21/7/24 ASSIGNMENT-7

1.Write a program to count all the prime and composite numbers entered by the user.

Sample Input:

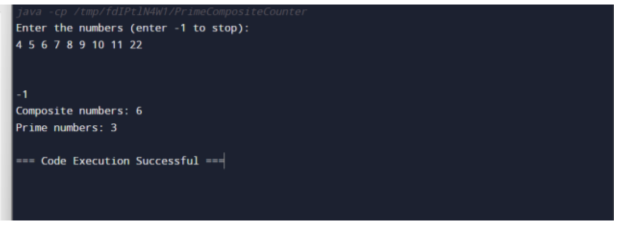
Enter the numbers

```
4
54
29
71
7
59
98
23
```

Sample Output:

```
Composite number:3
Prime number:5
```

```
import java.util.Scanner;
public class PrimeCompositeCounter {
public static void main(String[] args) {
Scanner scanner = new Scanner(System.in);
System.out.println("Enter the numbers (enter -1 to stop):");
int compositeCount = 0;
int primeCount = 0;
int number;
while (true) {
number = scanner.nextInt();
if (number == -1) {
break;
}
if (isPrime(number)) {
primeCount++;
} else {
compositeCount++;
}
}
System.out.println("Composite numbers: " + compositeCount);
System.out.println("Prime numbers: " + primeCount);
}
public static boolean isPrime(int num) {
if (num <= 1) {
return false;
}
for (int i = 2; i <= Math.sqrt(num); i++) {
if (num % i == 0) {
return false;
}
}
return true;
}
}
```



```
java -cp /tmp/fdIPtlN4W1/PrimeCompositeCounter
Enter the numbers (enter -1 to stop):
4 5 6 7 8 9 10 11 22


-1
Composite numbers: 6
Prime numbers: 3

=== Code Execution Successful ===
```

1. Find the Mth maximum number and Nth minimum number in an array and then find the sum of it and difference of it.

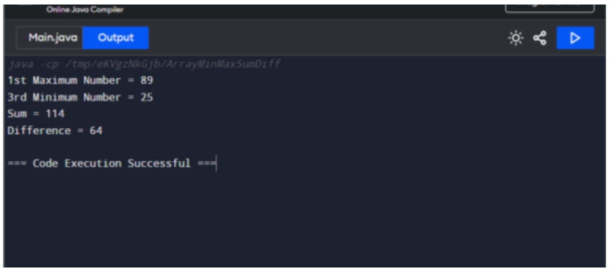
   Sample Input:
   Array of elements = {14, 16, 87, 36, 25, 89, 34}
   M = 1
   N = 3

   Sample Output:
   1stMaximum Number = 89
   3rdMinimum Number = 25
   Sum = 114
   Difference = 64

Test cases:

1. {16, 16, 16 16, 16}, M = 0, N = 1
2. {0, 0, 0, 0}, M = 1, N = 2
3. {-12, -78, -35, -42, -85}, M = 3 , N = 3
4. {15, 19, 34, 56, 12}, M = 6 , N = 3
5. {85, 45, 65, 75, 95}, M = 5 , N = 7

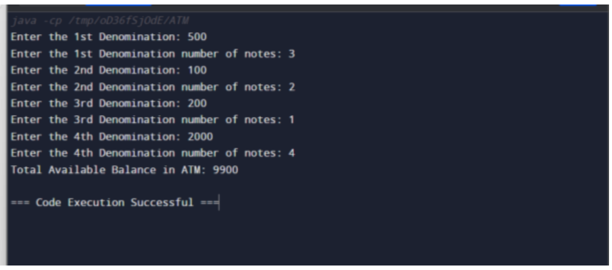
```
import java.util.Arrays;

public class ArrayMinMaxSumDiff {
  public static void main(String[] args) {
    int[] arr = {14, 16, 87, 36, 25, 89, 34};
    int M = 1;
    int N = 3;

    Arrays.sort(arr);

    int mthMax = arr[arr.length - M];
    int nthMin = arr[N - 1];

    int sum = mthMax + nthMin;
    int diff = mthMax - nthMin;

    System.out.println("1st Maximum Number = " + mthMax);
    System.out.println("3rd Minimum Number = " + nthMin);
    System.out.println("Sum = " + sum);
    System.out.println("Difference = " + diff);
  }
}
```



```
java -cp /tmp/eKVgzNkGjb/ArrayMinMaxSumDiff
1st Maximum Number = 89
3rd Minimum Number = 25
Sum = 114
Difference = 64

=== Code Execution Successful ===
```

