

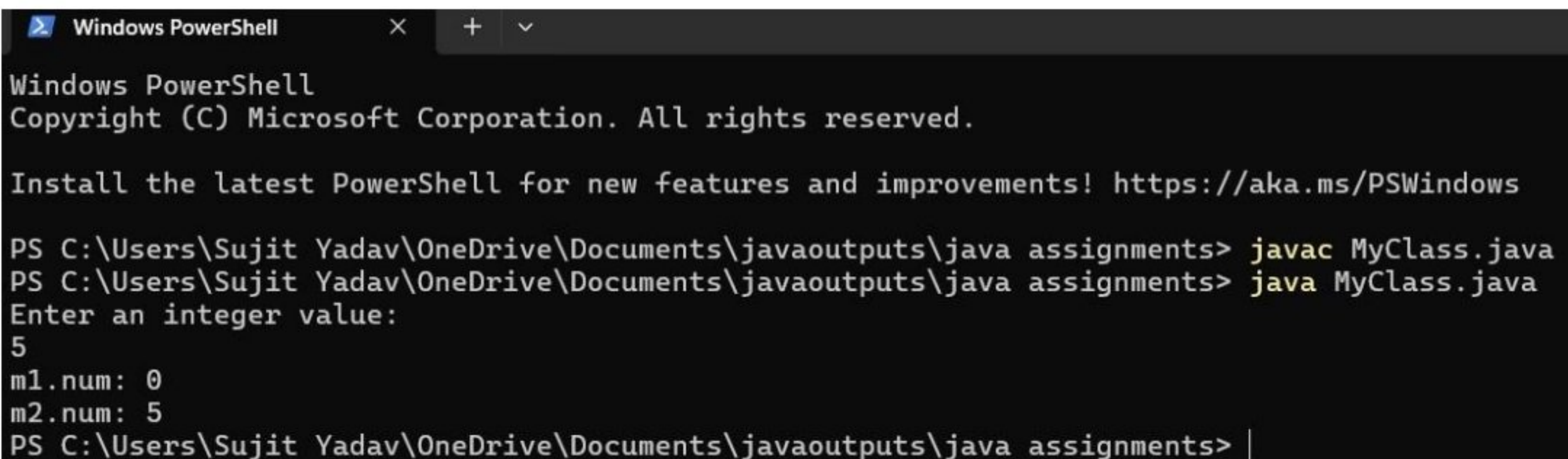
ASSIGNMENT NO.1: Java Tools and IDE, Simple Java Programs SET

A

- (1) Using javap, view the methods of the following classes from the lang package: java.lang.Object, java.lang.String and java.util.Scanner. and also Compile sample program 8. Type the following command and view the bytecodes. **javap -c MyClass** PROGRAM: package as1setaa;

```
public class MyClass
{
    int num;
    public MyClass()
    {
        num=0;
    }
    public MyClass(int num);
    {
        this.num=num;
    }
    public static void main(String[] args)
    {
        MyClass m1 = new MyClass();
        if(args.length>0)
        {
            int n = Integer.parseInt(args[0]);
            MyClass m2 = new MyClass(n);
            System.out.println(m1.num);
            System.out.println(m2.num);
        }
        else
            System.out.println("Insufficient arguments");
    }
}
```

OUTPUT:



```
Windows PowerShell
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PS C:\Users\Sujit Yadav\OneDrive\Documents\javaoutputs\java assignments> javac MyClass.java
PS C:\Users\Sujit Yadav\OneDrive\Documents\javaoutputs\java assignments> java MyClass.java
Enter an integer value:
5
m1.num: 0
m2.num: 5
PS C:\Users\Sujit Yadav\OneDrive\Documents\javaoutputs\java assignments> |
```


