1.Write a program to convert numbers into words using Enumerations with constructors,methods and instance variable(input range 0-99999).

```
package numbertoword;
public enum Number {
    ZERO(0),
    ONE(1),
    TWO(2),
    THREE(3),
    FOUR(4),
    FIVE(5),
    SIX(6),
    SEVEN(7),
    EIGHT(8),
    NINE(9),
    TEN(10),
    ELEVEN(11),
    TWELVE(12),
    THIRTEEN(13),
    FOURTEEN(14),
    FIFTEEN(15),
    SIXTEEN(16),
    SEVENTEEN(17),
    EIGHTEEN(18),
    NINETEEN(19),
    TWENTY(20),
```

```
  THIRTY(30),
  FORTY(40),
  FIFTY(50),
  SIXTY(60),
  SEVENTY(70),
  EIGHTY(80),
  NINETY(90),
  HUNDRED(100),
  THOUSAND(1000);



private  int number;
  private Number(int num){
      this.number=num;
  }


  public static String getWord(int n)
  {
      return Number.values()[n]+" ";
  }

   public String convert(int n)
  {
     if(n<0)
```

```
{
   return "NEGATIVE"+convert(-n);
}

if(n==0)
{
   return Number.getWord(n);
}
if(n>99999)
{
   return "ERROR: Out of Range!";
}

String result =" ";

 if(n>=20000)
{
 result +=" "+Number.getWord(18+(n/10000))+" ";
 n%=10000;
}



if(n>=1000)
{
 result +=" "+Number.getWord(n/1000)+"THOUSAND";
 n%=1000;
```

```
    }

    if(n>=100)
    {
    result+=" "+Number.getWord(n/100)+"HUNDRED";
    n%=100;
    }

   if(n>=20)
    {
       result+=" "+Number.getWord(18+(n/10))+" ";
       n%=10;
    }


    if(n>0)
    {
       result+=" "+Number.getWord(n);
    }
   return result;
}
}
```

Main Class

```
package numbertoword;

import java.util.Scanner;

public class NumberToWord {

    public static void main(String[] args) {
        Number num = Number.EIGHTEEN;
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter number: ");
        int data = sc.nextInt();
        System.out.println(num.convert(data));

    }
}
```

Output

```
run:
ZERO
  TEN
  ONE HUNDRED
  ONE THOUSAND
  TEN THOUSAND
BUILD SUCCESSFUL (total time: 0 seconds)
```

2. Find the second maximum and second minimum in a set of numbers using auto boxing and unboxing.

```
package program2;

import java.util.Scanner;
import java.util.Set;
import java.util.TreeSet;

public class Program2 {
   public static void main(String[] args) {
      Set<Integer> sortedset = new TreeSet<Integer>();
      int n;
      Scanner sc = new Scanner(System.in);
      System.out.print("Enter Total Number of Elements: ");
      n = sc.nextInt();

      if(n<2)
      {
         System.out.print("Enter atleast Two elements: ");

      }
      else{
         for(int i=0;i<n;i++)
         {
            sortedset.add(sc.nextInt());
         }
      }

         Integer[] arr =sortedset.toArray(new Integer[0]);
         System.out.println("Second Maximum Element: "+arr[arr.length-2]);
         System.out.println("Second Minimum Element: "+arr[1]);
  }

   }
```

Output

```
Enter Total Number of Elements: 5
7
6
-4
3
8
Second Maximum Element: 7
Second Minimum Element: 3
BUILD SUCCESSFUL (total time: 19 seconds)
```

