Week-1

11/12/23

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1. WAP for finding roots of Quadratic Equations:

```
import java.util.Scanner;
class Quadratic {
 int a,b,c;
 double r1,r2,d;
 void getd()
   {  Scanner s = new Scanner(System.in);
      System.out.println("Enter the coefficients of a,b,c");
      a=s.nextInt();
      b=s.nextInt();
      c=s.nextInt();
   }
void compute()
 {  while(a==0)
    {  System.out.println("Not a quadratic eqn");
       System.out.println("Enter a non zero value for 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 and equal");
   System.out.println("Root 1 = Root 2 = "+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("Root 1 = "+r1+" Root 2 = "+r2);
}
```

```
else if (d<0)
{ System.out.println("Roots are imaginary");
  r2 = (-b)/(2*a);
  r2 = Math.sqrt(-d)/(2*a);
  System.out.println("Root1 = " + r1 + "+i" + r2);
  System.out.println("Root2 = " + r1 + "-i" + r2);
}
}
}
```

Output:

(i) Enter the coefficients of a, b, c
1 -3 2
Roots are real
Root 1 = 2 Root 2 = 1

(ii) Enter the coefficients of a, b, c
0 2 3
Not a quadratic equation
Enter a non-zero value of a

(iii) Enter the coefficients of a, b, c :
1 2 1
Roots are Real and equal.
Root 1 = Root 2 = -1

(iv) Enter the coefficients of a, b, c
1 1 2
Roots are imaginary
Root 1 = 0.0 + i 0.322875
Root 2 = 0.0 - i 0.322875