(2) Write a program to calculate perimeter and area of rectangle.(hint : area = length * breadth , perimeter=2*(length+breadth)) PROGRAM:

```
package recatangle; import java.util.Scanner;
public class demo {

    public static void main(String[] args) {

        System.out.println("first java project...rectangle");
        Scanner sc = new Scanner(System.in);

        System.out.println("Enter Length of Rectangle : ");
        int length = sc.nextInt();

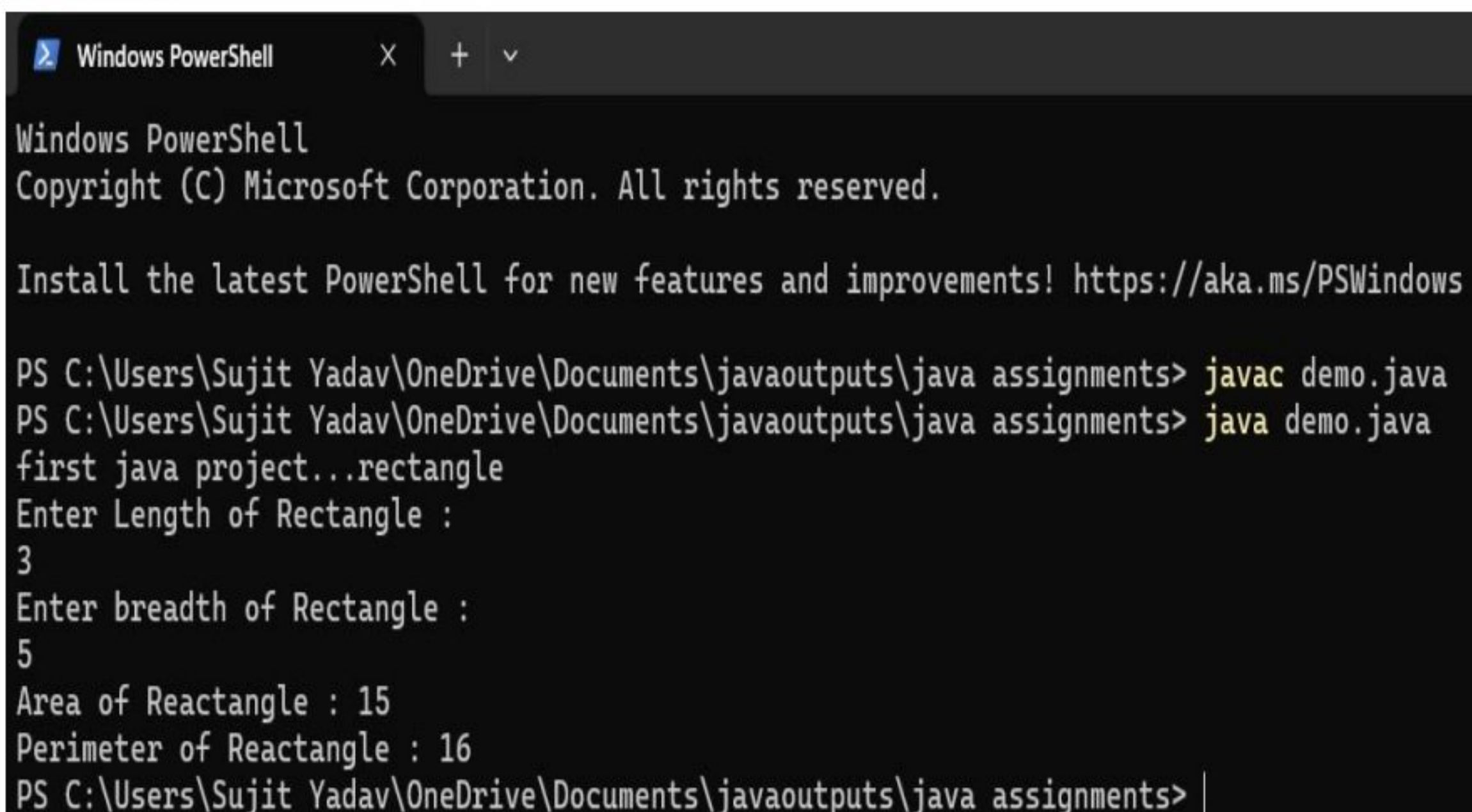
        System.out.println("Enter breadth of Rectangle : ");
        int breadth = sc.nextInt();

        int area = length * breadth;
        System.out.println("Area of Reactangle : " + area);

        int Perimeter = 2 * (length + breadth);
        System.out.println("Perimeter of Reactangle : " + Perimeter);

        sc.close();
    }
}
```

