

//MCQ's

1. C)
2. B)
3. C)
4. A)
5. E)
6. A)
7. A)
8. A)
9. A)
10. A)
11. A)
12. C)
13. B)
14. C)
15. B)
16. C)
17. D)
18. A)
19. D)
20. C)
21. D)
22. B)
23. A)
24. C)
25. Gg
26. A)
27. C)
28. D)
29. A)
30. A)

37) Leap year

```
import java.util.Scanner;

public class Test37 {

    public static void main(String[] args) {
        Scanner x = new Scanner(System.in);
        System.out.println("Enter the year:");
        int year = x.nextInt();

        if(year%4==0) {
            if(year%100==0) {
                if(year%400==0) {
```

```

        System.out.println("Its a leap year");
    }else {
        System.out.println("Not a leap year");
    }
}else
    System.out.println("Its a leap year");
}
else
    System.out.println("Not a leap year");
}
}

```

```

1 import java.util.Scanner;
2
3 public class Test37 {
4
5     public static void main(String[] args) {
6         Scanner x = new Scanner(System.in);
7         System.out.println("Enter the year:");
8         int year = x.nextInt();
9
10        if(year%4==0) {
11            if(year%100==0) {
12                if(year%400==0) {
13                    System.out.println("Its a leap year");
14                }else {
15                    System.out.println("Not a leap year");
16                }
17            }else {
18                System.out.println("Its a leap year");
19            }else {
20                System.out.println("Not a leap year");
21            }
22        }
23    }
24 }
25

```

<terminated> Test37 [Java Application] C
 Enter the year:
 2001
 Not a leap year

```
static int factorial(int a) {
    if(a==0)
```

```

        return 1;
    else
        return(a*factorial(a-1));
    }

    public static void main(String[] args) {
        int i, fact=1;
        Scanner x = new Scanner(System.in);
        System.out.println("Enter the Number:");
        int num = x.nextInt();
        fact = factorial(num);
        System.out.println("Factorial of given number is:"+fact);
    }
}

```

The screenshot shows an IDE with two panels. The left panel displays the source code for a Java class named Test34, which implements a recursive factorial function and a main method to take user input and print the result. The right panel shows the program's execution output, where the user entered the number 5, and the program correctly calculated and printed the factorial as 120.

```

1  java.util.Scanner;
2
3  class Test34 {
4
5      static int factorial(int a) {
6          if(a==0)
7              return 1;
8          else
9              return(a*factorial(a-1));
10
11
12     public static void main(String[] args) {
13         int i, fact=1;
14         Scanner x = new Scanner(System.in);
15         System.out.println("Enter the Number:");
16         int num = x.nextInt();
17         fact = factorial(num);
18         System.out.println("Factorial of give
19
20
21
22

```

```

<terminated> Test34 [Java Application] C:\Eclipse\jdk-16.0.2\bin\javaw.e
Enter the Number:
5
Factorial of given number is:120

```

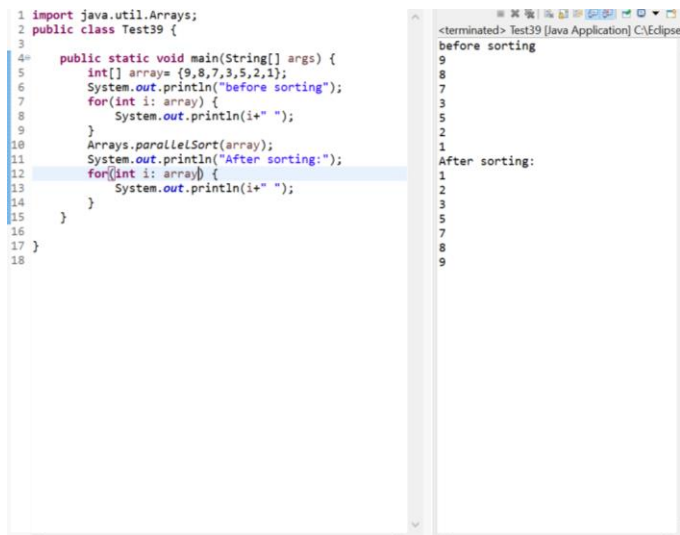
39) Parallel Sort

```

import java.util.Arrays;
public class Test39 {

    public static void main(String[] args) {
        int[] array= {9,8,7,3,5,2,1};
        System.out.println("before sorting");
        for(int i: array) {
            System.out.println(i+" ");
        }
        Arrays.parallelSort(array);
        System.out.println("After sorting:");
        for(int i: array) {
            System.out.println(i+" ");
        }
    }
}

```



```
1 import java.util.Arrays;
2 public class Test39 {
3
4     public static void main(String[] args) {
5         int[] array = {9,8,7,3,5,2,1};
6         System.out.println("before sorting");
7         for(int i: array) {
8             System.out.println(i+ " ");
9         }
10        Arrays.parallelSort(array);
11        System.out.println("After sorting:");
12        for(int i: array) {
13            System.out.println(i+ " ");
14        }
15    }
16 }
17 }
18 }
```

The screenshot shows the Eclipse IDE with a Java file named Test39.java. The code defines a main method that creates an array {9,8,7,3,5,2,1}, prints it, sorts it using Arrays.parallelSort, and prints it again. The output console on the right shows the execution results: "before sorting" followed by the unsorted array elements, and "After sorting:" followed by the sorted array elements {1, 2, 3, 5, 7, 8, 9}.