3. Write a menu driven program to create an Arraylist and perform the following operations
i) Adding elements
ii) Sorting elements
iii) Replace an element with another
iv) Removing an element
v) Displaying all the elements
vi) Adding an element between two elements

```
import java.util.*;

public class ArrayListDemo{

   public static void main(String[] args) {
      int choice;
      int value;
      int findValue;
      int replaceValue;
      int pos;
      Scanner sc =new Scanner(System.in);
      ArrayList<Integer> alist = new ArrayList<>();

      do {
         System.out.println("     MENU      ");
         System.out.println("----------------");
         System.out.println("1.Add");
         System.out.println("2.Sort");
         System.out.println("3.Replace");
         System.out.println("4.Remove");
         System.out.println("5.Display");
         System.out.println("6.Add in between");
         System.out.println("7.Exit");
         System.out.println("----------------");
         System.out.print("Enter your Choice-> ");
         choice = sc.nextInt();
```

```
switch(choice){
   case 1:
       System.out.print("Enter a Number: ");
       value = sc.nextInt();
       alist.add(value);
       break;

   case 2:
       System.out.println("Sorting....");
       Collections.sort(alist);
       System.out.println("Sorting Completed");
       break;

   case 3:
        System.out.print("Enter value to Find: ");
        findValue = sc.nextInt();
        if(alist.contains(findValue))  {
          System.out.print("Enter value to replace: ");
          replaceValue = sc.nextInt();
          Collections.replaceAll(alist,findValue,replaceValue);
          System.out.println("Replacement Completed ");
        }
        else{
          System.out.println("Element doesnot exist");
        }
        break;

   case 4:
        System.out.print("Enter the element to remove:");
        value =sc.nextInt();
        if(alist.contains(value)){
          alist.remove((Integer)value);
        }
        else{
          System.out.println("Element doesnot exist");
        }
        break;
```

```
            case 5:
                System.out.println("Elements are: ");
                System.out.println(alist);
                break;

            case 6:

                System.out.print("Enter the index position: ");
                pos=sc.nextInt();
                if(pos<alist.size()){
                  System.out.print("Enter the value to insert:");
                  value = sc.nextInt();
                  alist.add(pos,value);
                  System.out.println("Element Inserted");
                }
                else{
                  System.out.println("Index dosent exist");
                }
                break;
            case 7:
               System.out.println("Thank You");
               return;
            default:
               System.out.println("Invalid Choice ");
          }
       } while (true);

    }
}
```

Output

```
      MENU
 ----------------
 1.Add
 2.Sort
 3.Replace
 4.Remove
 5.Display
 6.Add in between
 7.Exit
 ----------------
 Enter your Choice-> 1
 Enter a Number: 3
```

```
     MENU
----------------
1.Add
2.Sort
3.Replace
4.Remove
5.Display
6.Add in between
7.Exit
----------------
Enter your Choice-> 3
Enter value to Find: 2
Enter value to replace: 6
Replacement Completed
```

```
      MENU
-----------------
1.Add
2.Sort
3.Replace
4.Remove
5.Display
6.Add in between
7.Exit
-----------------
Enter your Choice-> 5
Elements are:
[3, 6, 6]
```

```
     MENU
----------------
1.Add
2.Sort
3.Replace
4.Remove
5.Display
6.Add in between
7.Exit
----------------
Enter your Choice-> 2
Sorting....
Sorting Completed
```

```
---------------
1.Add
2.Sort
3.Replace
4.Remove
5.Display
6.Add in between
7.Exit
---------------
Enter your Choice-> 6
Enter the index position: 1
Enter the value to insert:2
Element Inserted
```

4. Write a java program to find words with even number of characters in a string, then swap the pair of characters in thosewords and also toggle the characters in a given string

EX: Good Morning everyone

Output: oGdo vereoyen gOOD mORNING EVERYONE

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

public static void main(String[] args) {
Scanner sc = new Scanner(System.in);
String str;
System.out.print("Enter a String: ");
str=sc.nextLine();
int start = 0;
String word="";
String togWord="";
str=str.trim()+"";
String punct= ".,?!:;\n\t";

for(int i=0;i<str.length();i++){
   if(punct.contains(str.charAt(i)+"")){
      word = str.substring(start, i);
      start = i+1;
      word = word.trim();
      if(word.length()>0 && word.length()%2==0) {
```

