Assignment Interface

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1. Create a JAVA program in inheritance format with classes and interfaces.

Program:

```
import java.util.Scanner;

/* A particle starts with an initital velocity u m/s along the positive x direction and
 * it accelerates uniformly at the rate 0.50 m/s2. (a) Find the distance travelled by it
 * in the first two seconds. (b) Find the time does it take to reach the velocity v m/s.
 * (c) How much distance will it cover in reaching the velocity v m/s ?
*/

class AAA {

    double a = 0.50;

    public double velocity1() {

        Scanner ivelocity = new Scanner(System.in);

        System.out.println("\nInitial velocity:");
        double u = ivelocity.nextDouble();

        return u;
    }

    public double velocity2() {

        Scanner fvelocity = new Scanner(System.in);

        System.out.println("Final velocity:");
        double v = fvelocity.nextDouble();

        return v;
    }
}

interface BBB {

    public void distance(double u, double a);
}

interface CCC {

    public void time(double u, double v, double a);
}

class DDD implements BBB, CCC {

    public void distance(double u, double a) {

        int t = 2;

        double x = u*t + 0.5*a*t*t;
        System.out.println("\nDistance travelled by it in first "+t+" s is "+x+" m");
    }
```

```
    public void time(double u, double v, double a) {

        double t = (v-u)/a;
        System.out.println("Time it takes to reach velocity "+v+" m/s is "+t+" s");
    }
}

public class program extends DDD {

    static void distance(double u, double v, double a) {

        double x = (v*v - u*u)/(2*a);
        System.out.println("Distance it cover reaching velocity "+v+" m/s is "+x+" m");
    }

    public static void main(String args[]) {

        AAA value = new AAA();

        double u = value.velocity1();
        double v = value.velocity2();

        DDD result = new DDD();
        result.distance(u, value.a);
        result.time(u, v, value.a);

        distance(u, v, value.a);
    }
}
```

Output:

```
Initial velocity:
2.5
Final velocity:
7.5

Distance travelled by it in first 2 s is 6.0 m
Time it takes to reach velocity 7.5 m/s is 10.0 s
Distance it cover reaching velocity 7.5 m/s is 50.0 m
```