35)Pattern printing

```
import java.util.Scanner;
public class Test35 {

    public static void main(String[] args) {
        int i,j,k,a;
        Scanner sc =new Scanner(System.in);
        System.out.println("Enter the number of rows:");
        a = sc.nextInt();
        for(i=0;i<=a-1;i++) {
            for(j=0;j<i;j++) {
                System.out.print(" ");
            }
            for(k=0;k<a-1;k++) {
                System.out.println("*" + " ");
            }
            System.out.println("");
        }

        for(i=a-1;i>=0;i--) {
            for(j=0;j<i;j++) {
                System.out.print(" ");
            }
            for(k=i;k<=a-1;k++) {
                System.out.println("*" + " ");
            }
            System.out.println("");
        }

        sc.close();

    }

}
```

```
<terminated> Test35 [Java Application] C:\Eclipse\jdk-16.0.2\bin\javaw.exe (12-Aug-2021, 4:09:54 pm - 4:09:57 pm)
Enter the number of rows: 4
*
* *
* * *
* * * *
* * * *
* * * *
* * * *
* * * *
* * * *
* * * *
```

32) Duplicate Removal

```
public class Test32 {

    public static int DuplicateElementsRemoval(int arr[], int n){
        if (n==0 || n==1){
            return n;
        }
        int i = 0;
        for (int j=0; j< n-1; j++){
            if (arr[j] != arr[j+1]){
                arr[i++] = arr[j];
            }
        }
        arr[i++] = arr[n-1];
        return i;
    }

    public static void main(String[] args) {
        int arr[] = {10,2,20,3,5,40,50,10,50,3,7,5,3};
        int length = arr.length;
        length = DuplicateElementsRemoval(arr, length);
        for (int k=0; k<length; k++)
            System.out.print(arr[k]+" ");
    }
}
```



36) Quadratic

```
import java.util.Scanner;

public class Test36 {

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

        System.out.println("Enter the value of x:");
        long a = x.nextLong();

        System.out.println("Enter the value of x:");
        long b = x.nextLong();

        System.out.println("Enter the value of x:");
        long c = x.nextLong();

        double res = b*b - 4 * a* c;

        if(res>0.0) {
            double r1=(-b + Math.pow(res, 0.5))/(2.0*a);
            double r2=(-b - Math.pow(res, 0.5))/(2.0*a);
            System.out.println("The roots are " +r1+ "and" +r2);
        }
        else if(res==0.0) {
            double r1 = -b/(2.0 *a);
            System.out.println("The root is " +r1);
        }
        else {
            System.out.println("Equation has imaginary roots.");
        }
    }
}
```

```
1 1
2 2
3 3
4 4
5 5
6 6
7 7
8 8
9 9
10 10
11 11
12 12
13 13
14 14
15 15
16 16
17 17
18 18
19 19
20 20
21 21
22 22
23 23
24 24
25 25
26 26
27 27
28 28
29 29
30 30
31 31
32 32
33 33
34 34
35 35
36 36

<terminated> Test36 [Java Application] C:\Eclipse\jdk-16.0.2\bin\javaw.exe (12-Aug-2021, 4:25:22 pm - 4:25:38 pm)
Enter the value of x:
2
Enter the value of x:
4
Enter the value of x:
6
Equation has imaginary roots.
```

31) Finding common elements

```
import java.util.Arrays;
import java.util.HashSet;
```

```
public class Test31 {

    public static void main(String[] args) {
        Integer[] i1 = {1,2,3,4,5};

        Integer[] i2 = {3,4,5,6,7,8};
        HashSet<Integer> set = new HashSet<>(Arrays.asList(i1));

        for (int i = 0; i < i1.length; i++)
        {
            for (int j = 0; j < i2.length; j++)
            {
                if(i1[i].equals(i2[j]))
                {
                    set.add(i1[i]);
                }
            }
        }

        System.out.println(set);
    }
}
```

Or

```
public class Test31 {

    public static void main(String[] args) {
        int[] arr1 = {1,2,3,4,5};
        int[] arr2 = {3,4,5,6,7,8};

        for(int i = 0; i < arr1.length; i++) {
            for(int j = 0; j < arr2.length; j++) {
```

```
        if(arr1[i] == arr2[j]) {  
            System.out.println(arr1[i]);  
        }  
    }  
}
```

```
<terminated> Test31 [Java Application] C:\Eclipse\jdk-16.0.2\bin\javaw.exe (12-Aug-2021, 4:30:06 pm - 4:30:06 pm)  
3  
4  
5
```