Object Oriented Programming (Lab)

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MODULE: Bachelors (S E)

SEMESTER: 2nd

SECTION: A

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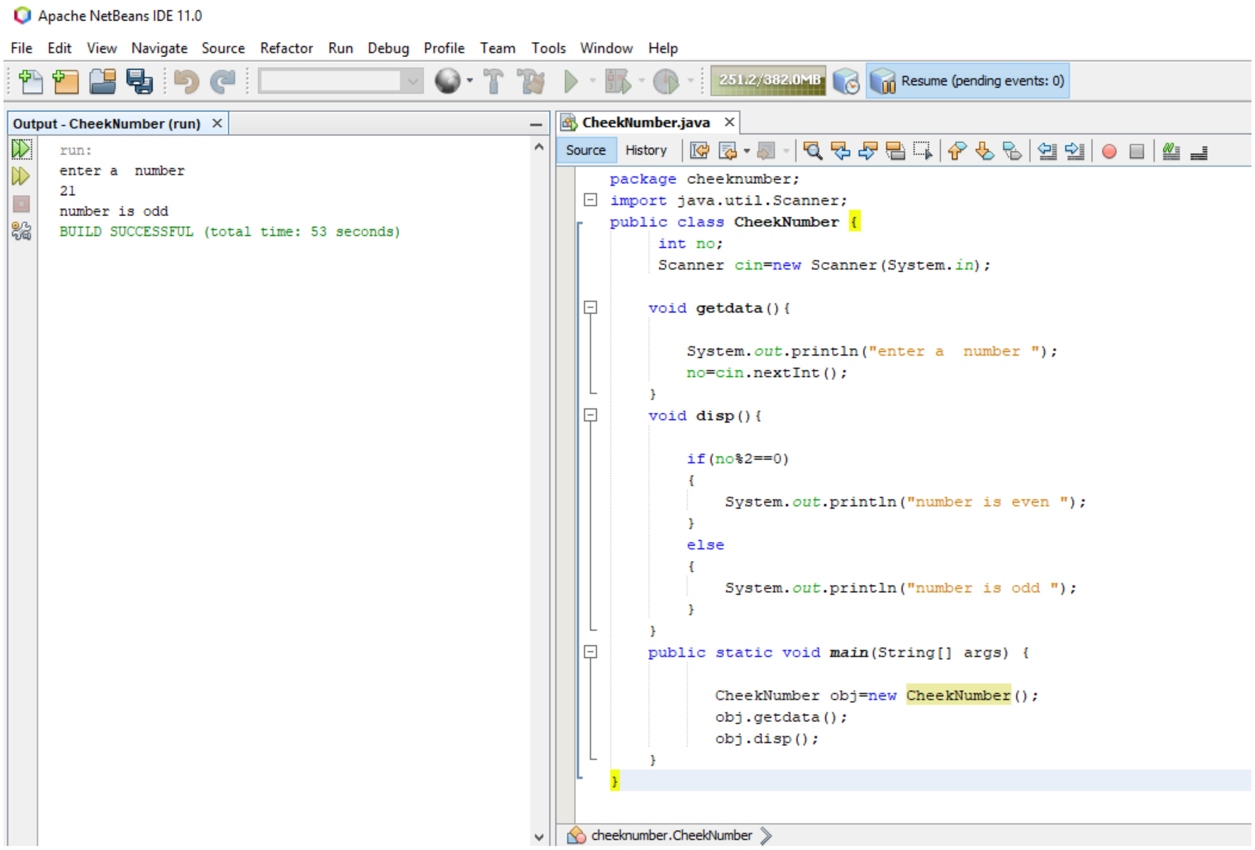
Q1. How to check Even and Odd numbers in java using object-oriented approach?

ANSWER:

Run program in NetBeans with output:


Apache NetBeans IDE 11.0
File Edit View Navigate Source Refactor Run Debug Profile Team Tools Window Help
251.2/382.0MB
Resume (pending events: 0)
Output - CheekNumber (run)
CheekNumber.java
Source
History
cheeknumber.CheekNumber