OUTPUT:



```
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PS C:\Users\Sujit Yadav\OneDrive\Documents\javaoutputs\java assignments> javac demo.java
PS C:\Users\Sujit Yadav\OneDrive\Documents\javaoutputs\java assignments> java demo.java
first java project...rectangle
Enter Length of Rectangle :
3
Enter breadth of Rectangle :
5
Area of Reactangle : 15
Perimeter of Reactangle : 16
PS C:\Users\Sujit Yadav\OneDrive\Documents\javaoutputs\java assignments> |
```

(3) Write a menu driven program to perform the following operations

i. Calculate the volume of cylinder. (hint : Volume: $\pi \times r^2 \times h$) ii. Find the factorial of given number. iii. Check the number is Armstrong or not. iv. Exit

PROGRAM:

```
package asi1seta; import
java.util.Scanner; public class
numericalsmenu {    public static
void main(String[] args) {
Scanner sc = new Scanner(System.in);
System.out.println("\n1.Volume of Cylinder. \n2.Factorial of Number.
\n3.Armstrong Number. \n4.Exit");
    System.out.println("Enter Your Choice : ");
int choice = sc.nextInt();

    switch (choice) {
case 1:
        System.out.println("Enter Radius:");
            Float r = sc.nextFloat();
            System.out.println("Enter Height:");
Float h = sc.nextFloat();
            double Volume = Math.PI * r * r * h;
            System.out.printf("Volume of Cylinder: %f",Volume);
break;

        case 2:
            System.out.println("Enter Number for Finding Factorial : ");
int num = sc.nextInt();        long fact = 1;        for (int i = 1; i
<= num; ++i) {                fact = fact * i;
        }
            System.out.printf("Factorial of %d = %d\n", num, fact);
break;

        case 3:
            System.out.println("Enter Number for Finding Armstrong Number : ");
int n = sc.nextInt();        int leng = 0;        int t1 = n;

            while (t1 != 0) {
t1 = t1 / 10;
leng = leng + 1;
            }
        }
```



```

        int t2 = n;
int arm = 0;
int rem;

        while (t2 != 0) {
int mult = 1;                rem =
t2 % 10;                    for (int i =
1; i <= leng; i++) {
mult = mult * rem;
        }
        arm = arm + mult;
t2 = t2 / 10;
        }
        if (arm == n) {
            System.out.println("The given number is armstrong..!");
        } else {
            System.out.println("The given number is not armstrong..!");
        }
break;
case 4:
System.exit(0);
default:    break;
        }
        sc.close();

    }
}

```

OUTPUT:

```
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PS C:\Users\Sujit Yadav\OneDrive\Documents\javaoutputs\java assignments> javac numericalsmenu.java
PS C:\Users\Sujit Yadav\OneDrive\Documents\javaoutputs\java assignments> java numericalsmenu.java

1.Volume of Cylinder.
2.Factorial of Number.
3.Armstrong Number.
4.Exit
Enter Your Choice :
1
Enter Radius:
3
Enter Height:
2
Volume of Cylinder: 56.548668
PS C:\Users\Sujit Yadav\OneDrive\Documents\javaoutputs\java assignments> javac numericalsmenu.java
PS C:\Users\Sujit Yadav\OneDrive\Documents\javaoutputs\java assignments> java numericalsmenu.java

1.Volume of Cylinder.
2.Factorial of Number.
3.Armstrong Number.
4.Exit
Enter Your Choice :
2
Enter Number for Finding Factorial :
4
Factorial of 4 = 24
PS C:\Users\Sujit Yadav\OneDrive\Documents\javaoutputs\java assignments> javac numericalsmenu.java
PS C:\Users\Sujit Yadav\OneDrive\Documents\javaoutputs\java assignments> java numericalsmenu.java

1.Volume of Cylinder.
2.Factorial of Number.
3.Armstrong Number.
4.Exit
Enter Your Choice :
3
Enter Number for Finding Armstrong Number :
```

```
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6
The given number is armstrong..!
PS C:\Users\Sujit Yadav\OneDrive\Documents\javaoutputs\java assignments> javac numericalsmenu.java
PS C:\Users\Sujit Yadav\OneDrive\Documents\javaoutputs\java assignments> java numericalsmenu.java

1.Volume of Cylinder.
2.Factorial of Number.
3.Armstrong Number.
4.Exit
Enter Your Choice :
4
PS C:\Users\Sujit Yadav\OneDrive\Documents\javaoutputs\java assignments>
```