2. Write a program to print the total amount available in the ATM machine with the conditions applied.
   Total denominations are 2000, 500, 200, 100, get the denomination priority from the user and the total number of notes from the user to display the total available balance to the user
   Sample Input:
   Enter the 1st Denomination: 500
   Enter the 1st Denomination number of notes: 4
   Enter the 2nd Denomination: 100
   Enter the 2nd Denomination number of notes: 20
   Enter the 3rd Denomination: 200
   Enter the 3rd Denomination number of notes: 32
   Enter the 4th Denomination: 2000
   Enter the 4th Denomination number of notes: 1
   Sample Output:
   Total Available Balance in ATM: 12400

```
import java.util.Scanner;

public class ATM {
    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);

        System.out.print("Enter the 1st Denomination: ");
        int denomination1 = input.nextInt();
        System.out.print("Enter the 1st Denomination number of notes: ");
        int notes1 = input.nextInt();

        System.out.print("Enter the 2nd Denomination: ");
        int denomination2 = input.nextInt();
        System.out.print("Enter the 2nd Denomination number of notes: ");
        int notes2 = input.nextInt();

        System.out.print("Enter the 3rd Denomination: ");
        int denomination3 = input.nextInt();
        System.out.print("Enter the 3rd Denomination number of notes: ");
        int notes3 = input.nextInt();

        System.out.print("Enter the 4th Denomination: ");
        int denomination4 = input.nextInt();
        System.out.print("Enter the 4th Denomination number of notes: ");
        int notes4 = input.nextInt();
    int totalBalance = (denomination1 * notes1) + (denomination2 * notes2) + (denomination3 *
notes3) + (denomination4 * notes4);

    System.out.println("Total Available Balance in ATM: " + totalBalance);
  }
}
```



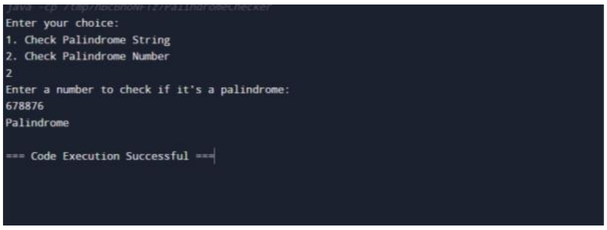
```
java -cp /tmp/oD36fSjOdE/ATM
Enter the 1st Denomination: 500
Enter the 1st Denomination number of notes: 3
Enter the 2nd Denomination: 100
Enter the 2nd Denomination number of notes: 2
Enter the 3rd Denomination: 200
Enter the 3rd Denomination number of notes: 1
Enter the 4th Denomination: 2000
Enter the 4th Denomination number of notes: 4
Total Available Balance in ATM: 9900

=== Code Execution Successful ===
```

3. Write a program using choice to check

   Case 1: Given string is palindrome or not
   Case 2: Given number is palindrome or not
   Sample Input:
   Case = 1
   String = MADAM
   Sample Output:
   Palindrome
   Test cases:
   1. MONEY
   2. 5678765
   3. MALAY12321ALAM
   4. MALAYALAM
   5. 1234.4321

```
import java.util.Scanner;

public class PalindromeChecker {
  public static void main(String[] args) {
    Scanner scanner = new Scanner(System.in);
    System.out.println("Enter your choice:\n1. Check Palindrome String\n2. Check Palindrome
Number");
    int choice = scanner.nextInt();

    switch (choice) {
      case 1:
        System.out.println("Enter a string to check if it's a palindrome:");
        String str = scanner.next();
        if (isPalindrome(str))
          System.out.println("Palindrome");
        else
          System.out.println("Not a Palindrome");
        break;

      case 2:
```

```
                System.out.println("Enter a number to check if it's a palindrome:");
                long num = scanner.nextLong();
                if (isPalindrome(Long.toString(num)))
                    System.out.println("Palindrome");
                else
                    System.out.println("Not a Palindrome");
                break;

            default:
                System.out.println("Invalid choice. Please choose 1 or 2.");
        }
    }

    public static boolean isPalindrome(String str) {
        int left = 0;
        int right = str.length() - 1;

        while (right > left) {
            if (str.charAt(left) != str.charAt(right)) {
                return false;
            }
            left++;
            right--;
        }
        return true;
    }
}
```

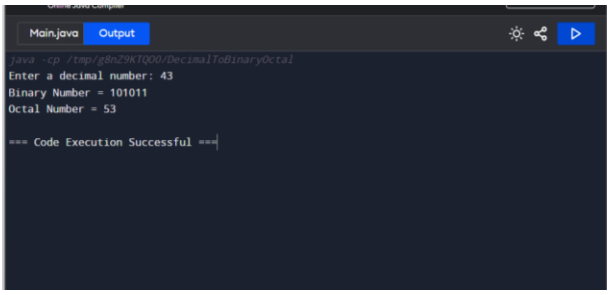


```
java -cp /tmp/hbcbnoNF12/PalindromeChecker
Enter your choice:
1. Check Palindrome String
2. Check Palindrome Number
2
Enter a number to check if it's a palindrome:
678876
Palindrome

=== Code Execution Successful ===
```

4. Write a program to convert Decimal number equivalent to Binary number and octal numbers?
   Sample Input:
   Decimal Number: 15
   Sample Output:
   Binary Number = 1111
   Octal = 17
    Test cases:
    1. 111
    2. 15.2
    3. 0
    4. B12
    5. 1A.2

```
import java.util.Scanner;
```

```
public class DecimalToBinaryOctal {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter a decimal number: ");
        int decimal = scanner.nextInt();

        String binary = Integer.toBinaryString(decimal);
        String octal = Integer.toOctalString(decimal);

        System.out.println("Binary Number = " + binary);
        System.out.println("Octal Number = " + octal);
    }
}
```



```
java -cp /tmp/g8nZ9KTQO0/DecimalToBinaryOctal
Enter a decimal number: 43
Binary Number = 101011
Octal Number = 53

=== Code Execution Successful ===
```