```
            StringBuilder sb = new StringBuilder(word);
            char temp;
            for (int j = 1; j < word.length(); j++) {
                temp = sb.charAt(j);
                sb.setCharAt(j,sb.charAt(-1));
                sb.setCharAt(j-1, temp);
            }
            System.out.print(""+sb);
        }
        StringBuilder tog = new StringBuilder(word);
        for (int j = 0; j < tog.length(); j++) {
            if(Character.isUpperCase(tog.charAt(j))){
                tog.setCharAt(j,Character.toLowerCase(tog.charAt(j)));
            }
            else if(Character.isLowerCase(tog.charAt(j))){
                tog.setCharAt(j,Character.toUpperCase(tog.charAt(j)));
            }
        }
        togWord+=tog;
        togWord+=str.charAt(i) ;
      }
   }
   System.out.println("\n"+togWord);
   }

}
```

Output

5. Write a Servlet program that accepts the age and name and displays if the user is

eligible for voting or not

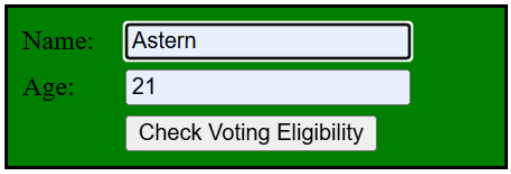
```
<!DOCTYPE html>
<!--
To change this license header, choose License Headers in Project Properties.
To change this template file, choose Tools | Templates
and open the template in the editor.
-->
<html>
    <head>
        <title>Voting Checker</title>
        <meta charset="UTF-8">
        <meta name="viewport" content="width=device-width, initial-scale=1.0">
        <style>
            table{
                background-color: green;
                padding: 5px;
                width:300px;
                border: 2px solid ;
                margin-top: 300px;
                margin-bottom: auto;
                margin-left: auto;
                margin-right: auto;
```

```
        }
        td{
            padding: 2px;
        }
    </style>
</head>
<body>
    <form method="POST" action="VoteChecker">
        <table>
            <tr>
                <td>Name:</td>
                <td><input type="text" name="uname"></td>
            </tr>

            <tr>
                <td>Age:</td>
                <td><input type="text" name="age"></td>
            </tr>
            <tr>
                <td></td>
                <td><input type="submit" value="Check Voting Eligibility"></td>
            </tr>
        </table>
    </form>
</body>
</html>
```

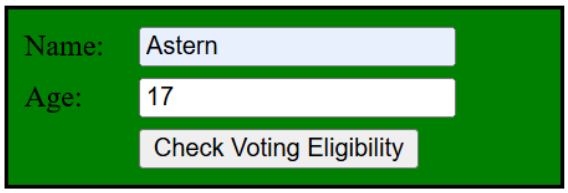
```
package com;

import java.io.IOException;
import java.io.PrintWriter;
import javax.servlet.ServletException;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;



public class VoteChecker extends HttpServlet {



    protected void processRequest(HttpServletRequest request,
HttpServletResponse response)
            throws ServletException, IOException {
        response.setContentType("text/html;charset=UTF-8");
        try (PrintWriter out = response.getWriter()) {
            /* TODO output your page here. You may use following sample code. */
            out.println("<!DOCTYPE html>");
            out.println("<html>");
            out.println("<head>");
            out.println("<title>Servlet VoteChecker</title>");
            out.println("</head>");
            out.println("<body>");
```

```
        String name =request.getParameter("uname");
        int age = Integer.parseInt(request.getParameter("age"));


        if(age>18)
        {
          out.println("<h1 style=\"color:green\">"+name+" "+ "you are eligible to vote"+ "</h1>");
        }
        else{
          out.println("<h1 style=\"color:brown\">"+name+" "+ "you are not eligible to vote"+ "</h1>");
        }
        out.println("</body>");
        out.println("</html>");
      }
   }
}
```

Output



Astern you are eligible to vote



Astern you are not eligible to vote

6. Write a JSP program to print first 10 Fibonacci and 10 prime numbers.

