Program 7 :-

Ques Write a program that demonstrates handling of exceptions in inheritance tree. Create a base class called "father" and derived class called "son" which extends the base class. In father class, implement a constructor which takes the age and throws the exception WrongAge() when the input age < 0. In son class, implement a constructor that takes both father and son's age and throws an exception if son's age is >= father's age.

```
class WrongAge extends Exception {
    public WrongAge(String msg) {
        super(msg);
    }
}

class Father {
    private int age;
    public Father(int age) throws WrongAge {
        if (age < 0) {
            throw new WrongAge("Age cannot be negative");
        }
        this.age = age;
    }
    public int getAge() {
        return age;
    }
}
```

```
class Son extends Father {
    private int sonAge;
    public Son(int fatherAge, int sonAge)
    throws WrongAge {
        super(fatherAge);
        if (sonAge >= fatherAge) {
    throw new WrongAge("Son's age cannot be
    greater than or equal to father's age");
        }
        this.sonAge = sonAge;
    }
    public int getSonAge() {
        return sonAge;
    }
}

public class Main {
    public static void main(String[] args) {
        try {
            Father father = new Father(45);
            Son son = new Son(45, 40);
System.out.println("Father's age :" + father.getAge());
System.out.println("Son's Age : " + son.getSonAge());
        }
        catch (WrongAge e) {
    System.out.println("Exception caught : " +
            e.getMessage());
        }
    }
}
```

Algorithm:

Step 1:- Start

Step 2:- Inherit WrongAge class from Exception

Step 3:- Make a public WrongAge constructor which takes a string as parameter & pass message (string) to the super class (i.e Exception).

Step 4:- Make a class Father with private integer age.

Step 5:- In Father constructor check if age < 0 throw new exception with message = " age cannot be less than zero"

Step 6:- Then Initialize age inside the constructor.

Step 7:- Inside father class make a getAge method which return age.

Step 8 → Inherit son from father class.

Step 9 :- Declare a private variable int sonAge inside son class.

Step 10 :- In Son constructor initialize fatherAge using super keyword.

Step 11 → If FatherAge <= sonAge throw exception of WrongAge with message (" son's age cannot be greater than or equal to father's age ") & else initialize son Age.

Step 12 :- make getSonAge() method which return SonAge().

Step 13:- Inside Main class instantiate father and son classes with param 45, (45, 40).

Step 14:- In the try block print their age. & in catch block throw custom WrongAge exception.

Step 15:- Stop