(4) Write a program to accept the array element and display in reverse order. PROGRAM:

```
package ass1;
import java.util.Scanner;
public class Reversearray {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter size of Array :");
        int n = sc.nextInt();

        int arr[] = new int[n];
```

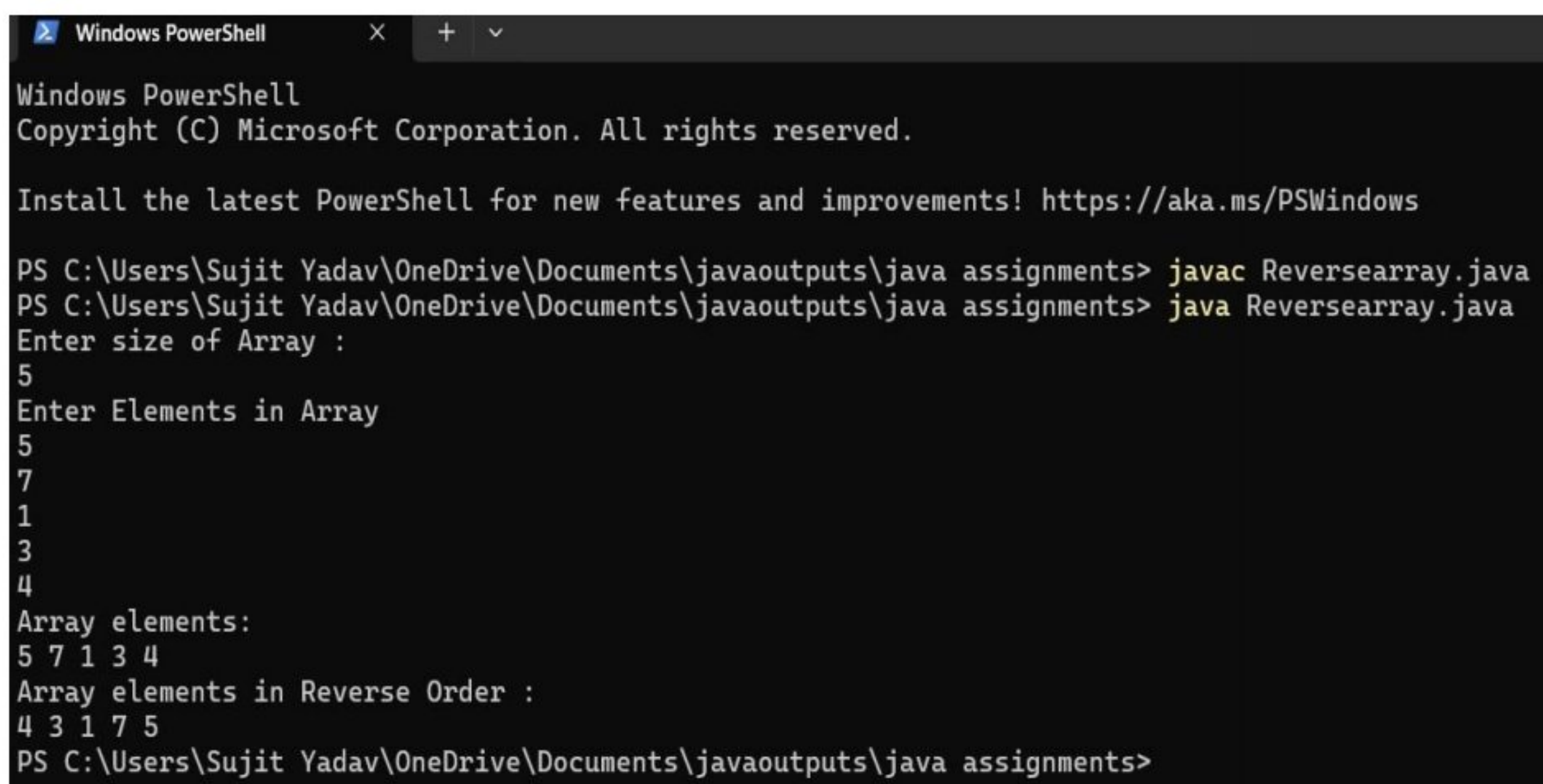


```

        System.out.println("Enter Elements in Array");
        for (int i = 0; i < n; i++) {
arr[i] = sc.nextInt();
        }
        System.out.println("Array elements:");
        for (int i = 0; i < n; i++) {
            System.out.print(arr[i] + " ");
        }
        System.out.println("\nArray elements in Reverse Order :");
        for (int i = n - 1; i >= 0; i--) {
            System.out.print(arr[i] + " ");
        }
sc.close();
    }
}

