Java week 6 to 10:

Week 6:

Program 1:

Code:

```java
import java.util.*;
public class Week6__1{

public static void main(String...arg){

Cost c1=new Cost();
c1.display_details();

}

}

class vehicle {
    Scanner sc=new Scanner(System.in);
  String vehicle_type = sc.next();
}

class brand extends vehicle {
    Scanner sc=new Scanner(System.in);
  String brand_name = sc.next();

}

class Cost extends brand {
    Scanner sc=new Scanner(System.in);
  double cost1 = sc.nextDouble();

  Cost() {
     System.out.println("Constructor of cost class");
  }

  void display_details(){
     System.out.println("type of vehicle is "+vehicle_type);
```

```
        System.out.println("type of brand is " + brand_name);
        System.out.println("cost of vehicle "+vehicle_type+" is "+cost1);


    }
}
```

Output:

```
E:\books and pdfs\sem4 pdfs\java lab\week6>javac Week6__1.java

E:\books and pdfs\sem4 pdfs\java lab\week6>java Week6__1.java
bike
royal enfield
170100
Constructor of cost class
type of vehicle is bike
type of brand is royal
cost of vehicle bike is 170100.0
```

Program 2:

Code:

```
import java.util.*;
class Week6__2{
public static void main(String... arg){
      figure_3d f1[]=new figure_3d[4];
      f1[0]=new cylinder();
      f1[1]=new cone();
      f1[2]=new sphere();
      f1[3]=new cube();
      f1[0].surface_Area();
      f1[1].surface_Area();
      f1[2].surface_Area();
      f1[3].surface_Area();
}
}
```

```java
class figure_3d{
    void surface_Area(){
        System.out.println("Total surface Area of the given 3d figure");

    }
}

class cylinder extends figure_3d{
void surface_Area(){
    Scanner sc=new Scanner(System.in);
    System.out.println(" radius and height of cylinder ");
    double r=sc.nextDouble();
    double h=sc.nextDouble();
    System.out.println("Total surface area of cylinder is "+(2*3.14*r*(r+h)));
}

}
class cone extends figure_3d{
void surface_Area(){
    Scanner sc=new Scanner(System.in);
    System.out.println(" radius and slant height of cone ");
    double r=sc.nextDouble();
    double h=sc.nextDouble();
    System.out.println("Total surface area of cylinder is "+(3.14*r*(r+h)));
}

}
class sphere extends figure_3d{
void surface_Area(){
    Scanner sc=new Scanner(System.in);
    System.out.println(" radius of sphere ");
    double r=sc.nextDouble();
    System.out.println("Total surface area of cylinder is "+(4*3.14*r*r));
}

}
class cube extends figure_3d{
void surface_Area(){
```

```java
        Scanner sc=new Scanner(System.in);
        System.out.println(" side of cube ");
        double a=sc.nextDouble();
        System.out.println("Total surface area of cylinder is "+(6*a*a));
 }


 }
```

Output:

```
E:\books and pdfs\sem4 pdfs\java lab\week6>javac Week6__2.java

E:\books and pdfs\sem4 pdfs\java lab\week6>java Week6__2.java
 radius and height of cylinder
12 3
Total surface area of cylinder is 1130.4
 radius and slant height of cone
4 2
Total surface area of cylinder is 75.36
 radius of sphere
5
Total surface area of cylinder is 314.0
 side of cube
6
Total surface area of cylinder is 216.0
```

Week 7:
Program 1:
Code:

Stud.java:

```java
 package pak1;
 public class Stud {
      public int roll_num=12;
      public String name="gayathri";


 }
```

