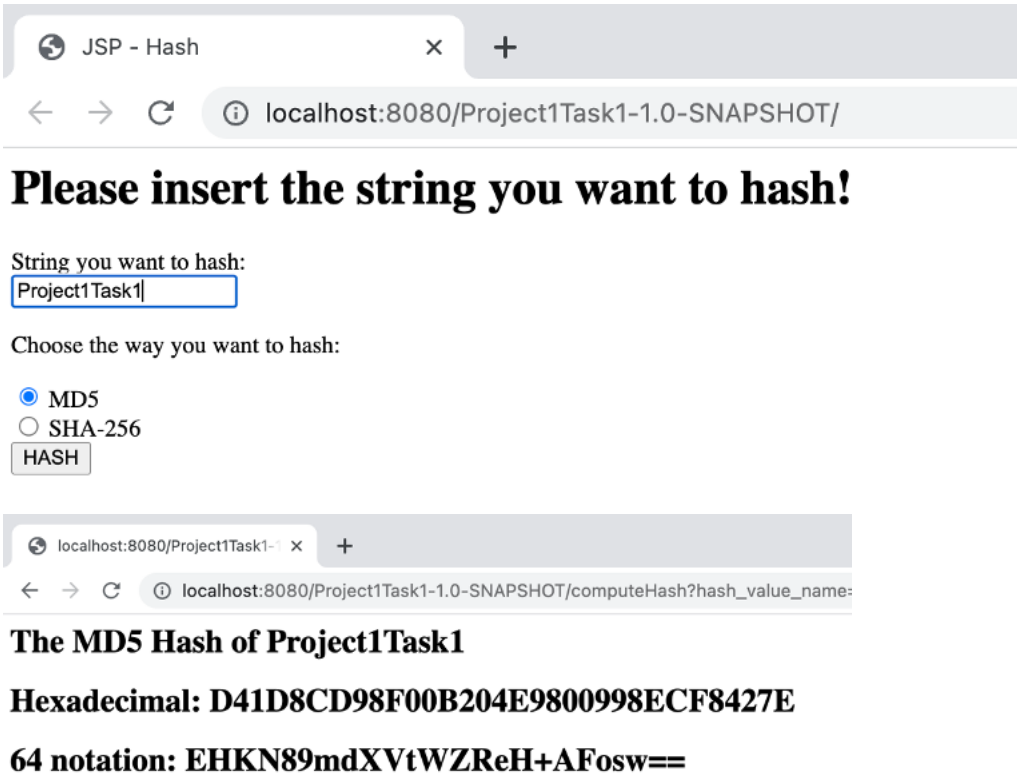
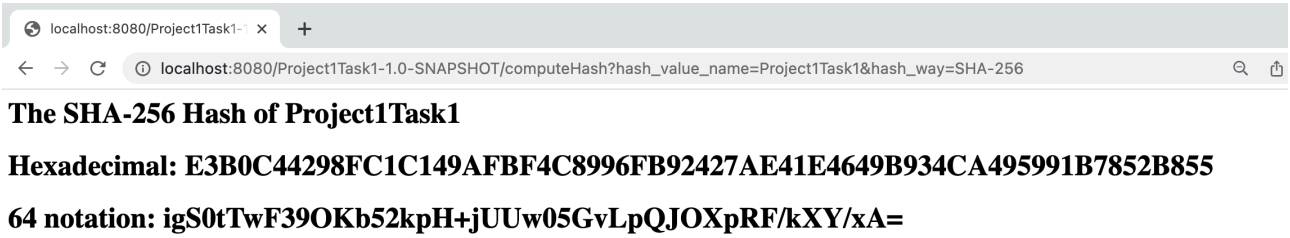
Task 1

Screen Shots





Code Snippet:

Hash way

String hash_way = request.getParameter("hash_way");

```
try {

    String hash_hexadecimal;

    String hash_64notation;

    MessageDigest md;

    if(hash_way.equals("SHA-256")){

        // Code for SHA-265

        md = MessageDigest.getInstance("SHA-256");
```

```
    }
    else{
       // Code for MD5
        md = MessageDigest.getInstance("MD5");
    }
```

Task 2

Screen Shots

State: Pennsylvania

Population: 13002700

Nickname: Keystone State

Capital: Harrisburg

Song: Pennsylvania

Flower:

Credit: https://statesymbolsusa.org/categories/flower

Flag:

Credit: https://states101.com/flags

Select another state.