```

OUTPUT:



```

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PS C:\Users\Sujit Yadav\OneDrive\Documents\javaoutputs\java assignments> javac Reversearray.java
PS C:\Users\Sujit Yadav\OneDrive\Documents\javaoutputs\java assignments> java Reversearray.java
Enter size of Array :
5
Enter Elements in Array
5
7
1
3
4
Array elements:
5 7 1 3 4
Array elements in Reverse Order :
4 3 1 7 5
PS C:\Users\Sujit Yadav\OneDrive\Documents\javaoutputs\java assignments>

```

SET B

- (1) Write a java program to display the system date and time in various formats shown below:
 - Current date is : 31/08/2021
 - Current date is : 08-31-2021
 - Current date is : Tuesday August 31 2021
 - Current date and time is : Fri August 31 15:25:59 IST 2021
 - Current date and time is : 31/08/21 15:25:59 PM+0530
 - Current time is : 15:25:59
 - Current week of year is : 35 Current week of month : 5 Current day of the year is : 243

PROGRAM:

```
package as1setb1;
import java.text.SimpleDateFormat;
import java.util.Date;

public class dateformatter {
public static void main(String[] args) {

    Date date = new Date();
    SimpleDateFormat sdf = new SimpleDateFormat("dd/MM/yyyy");
    String Str = sdf.format(date);
    System.out.println("Current date is: " + Str);

    sdf = new SimpleDateFormat("MM-dd-yyyy");
    Str = sdf.format(date);
    System.out.println("Current date is: " + Str);

    sdf = new SimpleDateFormat("EEEE MMMM dd yyyy");
    Str = sdf.format(date);
    System.out.println("Current date is: " + Str);

    sdf = new SimpleDateFormat("E MMMM dd HH:mm:ss z yyyy");
    Str = sdf.format(date);
    System.out.println("Current date and time is: " + Str);

    sdf = new
SimpleDateFormat("w");
    Str = sdf.format(date);
    System.out.println("Current week of year is: " + Str);

    sdf = new SimpleDateFormat("W");
    Str = sdf.format(date);
    System.out.println("Current week of the month is: " + Str);

    sdf = new SimpleDateFormat("D");
    Str = sdf.format(date);
    System.out.println("Current day of the year: " + Str);
}
```

} **OUTPUT:**


```

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PS C:\Users\Sujit Yadav\OneDrive\Documents\javaoutputs\java assignments> javac dateformatter.java
PS C:\Users\Sujit Yadav\OneDrive\Documents\javaoutputs\java assignments> java dateformatter.java
Current date is: 31/08/2024
Current date is: 08-31-2024
Current date is: Saturday August 31 2024
Current date and time is: Sat August 31 09:20:44 IST 2024
Current week of year is: 35
Current week of the month is: 5
Current day of the year: 244
PS C:\Users\Sujit Yadav\OneDrive\Documents\javaoutputs\java assignments> |

```

- (2) **Define a class MyNumber having one private int data member. Write a default constructor to initialize it to 0 and another constructor to initialize it to a value (Use this). Write methods isNegative, isPositive, isZero, isOdd, isEven. Create an object in main. Use command line arguments to pass a value to the object (Hint : convert string argument to integer) and perform the above tests. Provide javadoc comments for all constructors and methods and generate the html help file.**

PROGRAM:

```

Package as1setbb public
class MyNumber {
private int x; public
MyNumber(){
x=0;
}
public MyNumber(int x){
this.x=x;
}
public boolean
isNegative(){ if(x<0) return
true; else return false;
}
public boolean isPositive(){ if(x>0)
return
true;
else return false;
}
public boolean isZero(){
if(x==0) return
true;
else return false;
}
public boolean isOdd(){
if(x%2!=0) return true;
}
}

