LAB PROGRAM 7

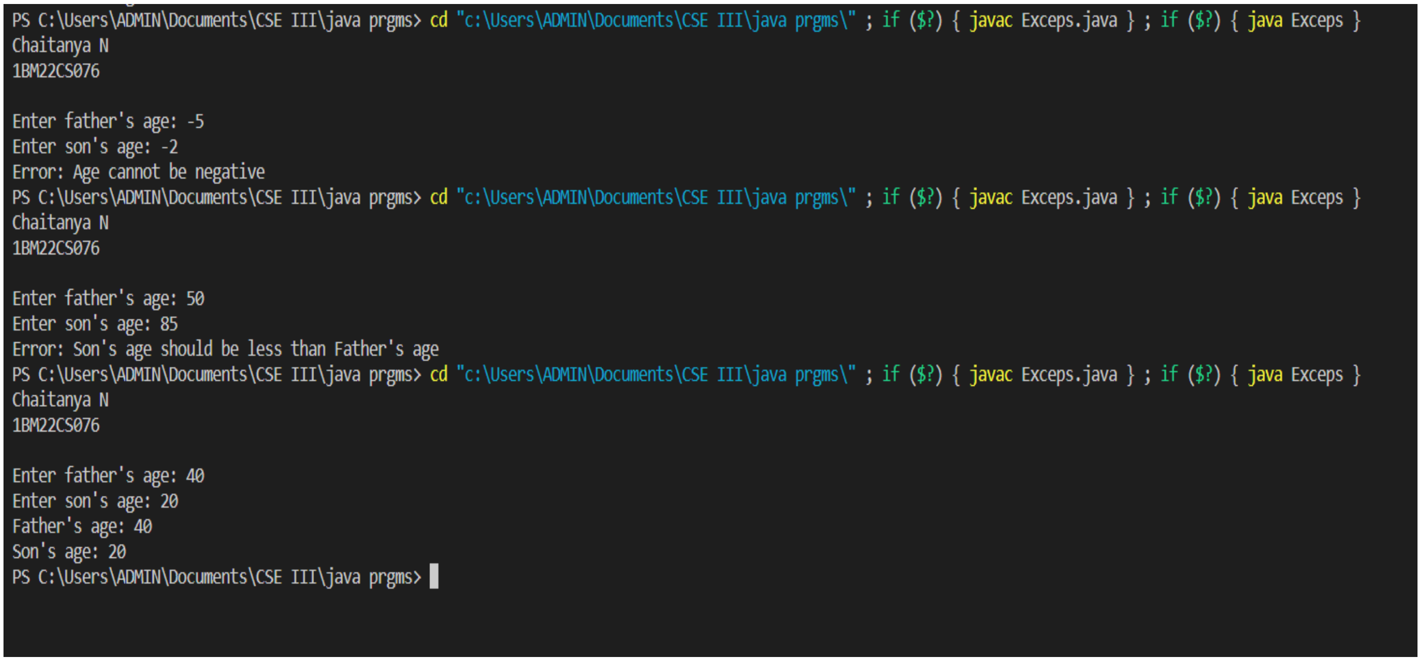
Write a program that demonstrates handling of exceptions in inheritance tree. Create a base class called "Father" and derived class called "Son" which extends the base class. In Father class, implement a constructor which takes the age and throws the exception WrongAge( ) when the input age=father's age.

CODE :

```
import java.util.Scanner;

class WrongAge extends Exception {
    WrongAge(String msg) {
        super(msg);
    }
}
class Father {
    int age;
    Father(int age) throws WrongAge {
        if (age < 0) {
            throw new WrongAge("Age cannot be negative");
        }
        this.age = age;
    }
}
class Son extends Father {
    int sonAge;


    Son(int fatherAge, int sonAge) throws WrongAge {
        super(fatherAge);
        if (sonAge >= fatherAge) {
            throw new WrongAge("Son's age should be less than Father's age");
        }
        this.sonAge = sonAge;
    }
}


public class Exceps {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.println("Chaitanya N");
        System.out.println("1BM22CS076");
        System.out.println();
        try {
            System.out.print("Enter father's age: ");
```

```
      int fatherAge = scanner.nextInt();
      System.out.print("Enter son's age: ");
      int sonAge = scanner.nextInt();

      Son son = new Son(fatherAge, sonAge);
      System.out.println("Father's age: " + fatherAge);
      System.out.println("Son's age: " + sonAge);
    } catch (WrongAge e) {
      System.out.println("Error: " + e.getMessage());
    } catch (Exception e) {
      System.out.println("Error: Invalid input");
    } finally {
      scanner.close();
    }
  }
}
```

OUTPUT :



```
PS C:\Users\ADMIN\Documents\CSE III\java prgms> cd "c:\Users\ADMIN\Documents\CSE III\java prgms\" ; if ($?) { javac Exceps.java } ; if ($?) { java Exceps }
Chaitanya N
1BM22CS076

Enter father's age: -5
Enter son's age: -2
Error: Age cannot be negative
PS C:\Users\ADMIN\Documents\CSE III\java prgms> cd "c:\Users\ADMIN\Documents\CSE III\java prgms\" ; if ($?) { javac Exceps.java } ; if ($?) { java Exceps }
Chaitanya N
1BM22CS076

Enter father's age: 50
Enter son's age: 85
Error: Son's age should be less than Father's age
PS C:\Users\ADMIN\Documents\CSE III\java prgms> cd "c:\Users\ADMIN\Documents\CSE III\java prgms\" ; if ($?) { javac Exceps.java } ; if ($?) { java Exceps }
Chaitanya N
1BM22CS076

Enter father's age: 40
Enter son's age: 20
Father's age: 40
Son's age: 20
PS C:\Users\ADMIN\Documents\CSE III\java prgms>
```

19|2|24

7. Exceptions

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

```
→ import java.util.Scanner;
  class WrongAge extends Exceptions
  {
     WrongAge(String msg)
       {
         super(msg);
       }
  }

  class Father
  {
     int age;
     Father (int age) throws WrongAge
      {
          if (age <0)
               throw new WrongAge(" Age cannot be negative");

          this.age = age;
      }
  }

  class Son extends Father
  {
     int sonAge;
     Son(int fatherAge, int sonAge) throws WrongAge()
     {
        super(fatherAge);
        if (sonAge >= fatherAge){
              throw new WrongAge(" Son age cannot be
              greater than father age");
        }
   } } this. sonAge = sonAge;
```

```
public class Main
 {
   public static void main(String args[])
  {
   Scanner   sc = new Scanner(System.in);
  try {
      System.out.println(" Enter father's age :");
      int fatherAge = sc.nextInt();
      int sonAge = sc.nextInt();

      Father f = new Father(fatherAge);
      System.out.println(" Father's age :" + fatherAge);

      Son s = new Son(fatherAge, sonAge);
      System.out.println(" Father's age :" + fatherAge);
      System.out.println(" Son's age :" + sonAge);
    }
    catch (WrongAge e)
     {
        System.out.println(e);
     }
     catch(Exception e)
           System.out.println (" e);
     finally {
              sc.close();
            }
     }
  }
```

Output :

```
1) Enter father's age : -8
   Enter son's age : 50
   Age cannot be negative

2) Enter father's age : 40
   Enter son's age : 70
   Father's age : 40
   Son's age should be less than Father age .
```