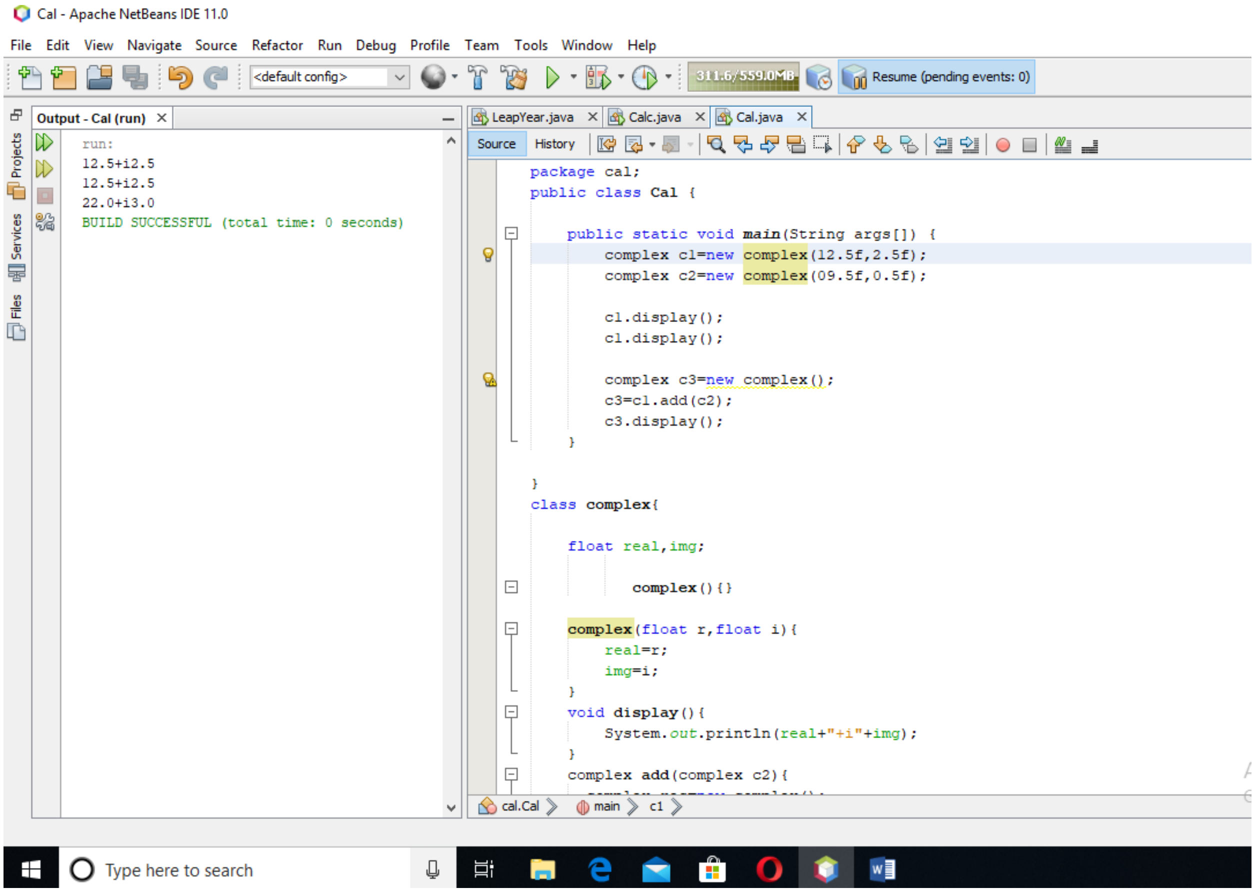
```
run:
enter a  number
21
number is odd
BUILD SUCCESSFUL (total time: 53 seconds)
```

```
package cheeknumber;
import java.util.Scanner;
public class CheekNumber {
     int no;
     Scanner cin=new Scanner(System.in);

    void getdata(){

        System.out.println("enter a  number ");
        no=cin.nextInt();
    }
    void disp(){

        if(no%2==0)
        {
            System.out.println("number is even ");
        }
        else
        {
            System.out.println("number is odd ");
        }
    }
    public static void main(String[] args) {

           CheekNumber obj=new CheekNumber();
           obj.getdata();
           obj.disp();
    }
}
```

Q2. How to add 2 complex numbers in java using object-oriented approach?