```
<%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
    <head>
        <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
        <title>Fibonacci and Prime</title>
    </head>
    <body>
        <h1>Fibonacci Number</h1>
        <%
            int a=0,b=1,c,i;
            out.println(a+" "+b+" ");
            for(i=1;i<=8;i++)
            {
                c=a+b;
                out.println(c+" ");
                a=b;
                b=c;
            }
        %>

        <h1>prime Numbers Number</h1>
```

```
<%
    int prime=2;
    boolean isprime;
    int count=1;

    while(count<=10)
    {
        isprime=true;
        for(i=2;i<=prime/2;i++)
        {
            if(prime%i==0)
            {
                isprime=false;
                break;
            }
        }

        if(isprime)
        {
            out.println(prime+" ");
            count++;
        }

        prime++;
    }
%>
```

```
    </body>
</html>
```

Output

Fibonacci Number

0 1 1 2 3 5 8 13 21 34

prime Numbers Number

2 3 5 7 11 13 17 19 23 29

7. Write a JSP Program to design a shopping cart to add items, remove item and to display items from the cart using Sessions

```
package com;

public class Item {
   private String name;
   private int qty;
   private Double Price;

   public Item(String name, int qty, Double Price) {
      this.name = name;
      this.qty = qty;
      this.Price = Price;
   }

   public String getName() {
      return name;
   }

   public void setName(String name) {
      this.name = name;
   }

   public Double getPrice() {
      return Price;
   }

   public void setPrice(Double Price) {
      this.Price = Price;
   }

    public void setQty(int qty) {
      this.qty=qty;
   }
```

```
    public int getQty() {
        return qty;
    }


}
```

```
<%@page import="com.Item"%>
<%@page import="java.util.ArrayList"%>
<%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
    <head>
        <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
        <title>Shopping</title>
    </head>
    <body>
        <h1>Online Shopping</h1>
        <%
            ArrayList<Item>cart;
            if(request.getSession().getAttribute("cart")==null)
            {
              cart=new ArrayList<Item>();
              request.getSession().setAttribute("cart",cart);

            }
            else{
                cart=(ArrayList<Item>)request.getSession().getAttribute("cart");
                }

            %>
        <table width="100%">
            <tr>
                <td>
```

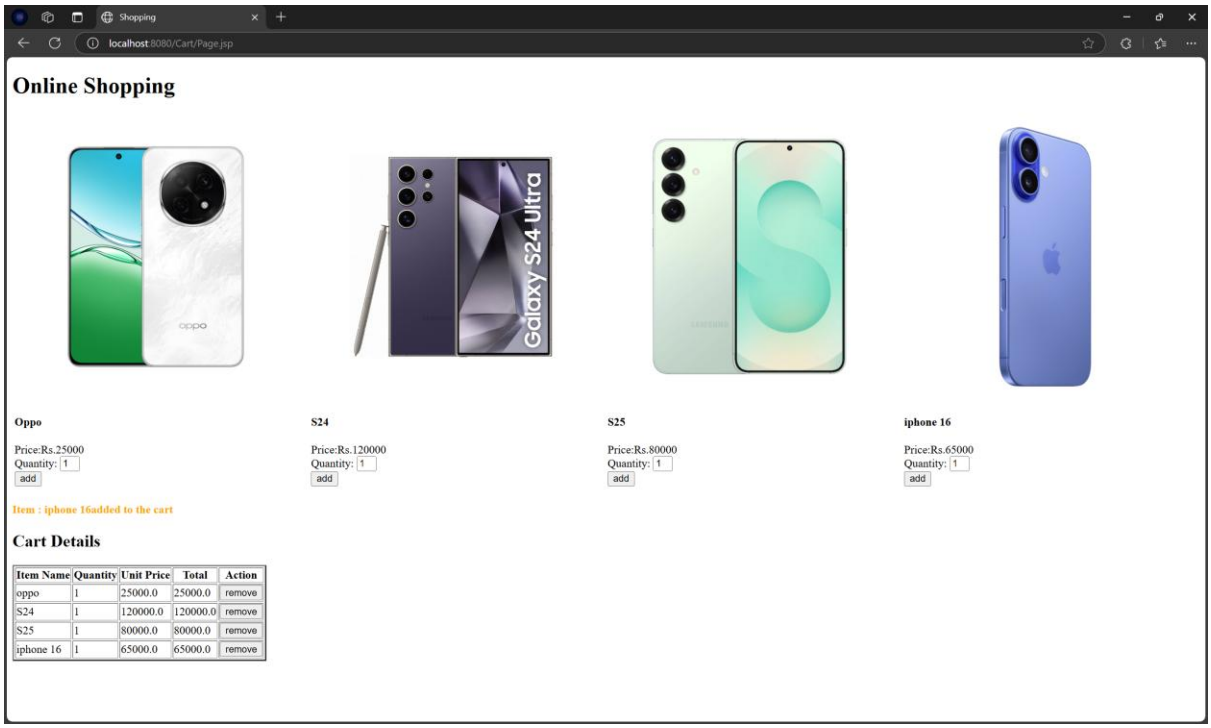
```
            <FORM method="POST">