Spts.java

package pak2;

```java
public interface Spts{
      void display();
}
```

Student_Report.java:

```java
package report;
import pak1.Stud;
import pak2.Spts;

class sport implements Spts{
      public void display(){
             System.out.println("Sports available : \n throwball\n table
tennis\n basket ball\n cricket\n football");

      }
}

class Student_Report{
      public static void main(String... arg){
             Stud s1=new Stud();
             Spts s2=new sport();
             System.out.println("Name of the student is "+s1.name);
             System.out.println("Roll number of the student is
"+s1.roll_num);
             s2.display();
      }
}
```

```
E:\books and pdfs\sem4 pdfs\java lab\week7>javac -d . Spts.java

E:\books and pdfs\sem4 pdfs\java lab\week7>javac -d . Stud.java

E:\books and pdfs\sem4 pdfs\java lab\week7>javac -d . Student_Report.java
```

```
Name of the student is gayathri
Roll number of the student is 12
Sports available :
 throwball
 table tennis
 basket ball
 cricket
 football
```

Program 2:
Code:

```java
import java.util.*;
import java.io.*;
import java.lang.*;

import java.util.*;
class Week7_2{
      public static void main(String... arg){
            Scanner sc=new Scanner(System.in);

            byte b=sc.nextByte();
            short s=sc.nextShort();

            int i=sc.nextInt();
            long l=sc.nextLong();
            float f=sc.nextFloat();
            double d=sc.nextDouble();
            char c='c';
            boolean boo=true;
```

```java
Byte byteobj=b;
Short shortobj=s;
Integer intobj=i;
Long longobj=l;
Float floatobj=f;
Double doubleobj=d;
Character charobj=c;
Boolean boolobj=boo;

Vector v1=new Vector();
v1.add(byteobj);
v1.add(shortobj);
v1.add(intobj);
v1.add(longobj);
v1.add(floatobj);
v1.add(doubleobj);
v1.add(charobj);
v1.add(boolobj);
System.out.println("---Printing primitive values---");
Iterator itr=v1.iterator();
while(itr.hasNext()){
System.out.println(itr.next());
}

    }

}
```

Output:

```
E:\books and pdfs\sem4 pdfs\java lab\week7>java Week7_2.java
Note: Week7_2.java uses unchecked or unsafe operations.
Note: Recompile with -Xlint:unchecked for details.
1
23
123
32344345
223.4
2445.22
---Printing primitive values---
1
23
123
32344345
223.4
2445.22
c
true
```

Week 8:

Program 1:

Code:

```java
import java.util.*;
import java.lang.Math;
class Week8_1{
public static void main(String... arg){
    int x1=0,x2,r;
    Random random=new Random();
    x2=random.nextInt(200);

    while(x1==0){
        x1=random.nextInt(200);
    }

    if(x2>x1){
        x2=x2+x1;
        x1=x2-x1;
```

```
            x2=x2-x1;
    }
    int n=0;
    while(n==0){
            n=random.nextInt(100);
    }
    System.out.println(x1);
    System.out.println(x2);
    System.out.println(n);
    for(int i=0;i<n;i++){
            r=random.nextInt(x1-x2+1)+x2;
            System.out.print(r+" ");
    }
}
}
```

Output:

```
E:\books and pdfs\sem4 pdfs\java lab\week8>javac Week8_1.java

E:\books and pdfs\sem4 pdfs\java lab\week8>java Week8_1.java
57
31
30
47 51 52 39 33 53 45 55 31 50 57 33 57 49 50 38 54 52 44 39 52 44 53 37 42 33 42 51 53 37
E:\books and pdfs\sem4 pdfs\java lab\week8>
```

Program 2:

Code:

```java
import java.util.*;
class MyArrayList{
    private Object[] arrlist=new Object[1];
    private int size_=0;
    public void add(Object object){
            if(size_==arrlist.length){
                    arrlist=Arrays.copyOf(arrlist,arrlist.length*2);
            }
            arrlist[size_]=object;
```

```java
            size_++;
    }
    public Object get(int ind){
            if(ind>=size_||ind<0){
                    throw new ArrayIndexOutOfBoundsException("element not
 found");
            }
            return arrlist[ind];

    }
    public void remove(int ind){
            if(ind>=size_||ind<0){
                    throw new ArrayIndexOutOfBoundsException("cant delete");

            }
            for(int i=ind;i<size_;i++){
                arrlist[i]=arrlist[i+1];

            }
            size_--;
    }
    public int size(){
            return size_;
    }
    public static void main(String... ARG){

            Scanner sc=new Scanner(System.in);
            MyArrayList myArrayList1 = new MyArrayList();
            System.out.println("enter number of elements");
            int n=sc.nextInt();
                        System.out.println("enter elements");

            for(int i=0;i<n;i++){
                myArrayList1.add(sc.nextInt());
            }
            System.out.println("\nSize: " + myArrayList1.size());
            for (int i = 0; i < myArrayList1.size(); i++) {
                System.out.print(myArrayList1.get(i)+" ");
            }
                        System.out.println();

                        System.out.println("enter element to be added");
```

```
            myArrayList1.add(sc.nextInt());
        System.out.println("\nSize: " + myArrayList1.size());
    for (int i = 0; i < myArrayList1.size(); i++) {
        System.out.print(myArrayList1.get(i)+" ");
    }
    System.out.println();

    System.out.println("enter element to be removed");

        myArrayList1.remove(sc.nextInt());

    System.out.println("\nSize: " + myArrayList1.size());

    for (int i = 0; i < myArrayList1.size(); i++) {
        System.out.print(myArrayList1.get(i)+" ");
    }
    }
}
```

Output:

```
E:\books and pdfs\sem4 pdfs\java lab\week8>javac MyArrayList.java

E:\books and pdfs\sem4 pdfs\java lab\week8>java MyArrayList.java
enter number of elements
5
enter elements
1 2 3 4 5

Size: 5
1 2 3 4 5
enter element to be added
7

Size: 6
1 2 3 4 5 7
enter element to be removed
3

Size: 5
1 2 3 5 7
```

Program 3:

Code:

```java
import java.util.*;

class Week8_3{
public static void main(String... arg){
     Scanner sc=new Scanner(System.in);
     employee e1=new employee();
     employee e2=new employee();
     employee e3=new employee();
     e1.setter(sc.nextInt(),sc.next(),sc.nextInt());
     e2.setter(sc.nextInt(),sc.next(),sc.nextInt());
     e3.setter(sc.nextInt(),sc.next(),sc.nextInt());
     HashMap<Integer,employee> hash1=new HashMap<Integer,employee>();
     hash1.put(e1.getid(),e1);
     hash1.put(e2.getid(),e2);
```

```
        hash1.put(e3.getid(),e3);
        int search_key=sc.nextInt();
        if(hash1.containsKey(search_key)){
                System.out.println("Searched employee found\n employee id is "+
search_key+" employee name is "+hash1.get(search_key).getname()+" and age
is  "+hash1.get(search_key).getage());
        }
        else{
        System.out.println("searched employee not found");
        }

}
}
class employee{
private int id;
private String name;
private int age;
void setter(int i,String n,int a){
id=i;
name=n;
age=a;
}
int getid(){
     return id;
}
String getname(){
     return name;
}
int getage(){
     return age;
}
}
}
```

output:

```
E:\books and pdfs\sem4 pdfs\java lab\week8>javac Week8_3.java

E:\books and pdfs\sem4 pdfs\java lab\week8>java Week8_3.java
1 shiva 21
2 ravi 22
3 sandhya 20
2
Searched employee found
 employee id is 2 employee name is ravi and age is  22
```

Week 9:

Program 1:
Code:

```java
import java.io.*;
import java.lang.*;
import java.util.*;
public class Week9_1{
public static void main(String[] args) throws IOException
    {
        File file1 = new File("E:\\books and pdfs\\sem4 pdfs\\java
lab\\week9\\sample.txt");
        FileInputStream fs = new FileInputStream(file1);
        InputStreamReader inp = new InputStreamReader(fs);

        BufferedReader reader = new BufferedReader(inp);
        String line;
        List<String> a1=new ArrayList<String>();
        // Initializing counters
        int terminating_symbols = 0;
        int alphabets=0;
        int numbers=0;
        int splsymbols=0;
        int data=inp.read();


        while(data!=-1)
```

```java
    {
        char c = (char) data;
        if(c>='a' && c<='z' || c>='A' && c<='Z'){
            alphabets+=1;
        }
        else if(c>='0' && c<='9')
        {
            numbers+=1;
        }
        else if(c==' '||c=='\n'|| c=='\t'){
            terminating_symbols+=1;
        }
        else{
            splsymbols+=1;
        }
        data=inp.read();

    }
     try{
    FileWriter obj1=new FileWriter("Statistic.txt");

    obj1.write("\nTotal number of alphabets = "+alphabets);
    obj1.write("\nTotal number of numbers = " + numbers);
    obj1.write("\nTotal number of terminating_symbols = " +
terminating_symbols);
    obj1.write("\nTotal number of special symbols = " + splsymbols);
    obj1.close();
    }
    catch (IOException e) {
   System.out.println("An error occurred."+e);
    }
    System.out.println("Total number of alphabets = " + alphabets);
    System.out.println("Total number of numbers = " + numbers);
    System.out.println("Total number of terminating_symbols = " +
terminating_symbols);
    System.out.println("Total number of special symbols = " +
splsymbols);
   }
}
```

Output:

Sample.txt:

```
sample.txt        ×

Stop words are available in abundance in any human language. By removing these words, we remove the
low-level information from our text in order to give more focus to the important information .
In order words , we can say that the removal of such words does not show any negative consequences
on the model we train for our task . Removal of stop words definitely reduces the dataset size and
thus reduces the training time due to the fewer number of tokens involved in the training .

English has developed over the course of more than 1,400 years. The earliest forms of English , a group of West Germanic
(Ingvaeonic) dialects brought to Great Britain by Anglo-Saxon settlers in the 5th century ,
 are collectively called Old English. Middle English began in the late 11th century with
 the Norman conquest of England; this was a period in which English was influenced by Old French ,
 in particular through its Old Norman dialect.[ 9 ][ 10 ] Early Modern English began in the late
15th century with the introduction of the printing press to London, the printing of
the King James Bible and the start of the Great Vowel Shift .[ 11 ]
```

```
E:\books and pdfs\sem4 pdfs\java lab\week9>javac Week9_1.java

E:\books and pdfs\sem4 pdfs\java lab\week9>java Week9_1.java
Total number of alphabets = 889
Total number of numbers = 14
Total number of terminating_symbols = 215
Total number of special symbols = 40

E:\books and pdfs\sem4 pdfs\java lab\week9>
```

```
Statistic.txt           ×

Total number of alphabets = 889
Total number of numbers = 14
Total number of terminating_symbols = 215
Total number of special symbols = 40
```

Program 3:
Code:

```java
import java.util.*;
import java.io.*;
```

```java
class Week9_3{
    public static void main(String[] args) {
    File file = new File("sample.txt");
    File file1 = new File("stopwords.txt");
        ArrayList li1=new ArrayList();

    try{
    Scanner input1 = new Scanner(file1);
    while (input1.hasNext()) {
        String a=input1.next();
      li1.add(a.toLowerCase());
    }

    }
    catch(FileNotFoundException e){
    System.out.println("file not found");
    }
    try{
    Scanner input = new Scanner(file);
      ArrayList li=new ArrayList();
    while (input.hasNext()) {
        String a=input.next().toLowerCase();
        if(li1.contains(a) ||li.contains(a))
            continue;
        li.add(a);
    }
    Collections.sort(li);

    System.out.println(li);
}
catch(FileNotFoundException e){
    System.out.println("file not found");
}
}
}
```
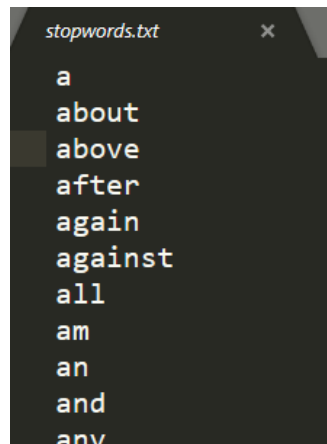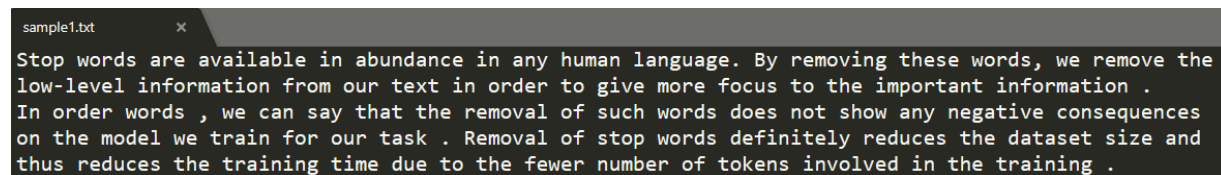
Output:

stopwords.txt contains all stop words,


```
E:\books and pdfs\sem4 pdfs\java lab\week9>javac Week9_3.java

E:\books and pdfs\sem4 pdfs\java lab\week9>java Week9_3.java
[,, ., abundance, available, can, consequences, dataset, definitely, due, fewer, focus, give, human, important,
information, involved, language., low-level, model, negative, number, order, reduces, removal, remove, removing,
 say, show, size, stop, task, text, thus, time, tokens, train, training, words, words,]

E:\books and pdfs\sem4 pdfs\java lab\week9>
```



```
sample1.txt        x
Stop words are available in abundance in any human language. By removing these words, we remove the
low-level information from our text in order to give more focus to the important information .
In order words , we can say that the removal of such words does not show any negative consequences
on the model we train for our task . Removal of stop words definitely reduces the dataset size and
thus reduces the training time due to the fewer number of tokens involved in the training .
```

Week 10:

Program 1:
code:

```java
import java.util.*;
class Week10_1{
      public static void main(String... arg){
            Scanner sc=new Scanner(System.in);
            int a,b,c;
            try{
            a=Integer.parseInt(sc.next());
            b=Integer.parseInt(sc.next());
            System.out.println(a/b);
            }
            catch(NumberFormatException e){
            System.out.println("number format error "+e);
            }
            catch(ArithmeticException e){
                  System.out.println("Arithemetic expression error "+e);
      }
      }
}
```

Output:

```
E:\books and pdfs\sem4 pdfs\java lab\week10>javac Week10_1.java

E:\books and pdfs\sem4 pdfs\java lab\week10>java Week10_1.java
12 3
4

E:\books and pdfs\sem4 pdfs\java lab\week10>java Week10_1.java
12 0
Arithemetic expression error java.lang.ArithmeticException: / by zero

E:\books and pdfs\sem4 pdfs\java lab\week10>java Week10_1.java
sample 3
number format error java.lang.NumberFormatException: For input string: "sample"
```

Program 2:

Code:

```java
import java.util.*;
class Week10_2{

public static void main(String... arg){
      try
        {
            Scanner sc=new Scanner(System.in);
                divisible(sc.nextInt());

        }
        catch (Exception e)
        {
            System.out.println(e);

        }
}
public static void divisible(int a) throws divisiblebytwoException {
      if(a%2!=0){
            throw new divisiblebytwoException("not divisible by 2");
      }
      else{
          System.out.println(a+" is divisible by 2");
      }

}
}
class divisiblebytwoException extends Exception{
divisiblebytwoException(String s){
      System.out.println(s);

}
}
```

Output:

```
E:\books and pdfs\sem4 pdfs\java lab\week10>javac Week10_2.java

E:\books and pdfs\sem4 pdfs\java lab\week10>java Week10_2.java
12
12 is divisible by 2

E:\books and pdfs\sem4 pdfs\java lab\week10>java Week10_2.java
11
not divisible by 2
divisiblebytwoException
```