\OneDrive\Desktop\java_codes'; & 'C:\Program Files\Java\jdk-17.0.1\bin\java.exe' '--enable-preview' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\Anirudh\AppData\Roaming\Code\User\workspaceStorage\30032ff6b908f564bf959529c93335e9\redhat.java\jdt_ws\java_codes_72fe121c\bin' 'string_q6'
Enter the string to be converted :
Anirudh
ANIRUDH VADERA (20BCE2940)
The Binary Equivalent of the string is :
10000001 1101110 1101001 1110010 1110101 1100100 1101000
The Hexadecimal equivalent of the string is :
41 6e 69 72 75 64 68
The Binary equivalent of the Hexadecimal String is :
10000001 1101110 1101001 1110010 1110101 1100100 1101000
PS C:\Users\Anirudh\OneDrive\Desktop\java_codes>
```