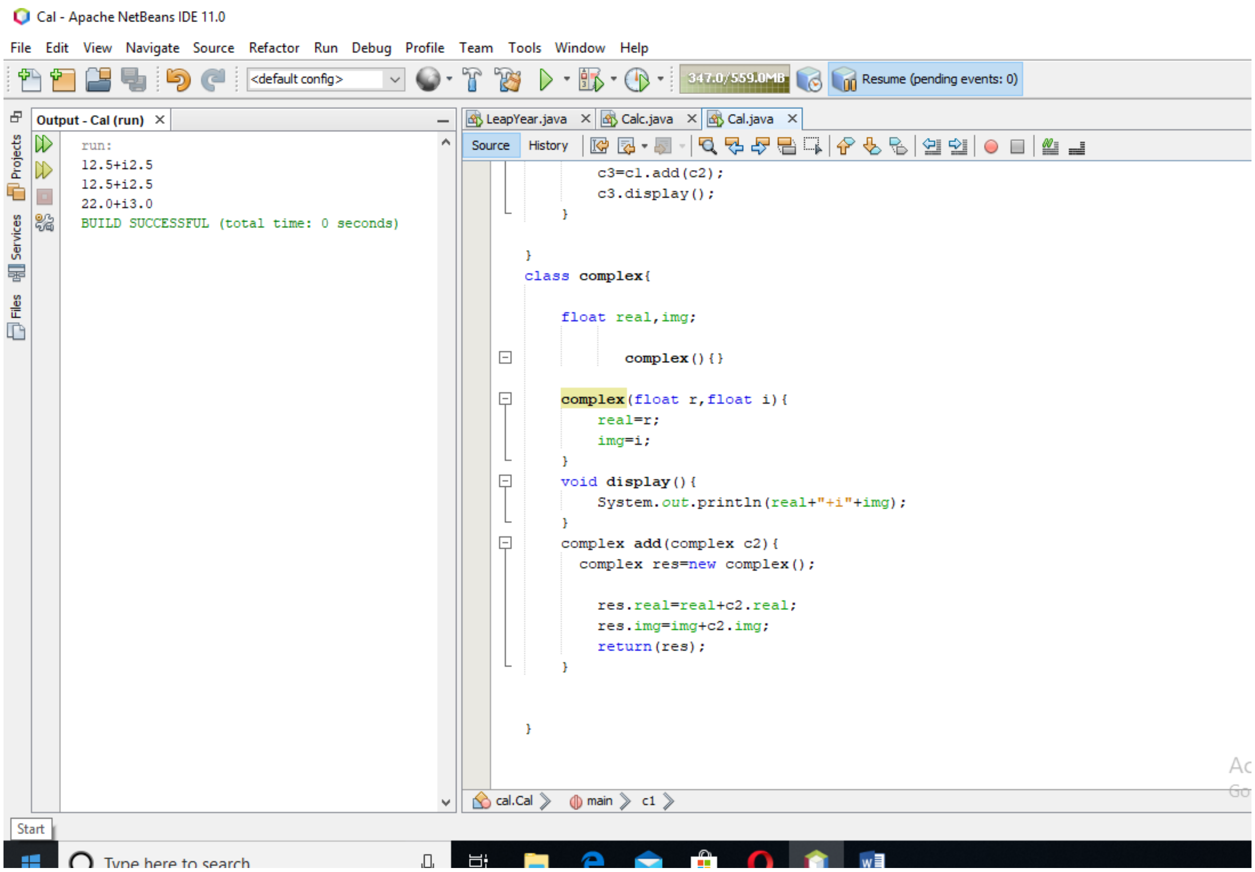
ANSWER:

Run program in NetBeans with output:



```
run:
12.5+i2.5
12.5+i2.5
22.0+i3.0
BUILD SUCCESSFUL (total time: 0 seconds)
```

```java
package cal;
public class Cal {

    public static void main(String args[]) {
        complex c1=new complex(12.5f,2.5f);
        complex c2=new complex(09.5f,0.5f);

        c1.display();
        c1.display();

        complex c3=new complex();
        c3=c1.add(c2);
        c3.display();
    }

}
class complex{

    float real,img;

            complex(){}

    complex(float r,float i){
        real=r;
        img=i;
    }
    void display(){
        System.out.println(real+"+i"+img);
    }
    complex add(complex c2){
```



```
run:
12.5+i2.5
12.5+i2.5
22.0+i3.0
BUILD SUCCESSFUL (total time: 0 seconds)
```

