Session-4

Assignment

1.Create an abstract class Figure with following properties and functions:Create three subclasses Circle, Rectangle and Triangle that extends Figure class and define both the methods. Write a program that will find the area and perimeter of 3 Figures and print the details for all.

Program Code:

```
import java.util.Scanner;
abstract class figure {
abstract void findRectangle(double l, double b);
abstract void findRectangle1(double l, double w);
abstract void findCircle(double r);
abstract void findTriangle(double b, double h);
}
class findArea extends figure {
void findRectangle(double l, double b)
{
double area = l*b;
System.out.println("Area of Rectangle: "+area);
}
void findRectangle1(double l, double w)
{
double perimeter = 2*(l+w);
System.out.println("Perimeter of Rectangle:"+perimeter);
}
void findCircle(double r)
{
double area = 3.14*r*r;
System.out.println("Area of Circle: "+area);
}
void findCircle1(double r)
{
double perimeter = 2*3.14*r;
System.out.println("Perimeter of Circle:"+perimeter);
}
void findTriangle(double b, double h)
{
double area = (b*h)/2;
System.out.println("Area of Triangle: "+area);
}
}
class area {
public static void main(String args[])
{
double l, b, h, r, w;
findArea area = new findArea();
Scanner get = new Scanner(System.in);

System.out.print("\nEnter Length & Breadth of Rectangle: ");
l = get.nextDouble();
b = get.nextDouble();
area.findRectangle(l, b);
```

```
System.out.print("\nEnter Length & Width of Rectangle:");
l = get.nextDouble();
w = get.nextDouble();
area.findRectangle1(l,w);

System.out.print("\nEnter Radius of Circle: ");
r = get.nextDouble();
area.findCircle(r);

System.out.print("\nEnter Radius of Circle:");
r = get.nextDouble();
area.findCircle1(r);

System.out.print("\nEnter Base & Vertical Height of Triangle: ");
b = get.nextDouble();
h = get.nextDouble();
area.findTriangle(b, h);

}
}
```

Class & Java File:


area.java


Area.class

Program Output:

Select Command Prompt

```
Microsoft Windows [Version 10.0.17134.407]
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C:\Users\SAmutha>cd\

C:\>cd c:\JPrgm

c:\JPrgm>javac area.java

c:\JPrgm>java area

Enter Length & Breadth of Rectangle: 3
8
Area of Rectangle: 24.0

Enter Length & Width of Rectangle:3
9
Perimeter of Rectangle:24.0

Enter Radius of Circle: 7
Area of Circle: 153.86

Enter Radius of Circle:7
Perimeter of Circle:43.96

Enter Base & Vertical Height of Triangle: 4
2
Area of Triangle: 4.0

c:\JPrgm>
```
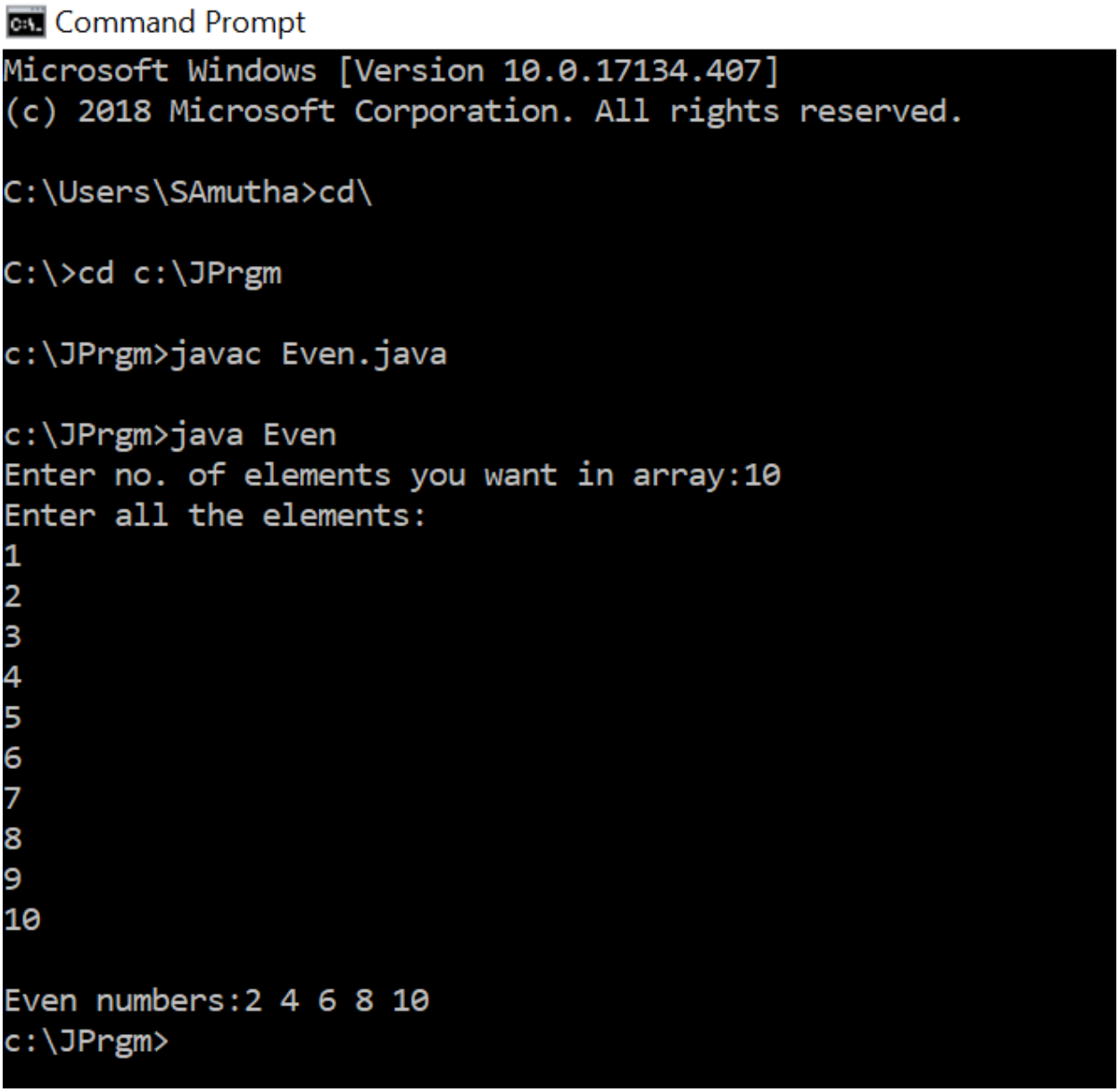

2. Declare an integer array of size 10. Initialize using for loop with 1 to 10 and print all even numbers in array.

Program Code:

```
import java.util.Scanner;
public class Even
{
public static void main(String[] args)
{
int n;
Scanner s = new Scanner(System.in);
System.out.print("Enter no. of elements you want in array:");
n = s.nextInt();
int a[] = new int[n];
System.out.println("Enter all the elements:");
for (int i = 0; i < n; i++)
{
a[i] = s.nextInt();
}
System.out.println("");
System.out.print("Even numbers:");
for(int i = 0 ; i < n ; i++)
{
if(a[i] % 2 == 0)
{
System.out.print(a[i]+" ");
}
}
}
}
```

Java & Class file:

Program output:



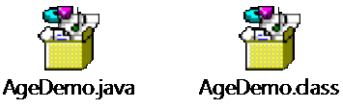
3.Write a program to generate a user defined exception called NegativeAgeException if the user inputs negative value for age.

Program Code:

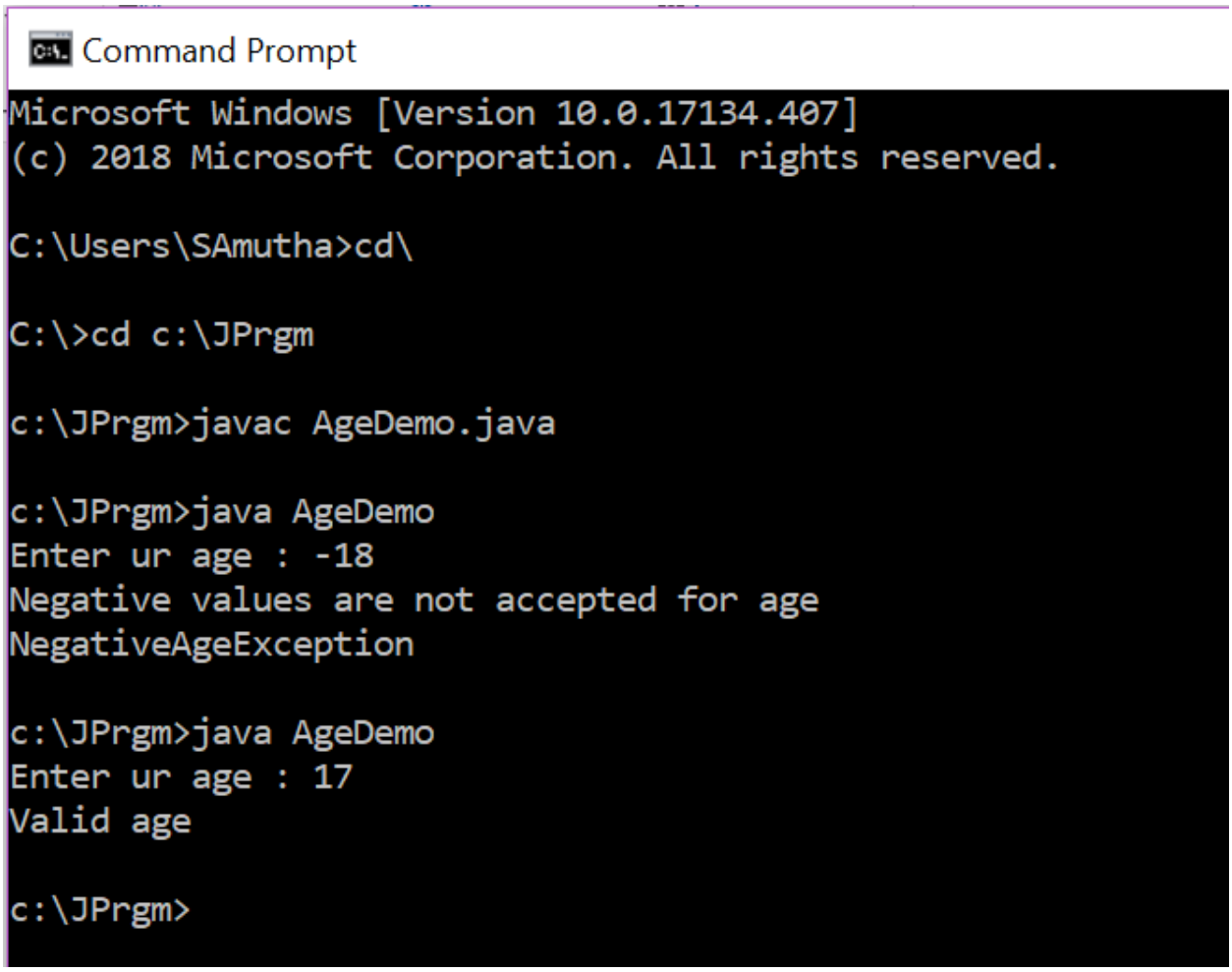
```
import java.util.Scanner;

class NegativeAgeException extends Exception {

 public NegativeAgeException(String str) {
  System.out.println(str);
 }
}
```

```
public class AgeDemo {

 public static void main(String[] args) {
  Scanner s = new Scanner(System.in);
  System.out.print("Enter ur age : ");
  int age = s.nextInt();

  try {
   if(age < 0)
    throw new NegativeAgeException("Negative values are not accepted for
age");
   else
    System.out.println("Valid age");
  }
  catch (NegativeAgeException a) {
   System.out.println(a);
  }
 }
}
```

Java & Class File:



Program Output:


Command Prompt
Microsoft Windows [Version 10.0.17134.407]
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C:\Users\SAmutha>cd\
C:\>cd c:\JPrgm
c:\JPrgm>javac AgeDemo.java
c:\JPrgm>java AgeDemo
Enter ur age : -18
Negative values are not accepted for age
NegativeAgeException
c:\JPrgm>java AgeDemo
Enter ur age : 17
Valid age
c:\JPrgm>