                <img src="images/img1.png" alt="god" height="400px"
width="400px"/>
                <h4>Oppo </H4>
                <input type="HIDDEN" value="oppo" name="name">
                Price:Rs.25000
                <input type="hidden" value="25000" name="price">
                <br>
                Quantity:
                <input type="number" name="qty" value="1" WIDTH="2"
STYLE="width:20px">
                <br>
                <input type="submit" name="addbtn" value="add">
            </FORM>
        </td>

        <td>
            <FORM method="POST">
                <img src="images/img2.png" alt="god" height="400px"
width="400px"/>
                <h4>S24</H4>
                <input type="HIDDEN" value="S24" name="name">
                Price:Rs.120000
                <input type="hidden" value="120000" name="price">
                <br>
                Quantity:
                <input type="number" name="qty" value="1" WIDTH="2"
STYLE="width:20px">
                <br>
                <input type="submit" name="addbtn" value="add">
            </FORM>
        </td>

        <td>
            <FORM method="POST">
```

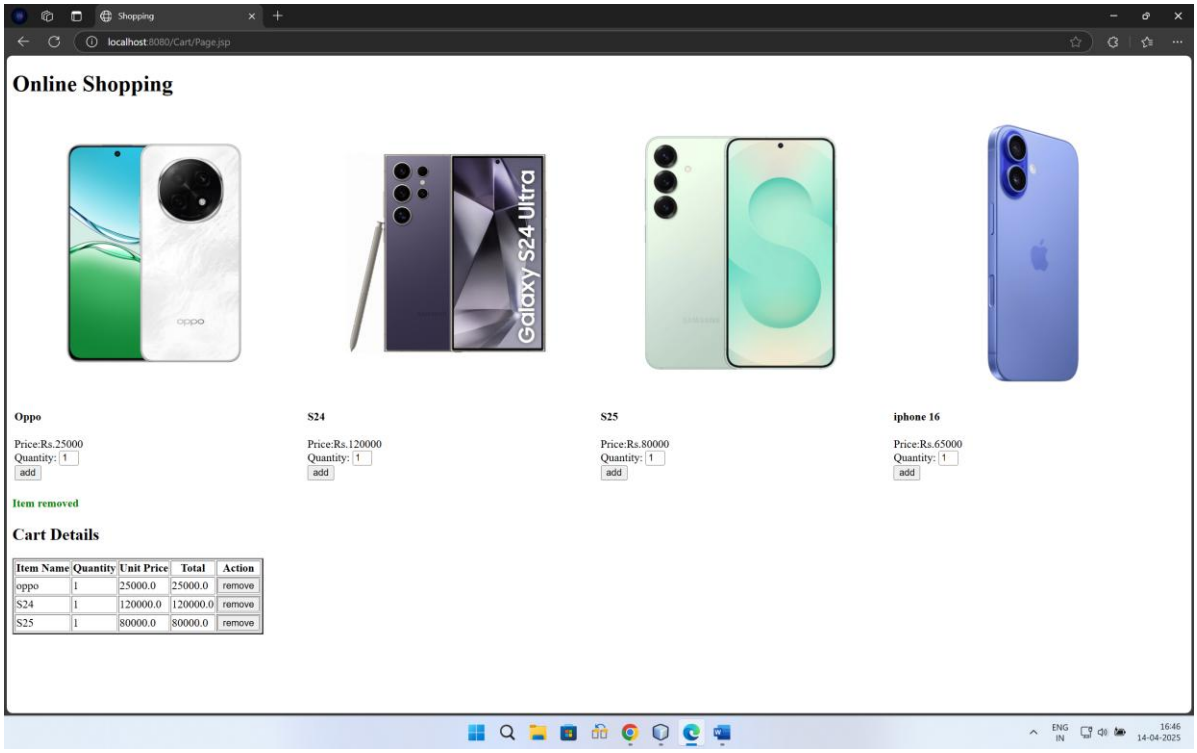
```
                <img src="images/img3.png" alt="god" height="400px"
width="400px"/>
                <h4>S25</H4>
                <input type="HIDDEN" value="S25" name="name">
                Price:Rs.80000
                <input type="hidden" value="80000" name="price">
                <br>
                Quantity:
                <input type="number" name="qty" value="1" WIDTH="2"
STYLE="width:20px">
                <br>
                <input type="submit" name="addbtn" value="add">
              </FORM>
            </td>