Continue

State: New York

Population: 20201249

Nickname: Empire State

Capital: Albany

Song: I love New York

Flower:

Credit: https://statesymbolsusa.org/categories/flower

Flag:

Credit: https://states101.com/flags

Select another state.

Continue

Code Snippet

Get population api

```
public String getPopulation(String searchTag){

    String stateCode = fips_code.get(searchTag);

    String uri =

            "https://api.census.gov/data/2020/dec/pl?
get=NAME,P1_001N&for=state:"

                    + stateCode

                    + "&key=a5406f80f9aefd5891b625e07ca533e36106e6f5";

    String response = fetch(uri);

    String[] info = response.split(",");

    String population = info[4].replace("\"", "");

    return population;

}
```

Scrape nickname

```
public String getNickName(String searchTag){

    int cutLeft = nickNameResponse.indexOf(searchTag + "</a></td><td>") +
searchTag.length() + 13;

    int cutRight = nickNameResponse.indexOf("</td>", cutLeft);

    String nickname = nickNameResponse.substring(cutLeft, cutRight);

    return nickname;


}
```

Scrape Capital

```
public String getCapital(String searchTag){

    int cutLeft = capitalResponse.indexOf(searchTag + " (") +
searchTag.length() + 2;

    int cutRight = capitalResponse.indexOf(")", cutLeft);

    String capital = capitalResponse.substring(cutLeft, cutRight);

    return capital;
```

```
}
```

Scrape Songname

```
public String getSong(String searchTag){

    int cut1 = songResponse.indexOf(searchTag + "</dt><dd><a")
+searchTag.length() + 11;

    int cutLeft = songResponse.indexOf(">", cut1) + 1;

    int cutRight = songResponse.indexOf("<", cutLeft);

    String song = songResponse.substring(cutLeft, cutRight);

    return song;

}
```

Scrape Flower picture url

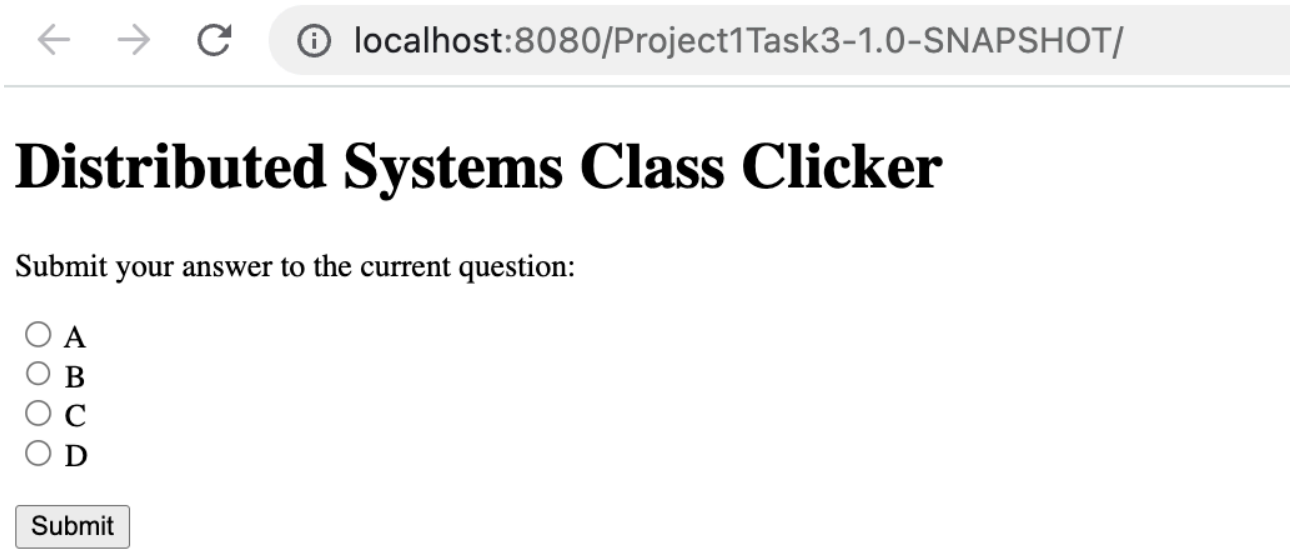
```
public String doFlowerSearch(String searchTag)

        throws UnsupportedEncodingException {

    /*

     * Getting the url from html page, the reason to use another string
variable

     * is if there is space in the string, we need to replace it with
hyphen to match the html

     */

    String hyphen = searchTag.replace(' ', '-');

    int cut1 = flowerResponse.indexOf(hyphen.toLowerCase() + "/state-
flower");

    int cutLeft = flowerResponse.indexOf("src=", cut1)+5;

    int cutRight = flowerResponse.indexOf("width=", cutLeft) -2;


    String flowerURL = flowerResponse.substring(cutLeft, cutRight);

    return flowerURL;

}
```