```



```

else return false;
}
public boolean isEven(){
if(x%2==0) return true;
else return false;
}
public static void main(String [] args) throws ArrayIndexOutOfBoundsException
{
int x=Integer.parseInt(args[0]); MyNumber
m=new MyNumber(x);
if(m.isNegative())
System.out.println("Number is Negative"); if(m.isPositive())
System.out.println("Number is Positive"); if(m.isEven())
System.out.println("Number is Even"); if(m.isOdd())
System.out.println("Number is Odd"); if(m.isZero())
System.out.println("Number is Zero");
}
}

```

OUTPUT:

```

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PS C:\Users\Sujit Yadav\OneDrive\Documents\javaoutputs\java assignments> javac MyNumber.java
PS C:\Users\Sujit Yadav\OneDrive\Documents\javaoutputs\java assignments> java MyNumber.java
Enter an integer: 2
Number is Positive
Number is Even
PS C:\Users\Sujit Yadav\OneDrive\Documents\javaoutputs\java assignments> |

```

- (3) **Write a menu driven program to perform the following operations on multidimensional array ie matrix :** i. Addition ii. Multiplication iii. Transpose of any matrix. iv. Exit

PROGRAM:

```

import java.util.Scanner;
public class MatrixOperations {
    /**
     * Displays the given matrix.
     *
     * @param matrix The matrix to be displayed.
     */
    public static void displayMatrix(int[][] matrix) {
        for (int[] row : matrix) {
            for (int element : row) {

```



```

        System.out.print(element + " ");
    }
    System.out.println();
}
}
/**
 * Adds two matrices.
 *
 * @param matrix1 The first matrix.
 * @param matrix2 The second matrix.
 * @return The result of adding matrix1 and matrix2.
 */
public static int[][] addMatrices(int[][] matrix1, int[][] matrix2) {
    int rows = matrix1.length;    int cols = matrix1[0].length;
    int[][] result = new int[rows][cols];    for (int i = 0; i < rows; i++)
    {
        for (int j = 0; j < cols; j++) {
            result[i][j] = matrix1[i][j] + matrix2[i][j];
        }
    }
    return result;
}
/**
 * Multiplies two matrices.
 *
 * @param matrix1 The first matrix.
 * @param matrix2 The second matrix.
 * @return The result of multiplying matrix1 and matrix2.
 */
public static int[][] multiplyMatrices(int[][] matrix1, int[][] matrix2) {
    int rows1 = matrix1.length;    int cols1 = matrix1[0].length;    int
    rows2 = matrix2.length;    int cols2 = matrix2[0].length;
    if (cols1 != rows2) {        throw new IllegalArgumentException("Matrix
    multiplication is not possible:
    column count of the first matrix must be equal to row count of the second
    matrix.");
    }
    int[][] result = new int[rows1][cols2];
    for (int i = 0; i < rows1; i++) {        for
    (int j = 0; j < cols2; j++) {
        result[i][j] = 0;
        for (int k = 0; k < cols1; k++) {
            result[i][j] += matrix1[i][k] * matrix2[k][j];
        }
    }
}
}

```



```

        return result;
    }
    /**
    * Computes the transpose of a matrix.
    *
    * @param matrix The matrix to be transposed.
    * @return The transpose of the matrix.
    */
    public static int[][] transposeMatrix(int[][] matrix) {
        int rows = matrix.length;    int cols =
        matrix[0].length;    int[][] transposed = new
        int[cols][rows];
        for (int i = 0; i < rows; i++) {
        for (int j = 0; j < cols; j++) {
            transposed[j][i] = matrix[i][j];
        }
    }
        return transposed;
    }
    /**
    * Reads a matrix from the user.
    *
    * @param rows The number of rows.
    * @param cols The number of columns.
    * @return The matrix entered by the user.
    */
    public static int[][] readMatrix(int rows, int cols) {
        Scanner scanner = new Scanner(System.in);    int[][]
        matrix = new int[rows][cols];
        System.out.println("Enter the matrix elements:");
        for (int i = 0; i < rows; i++) {    for (int j = 0; j <
        cols; j++) {
            matrix[i][j] = scanner.nextInt();
        }
    }
        return matrix;
    }
    /**
    * Main method to drive the menu-based matrix operations.
    *
    * @param args Command-line arguments (not used).
    */
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        while (true) {