             <td>
               <FORM method="POST">
                <img src="images/img4.png" alt="God" height="400px"
width="400px"/>
                <h4>iphone 16</H4>
                <input type="HIDDEN" value="iphone 16" name="name">
                Price:Rs.65000
                <input type="hidden" value="65000" name="price">
                <br>
                Quantity:
                <input type="number" name="qty" value="1" WIDTH="2"
STYLE="width:20px">
                <br>
                <input type="submit" name="addbtn" value="add">
              </FORM>
            </td>
           </tr>
      </table>
        <%
          if(request.getParameter("removeBtn")!=null)
          {
             int index=Integer.parseInt(request.getParameter("ino"));
```

```
            cart.remove(index);
            out.println("<h4 style=\"color:green\"> Item removed</h4>");
          }

          if(request.getParameter("addbtn")!=null)
            {
            int qty=Integer.parseInt(request.getParameter("qty"));
            if(qty<0 )
            {
               out.println("<h4 style=\"color:red\"> Please enter positive
quantity</h4>");
            }
            else
            {   String name=request.getParameter("name");
              boolean itemfound=false;
              for(int i=0;i<cart.size();i++)
              { Item it=cart.get(i);
                if(it.getName().equals(name))
                {
                   it.setQty(it.getQty()+qty);
                    out.println("<h4 style=\"color:blue\"> Item : "+ name+"added to
the cart  </h4>");
                    itemfound=true;
                    break;
                }
              }
                if(!itemfound)
              {
              double price=Double.parseDouble(request.getParameter("price"));
              Item itm=new Item(name,qty,price);
              cart.add(itm);
              out.println("<h4 style=\"color:orange\"> Item : "+ name+"added to
the cart  </h4>");
              }
            }
           }
         if(cart.size()>0)
```

```
        {
        %>
        <h2> Cart Details</h2>
          <table border="2">
              <tr>
                 <th>Item Name</th>
                 <th>Quantity</th>
                 <th>Unit Price</th>
                 <th>Total</th>
                 <th>Action</th>
                 </tr>
                 <%
                for(int i=0;i<cart.size();i++)
                 {Item it=cart.get(i);
                 %>
                 <tr>
                    <td><%=it.getName()%></td>
                    <td><%=it.getQty()%></td>
                    <td><%=it.getPrice()%></td>
                    <td><%=it.getQty()*it.getPrice()%></td>
                    <td>
                       <form method="POST">
                          <input type="hidden"  value="<%=i%>" name="ino">
                          <input type="submit" value="remove"
name="removeBtn">

