⇒ Lab additional programs

a) Biggest of 3 nos
b) factorial
c) palindroms
d) command line segment

LRA 12-12-23

12/12/23

1. Demonstrate parseInt
2. Demonstrate scanner class
3. Arrays 1D & 2D
4. factorial of a number.
5. Palindrome
6. sum of digits
7. Conversions. (widening, narrowing, Promotion
8. Casting incompatible Types

⇒

12/12/23 Lab - Program - 1

1. Develop a Java program that prints all real solutions to the quadratic equation $ax^2+bx+c=0$. Read in a, b, c & use the quadratic formula. If the discriminate $b^2-4ac$ is -ve, display no real soln.

```
import java.util.Scanner;
class Quadratic
{
  int a, b, c;
  double r1, r2, d;
  void getId()
  {
    Scanner s= new Scanner(System.in);
    System.out.println("Enter the co-efficients of a,b,c");
      a= s.nextInt();
      b= s.nextInt();
      c= s.nextInt();
  }
void compute()
  {
    while(a==0)
```

```
{
    System.out.println("Not a quadratic equation");
    System.out.println("Enter a non-zero value of a:");
    Scanner s = new Scanner(System.in);
    a = s.nextInt();
}
d = b*b - 4*a*c;
if (d == 0)
{
    r1 = (-b)/(2*a);
    System.out.println("Roots are real & equal");
    System.out.println("Root1 = Root2 = " +r1);
}
else if (d>0)
{
    r1 = ((-b) + (Math.sqrt(d)))/((double)(2*a));
    r2 = ((-b) - (Math.sqrt(d)))/((double)(2*a));
    System.out.println("Roots are real and distinct");
    System.out.println("Root1 = " +r1+ " Root2 = " +r2);
}
else if (d<0)
{
    System.out.println("Roots are imaginary");
    r1 = (-b)/(2*a);
    r2 = Math.sqrt(-d)/(2*a);
    System.out.println("Root1 = " +r1+ " +i " +r2);
    System.out.println("Root1 = " +r1+ " -i " +r2);
}
}
}
class QuadraticMain
{
    public static void main(String args[])
    {
        Quadratic q = new Quadratic();
```

```
q.getd();
q.compute();
}
}
```

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Output 1:

→ Enter the coefficients of a, b, c
2 3 4
Roots are imaginary
Root 1 = 0.0 + i1.198957
Root 1 = 0.0 − i1.198957
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→ Enter the co-efficients of a, b, c
5 0 0
~~Roots are equal and equal~~
Roots are real and equal
Root 1 = Root 2 = 0.0

→ Enter the co-efficients of a, b, c
4 4 4
Roots are imaginary
Root 1 = 0.0 + i0.860625
Root 1 = 0.0 − i0.860075
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