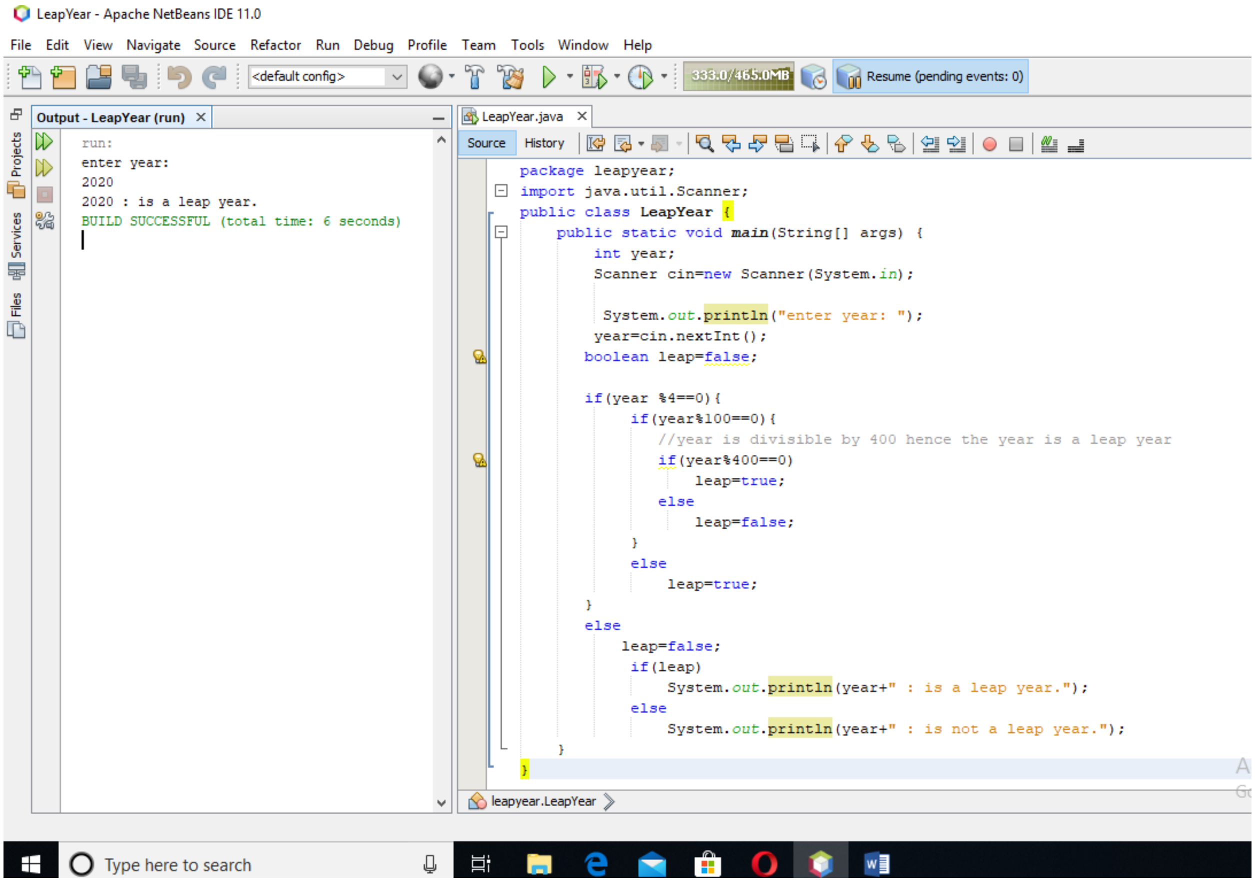
```
            c3=c1.add(c2);
            c3.display();
        }

}
class complex{

    float real,img;

            complex(){}

    complex(float r,float i){
        real=r;
        img=i;
    }
    void display(){
        System.out.println(real+"+i"+img);
    }
    complex add(complex c2){
      complex res=new complex();

        res.real=real+c2.real;
        res.img=img+c2.img;
        return(res);
    }


}
```

Q3. How to check Leap year in java using object-oriented approach?

ANSWER:

Run program in NetBeans with output:

Leap year:

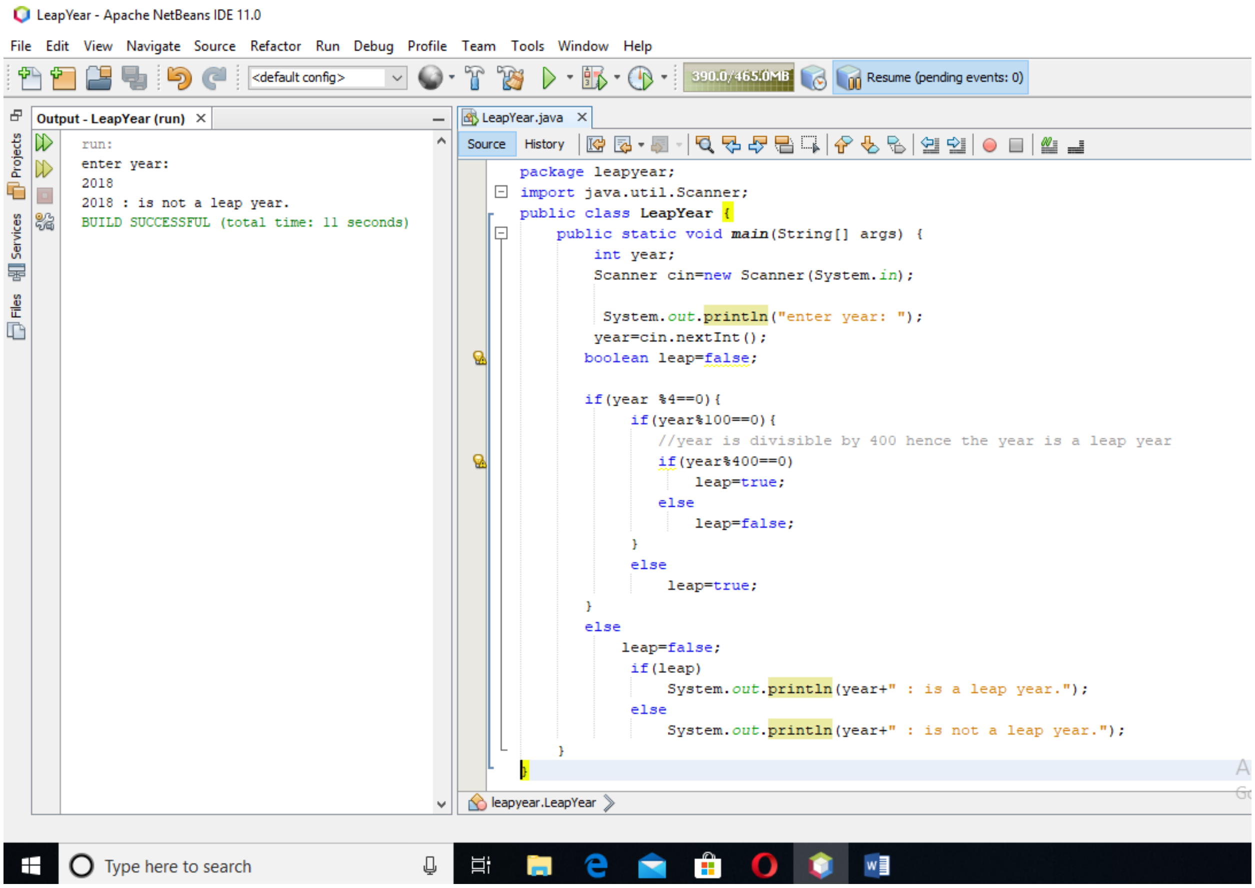


LeapYear - Apache NetBeans IDE 11.0
File Edit View Navigate Source Refactor Run Debug Profile Team Tools Window Help
<default config>
333.0/465.0MB
Resume (pending events: 0)
Output - LeapYear (run)
Projects
Services
Files
LeapYear.java
Source
History
leapyear.LeapYear
Type here to search

```
run:
enter year:
2020
2020 : is a leap year.
BUILD SUCCESSFUL (total time: 6 seconds)
```

```java
package leapyear;
import java.util.Scanner;
public class LeapYear {
    public static void main(String[] args) {
        int year;
        Scanner cin=new Scanner(System.in);

         System.out.println("enter year: ");
        year=cin.nextInt();
       boolean leap=false;

       if(year %4==0){
            if(year%100==0){
               //year is divisible by 400 hence the year is a leap year
               if(year%400==0)
                   leap=true;
               else
                   leap=false;
            }
            else
                leap=true;
       }
       else
           leap=false;
            if(leap)
                System.out.println(year+" : is a leap year.");
            else
                System.out.println(year+" : is not a leap year.");
    }
}
```

Not Leap year:


LeapYear - Apache NetBeans IDE 11.0
File Edit View Navigate Source Refactor Run Debug Profile Team Tools Window Help
<default config>
390.0/465.0MB
Resume (pending events: 0)
Output - LeapYear (run)
Projects
Services
Files
LeapYear.java
Source
History
leapyear.LeapYear
Type here to search

```
run:
enter year:
2018
2018 : is not a leap year.
BUILD SUCCESSFUL (total time: 11 seconds)
```