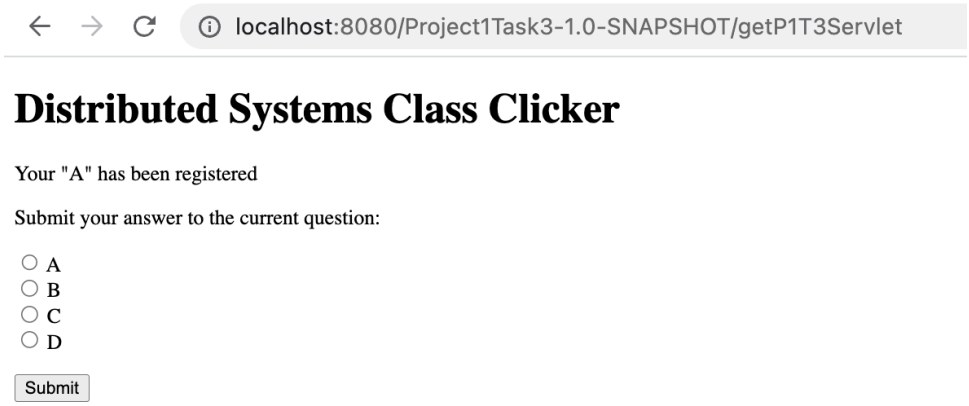
Scrape Flag picture url

```
public String doFlagSearch(String searchTag)

        throws UnsupportedEncodingException {

    /*

     * Getting the url from html page, the reason to use another string
variable

     * is if there is space in the string, we need to replace it with
hyphen to match the html

     */

    String hyphen = searchTag.replace(' ', '-');

    int cut1 = flagResponse.indexOf("flags/" + hyphen.toLowerCase());

    int cutLeft = flagResponse.indexOf("src=", cut1) + 5;

    int cutRight = flagResponse.indexOf("alt=", cutLeft) -2;

    // https://www.states101.com



    String flagURL = "https://www.states101.com" +
flagResponse.substring(cutLeft, cutRight);

    return flagURL;

}
```