                       </form>
                    </td>
                 </tr>

        <%}%>
        <%}%>
          </table>


   </body>
</html>
```

Output


Shopping
localhost:8080/Cart/Page.jsp
Online Shopping
Galaxy S24 Ultra
Oppo
Price:Rs.25000
Quantity: 1
add
S24
Price:Rs.120000
Quantity: 1
add
S25
Price:Rs.80000
Quantity: 1
add
iphone 16
Price:Rs.65000
Quantity: 1
add
Item : iphone 16added to the cart
Cart Details
Item Name Quantity Unit Price Total Action
oppo 1 25000.0 25000.0 remove
S24 1 120000.0 120000.0 remove
S25 1 80000.0 80000.0 remove
iphone 16 1 65000.0 65000.0 remove


Shopping
localhost:8080/Cart/Page.jsp
Online Shopping
Galaxy S24 Ultra
Oppo
Price:Rs.25000
Quantity: 1
add
S24
Price:Rs.120000
Quantity: 1
add
S25
Price:Rs.80000
Quantity: 1
add
iphone 16
Price:Rs.65000
Quantity: 1
add
Item removed
Cart Details
Item Name Quantity Unit Price Total Action
oppo 1 25000.0 25000.0 remove
S24 1 120000.0 120000.0 remove
S25 1 80000.0 80000.0 remove
ENG
IN
16:46
14-04-2025

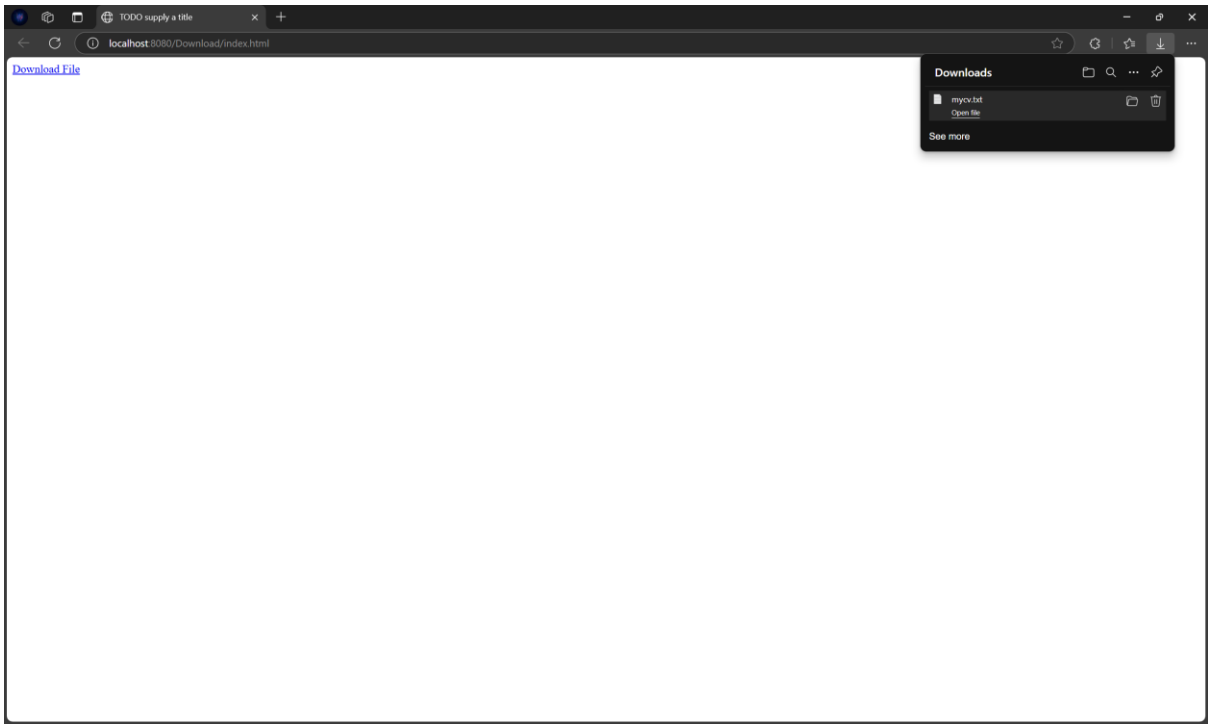
8. Write a java Servlet program to Download a file and display it on the screen(A link has to be provided in HTML, when the link is clicked corresponding file has to be displayed on screen).

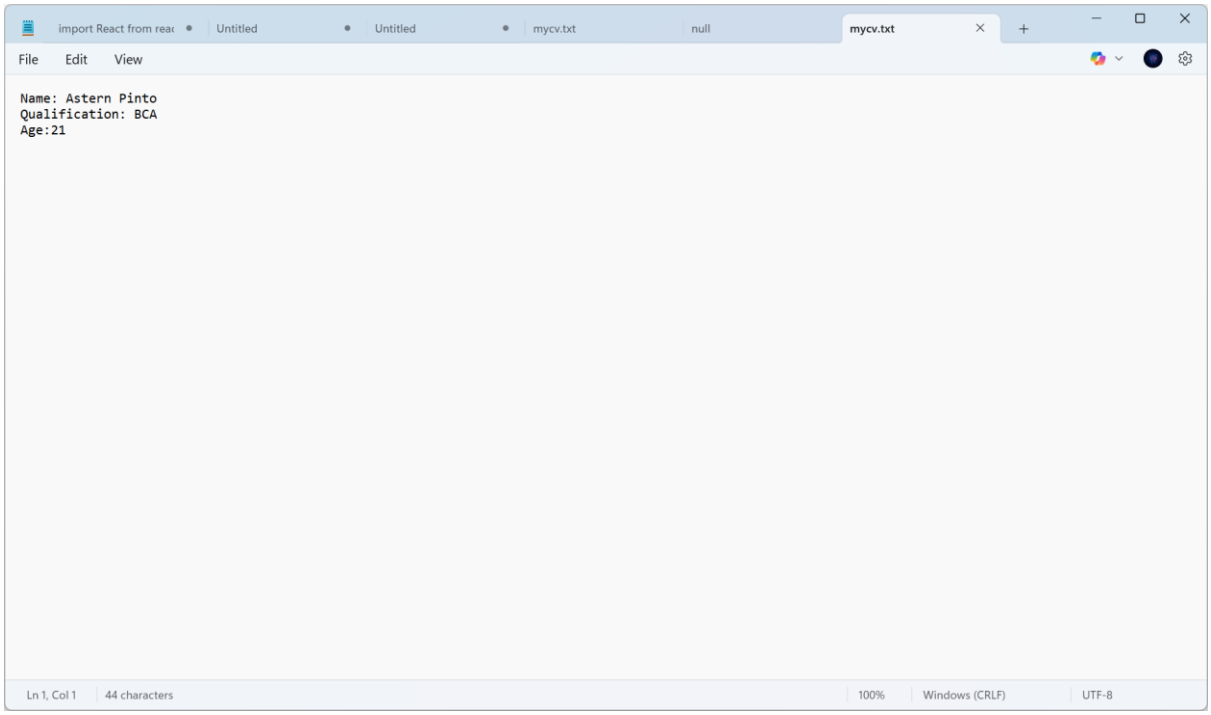
```
<!DOCTYPE html>