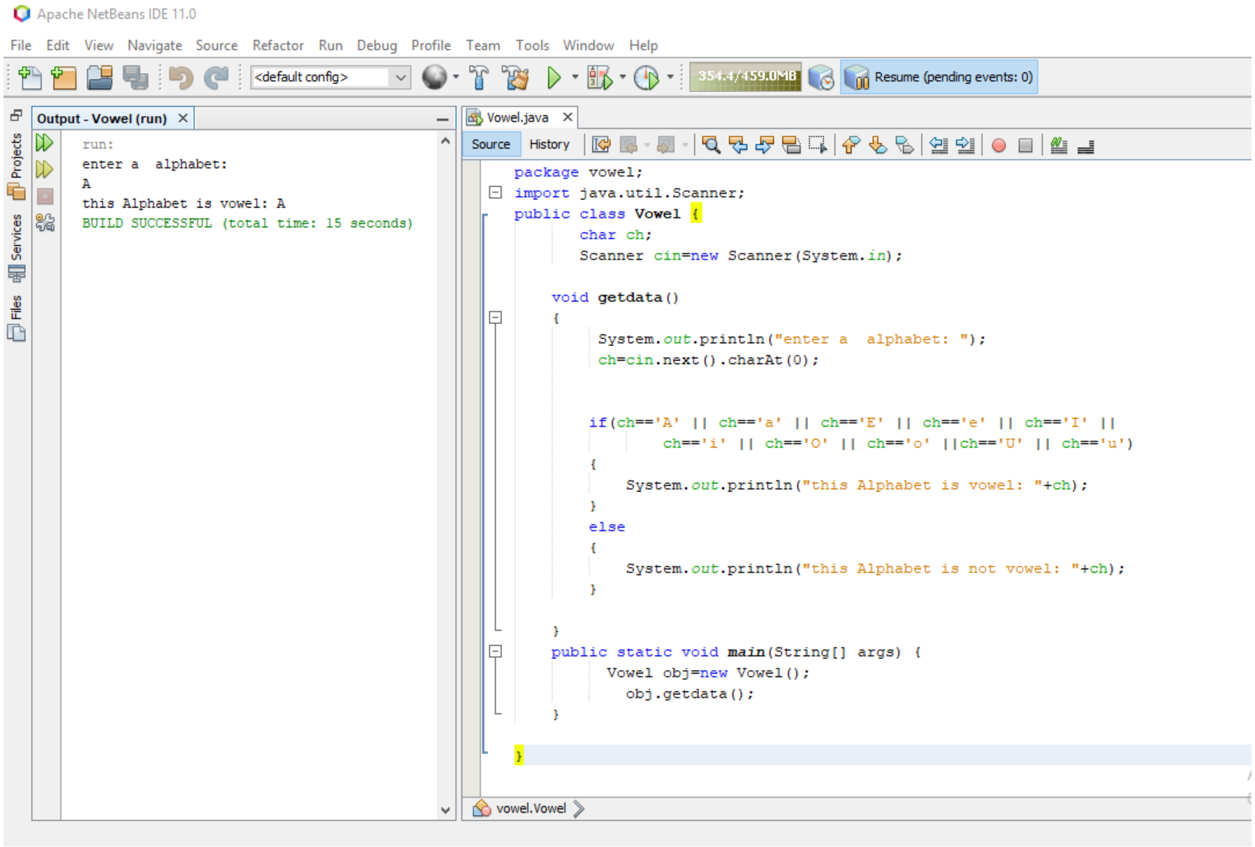
```java
package leapyear;
import java.util.Scanner;
public class LeapYear {
    public static void main(String[] args) {
        int year;
        Scanner cin=new Scanner(System.in);

         System.out.println("enter year: ");
        year=cin.nextInt();
       boolean leap=false;

       if(year %4==0){
           if(year%100==0){
              //year is divisible by 400 hence the year is a leap year
              if(year%400==0)
                  leap=true;
              else
                  leap=false;
           }
           else
               leap=true;
       }
       else
           leap=false;
           if(leap)
               System.out.println(year+" : is a leap year.");
           else
               System.out.println(year+" : is not a leap year.");
    }
}
```

Q4. How to check that the input from the user is the vowel or not in java using object oriented approach?