```



```

        System.out.println("\nMenu:");
        System.out.println("1. Add Matrices");
        System.out.println("2. Multiply Matrices");
        System.out.println("3. Transpose Matrix");
        System.out.println("4. Exit");
        System.out.print("Choose an option: ");
        int choice = scanner.nextInt();
        switch (choice) {
case 1:
            System.out.print("Enter the number of rows for both matrices: ");
            int rowsAdd = scanner.nextInt();
            System.out.print("Enter the number of columns for both matrices: ");
            int colsAdd = scanner.nextInt();
            System.out.println("Enter elements for the first matrix:");
            int[][] matrix1Add = readMatrix(rowsAdd, colsAdd);
            System.out.println("Enter elements for the second matrix:");
            int[][] matrix2Add = readMatrix(rowsAdd, colsAdd);
            int[][] sumMatrix = addMatrices(matrix1Add, matrix2Add);
            System.out.println("Sum of the matrices:");
            displayMatrix(sumMatrix);
            break;
case 2:
            System.out.print("Enter the number of rows and columns for the first
matrix: ");
            int rows1 = scanner.nextInt();
            int cols1 = scanner.nextInt();
            System.out.print("Enter the number of rows and columns for the second
matrix: ");
            int rows2 = scanner.nextInt();
            int cols2 = scanner.nextInt();
            if (cols1 != rows2) {
                System.out.println("Matrix multiplication is not possible.");
                break;
            }
            System.out.println("Enter elements for the first matrix:");
            int[][] matrix1Mul = readMatrix(rows1, cols1);
            System.out.println("Enter elements for the second matrix:");
            int[][] matrix2Mul = readMatrix(rows2, cols2);
            int[][] productMatrix = multiplyMatrices(matrix1Mul, matrix2Mul);
            System.out.println("Product of the matrices:");
            displayMatrix(productMatrix);
            break;
case 3:
            System.out.print("Enter the number of rows for the matrix: ");
            int rowsTrans = scanner.nextInt();
            System.out.print("Enter the number of columns for the matrix: ");
            int colsTrans = scanner.nextInt();
            System.out.println("Enter elements for the matrix:");
            int[][] matrixTrans = readMatrix(rowsTrans, colsTrans);
            int[][] transposedMatrix = transposeMatrix(matrixTrans);