<html>
   <head>
      <title>TODO supply a title</title>
      <meta charset="UTF-8">
      <meta name="viewport" content="width=device-width, initial-scale=1.0">
   </head>
   <body>
      <div>
         <a href="FileDownload?filename=mycv.txt">Download File</a>
      </div>
   </body>
</html>
```

```
package com;


import java.io.FileInputStream;

import java.io.IOException;

import java.io.OutputStream;

import java.io.PrintWriter;

import javax.servlet.ServletException;

import javax.servlet.http.HttpServlet;

import javax.servlet.http.HttpServletRequest;

import javax.servlet.http.HttpServletResponse;
```

```
public class FileDownload extends HttpServlet {



   protected void processRequest(HttpServletRequest request,
HttpServletResponse response)
           throws ServletException, IOException {
       response.setContentType("text/plaintext");
       String fname=request.getParameter("filename");
       response.setHeader("Content-
Disposition","attachment;filename=\""+fname+"\"");
       OutputStream os = response.getOutputStream();
       FileInputStream fis = new FileInputStream("C:\\BCA\\mycv.txt");


       int i =0;
       while((i=fis.read())!=-1)
       {
          os.write(i);
       }


       os.close();
       fis.close();


   }
}
```

Output


TODO supply a title
localhost:8080/Download/index.html
Download File
Downloads
mycv.txt
Open file
See more


import React from reac
Untitled
Untitled
mycv.txt
null
mycv.txt
File
Edit
View
Name: Astern Pinto
Qualification: BCA
Age:21
Ln 1, Col 1
44 characters
100%
Windows (CRLF)
UTF-8