ANSWER:

Run program in NetBeans with output:

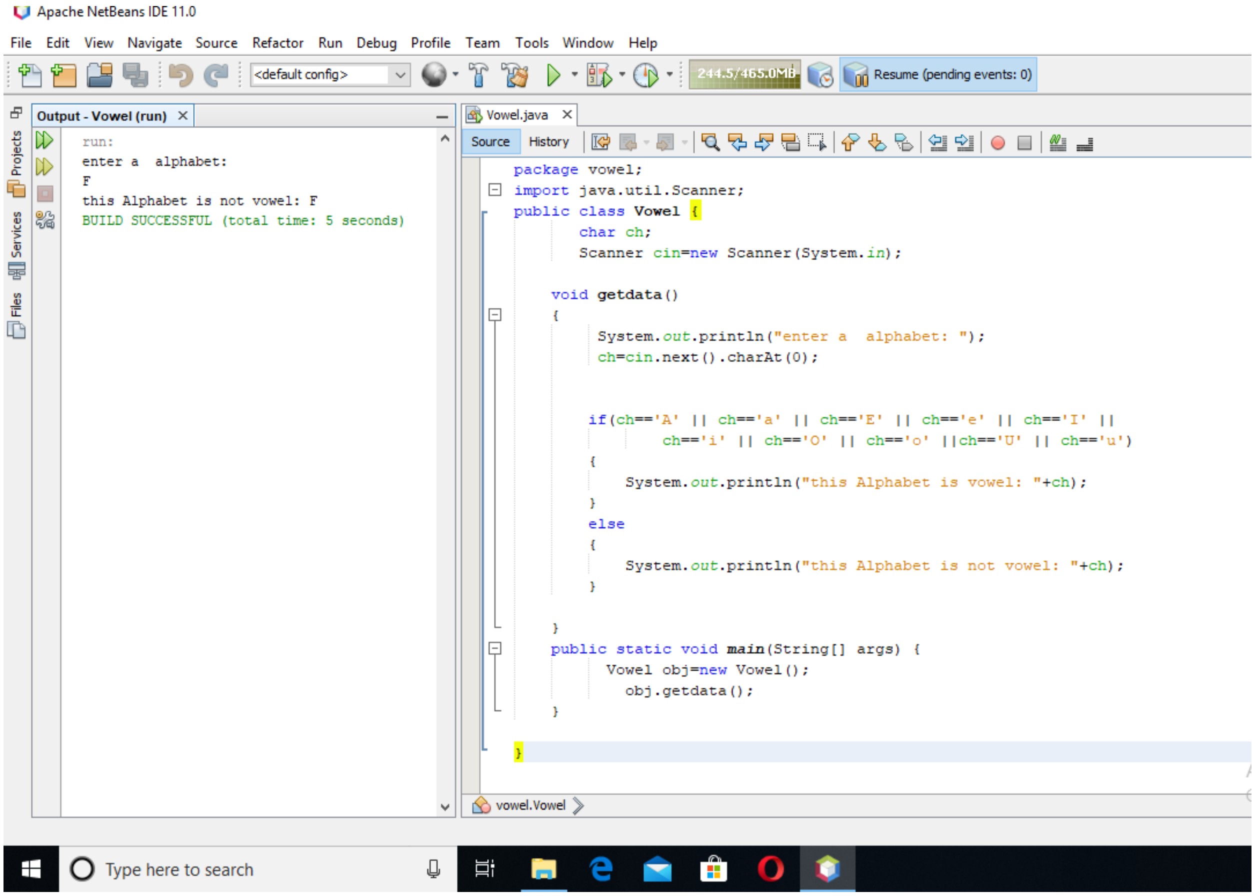
Vowel:



```
run:
enter a  alphabet:
A
this Alphabet is vowel: A
BUILD SUCCESSFUL (total time: 15 seconds)
```

```java
package vowel;
import java.util.Scanner;
public class Vowel {
        char ch;
        Scanner cin=new Scanner(System.in);

    void getdata()
    {
         System.out.println("enter a  alphabet: ");
         ch=cin.next().charAt(0);


        if(ch=='A' || ch=='a' || ch=='E' || ch=='e' || ch=='I' ||
                ch=='i' || ch=='O' || ch=='o' ||ch=='U' || ch=='u')
        {
            System.out.println("this Alphabet is vowel: "+ch);
        }
        else
        {
            System.out.println("this Alphabet is not vowel: "+ch);
        }

    }
    public static void main(String[] args) {
          Vowel obj=new Vowel();
            obj.getdata();
    }

}
```

Not Vowel:



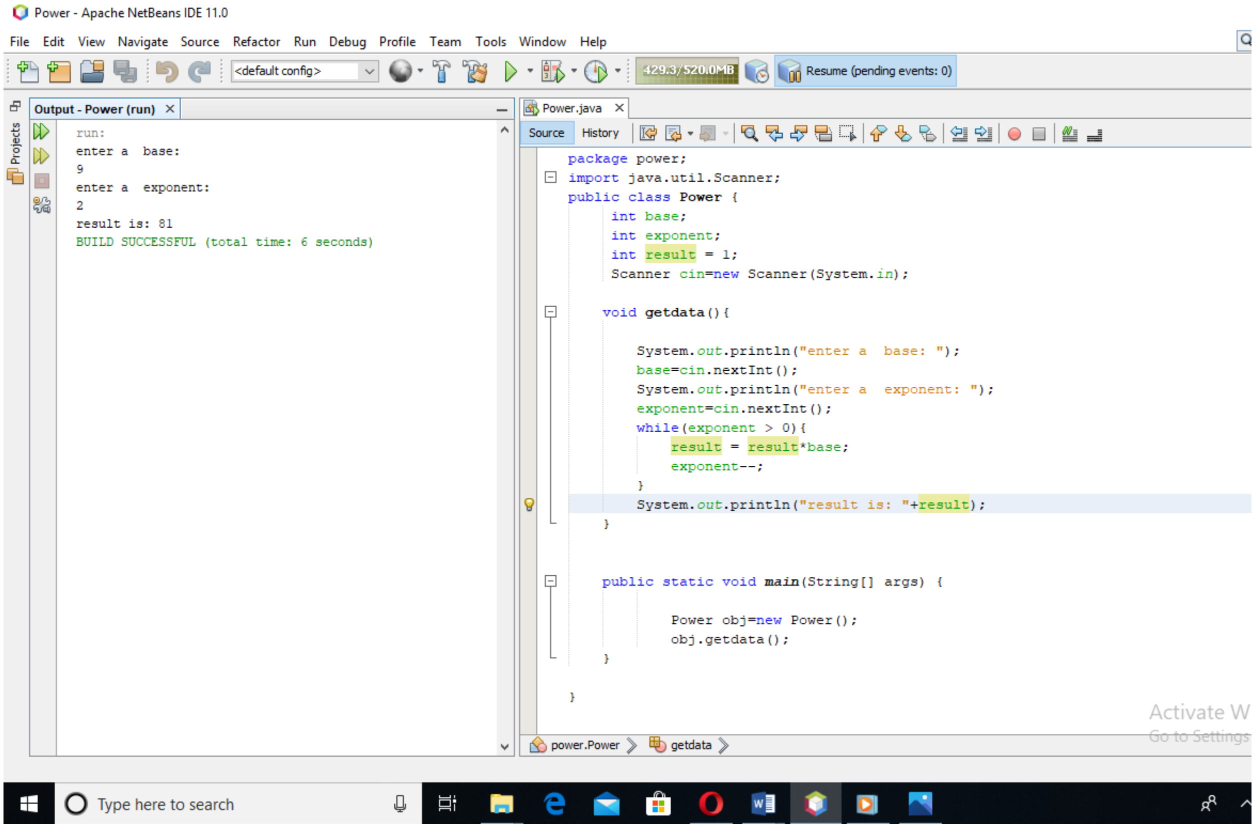
```
run:
enter a  alphabet:
F
this Alphabet is not vowel: F
BUILD SUCCESSFUL (total time: 5 seconds)
```

```java
package vowel;
import java.util.Scanner;
public class Vowel {
       char ch;
       Scanner cin=new Scanner(System.in);

    void getdata()
    {
         System.out.println("enter a  alphabet: ");
         ch=cin.next().charAt(0);


        if(ch=='A' || ch=='a' || ch=='E' || ch=='e' || ch=='I' ||
                ch=='i' || ch=='O' || ch=='o' ||ch=='U' || ch=='u')
        {
            System.out.println("this Alphabet is vowel: "+ch);
        }
        else
        {
            System.out.println("this Alphabet is not vowel: "+ch);
        }

    }
    public static void main(String[] args) {
          Vowel obj=new Vowel();
            obj.getdata();
    }

}
```

Q5. How to use power of a number in java using object-oriented approach?

ANSWER:

Run program in NetBeans with output:



```
run:
enter a  base:
9
enter a  exponent:
2
result is: 81
BUILD SUCCESSFUL (total time: 6 seconds)
```

```java
package power;
import java.util.Scanner;
public class Power {
    int base;
    int exponent;
    int result = 1;
    Scanner cin=new Scanner(System.in);

   void getdata(){

       System.out.println("enter a  base: ");
       base=cin.nextInt();
       System.out.println("enter a  exponent: ");
       exponent=cin.nextInt();
       while(exponent > 0){
           result = result*base;
           exponent--;
       }
       System.out.println("result is: "+result);
   }


   public static void main(String[] args) {

           Power obj=new Power();
           obj.getdata();
   }

}
```

End

Thank you, sir,