```

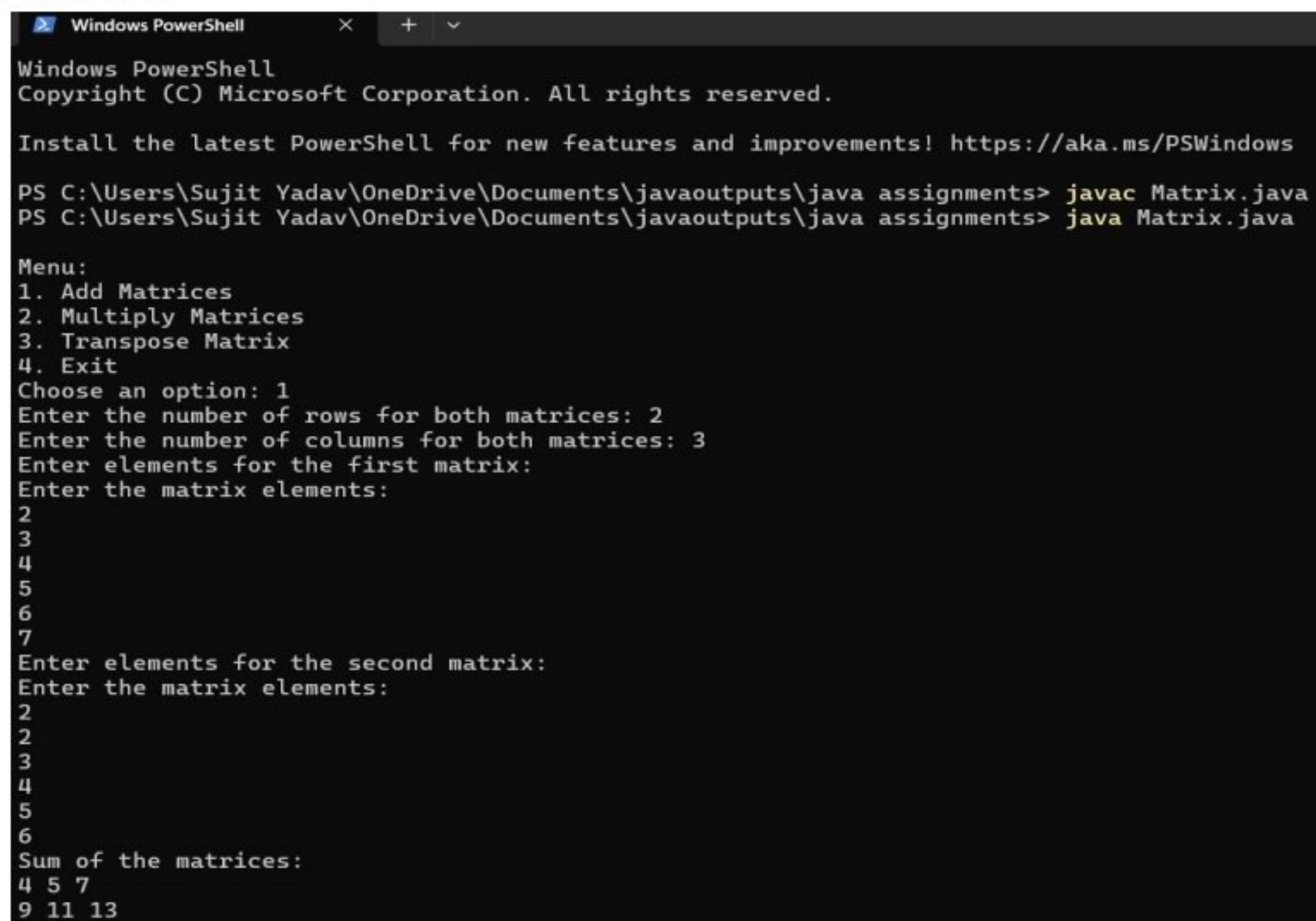


```

System.out.println("Transposed matrix:");
displayMatrix(transposedMatrix);          break;          case 4:
    System.out.println("Exiting...");
    scanner.close();
    return;
default:
    System.out.println("Invalid choice. Please choose a valid option.");
break;
    }
    }
    }
}

```

OUTPUT:



```

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PS C:\Users\Sujit Yadav\OneDrive\Documents\javaoutputs\java assignments> javac Matrix.java
PS C:\Users\Sujit Yadav\OneDrive\Documents\javaoutputs\java assignments> java Matrix.java

Menu:
1. Add Matrices
2. Multiply Matrices
3. Transpose Matrix
4. Exit
Choose an option: 1
Enter the number of rows for both matrices: 2
Enter the number of columns for both matrices: 3
Enter elements for the first matrix:
Enter the matrix elements:
2
3
4
5
6
7
Enter elements for the second matrix:
Enter the matrix elements:
2
2
3
4
5
6
Sum of the matrices:
4 5 7
9 11 13

```

```
Menu:
1. Add Matrices
2. Multiply Matrices
3. Transpose Matrix
4. Exit
Choose an option: 2
Enter the number of rows and columns for the first matrix: 2
2
Enter the number of rows and columns for the second matrix: 2
2
Enter elements for the first matrix:
Enter the matrix elements:
2
2
2
2
Enter elements for the second matrix:
Enter the matrix elements:
3
3
3
3
Product of the matrices:
12 12
12 12

Menu:
1. Add Matrices
2. Multiply Matrices
3. Transpose Matrix
4. Exit
Choose an option: 3
Enter the number of rows for the matrix: 2
Enter the number of columns for the matrix: 1
Enter elements for the matrix:
```

```
2 Windows PowerShell X + v
Choose an option: 3
Enter the number of rows for the matrix: 2
Enter the number of columns for the matrix: 1
Enter elements for the matrix:
Enter the matrix elements:
2
1
Transposed matrix:
2 1
```

```
Menu:
1. Add Matrices
2. Multiply Matrices
3. Transpose Matrix
4. Exit
Choose an option: 4
Exiting...
PS C:\Users\Sujit Yadav\OneDrive\Documents\javaoutputs\java assignments>
```