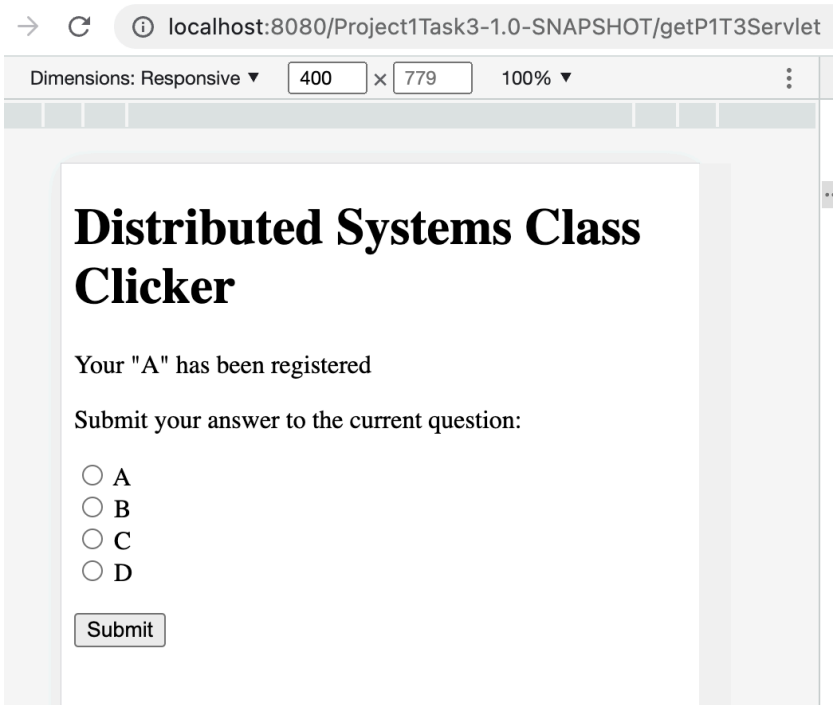
Task 3

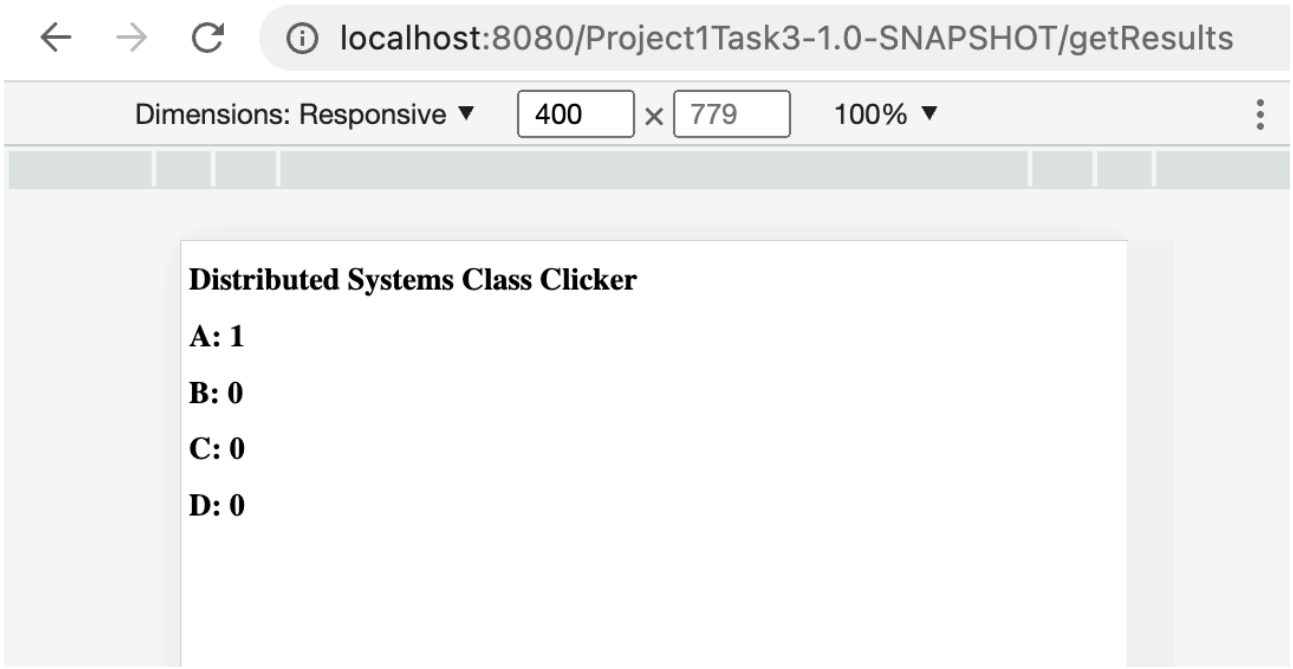
Screen Shots




localhost:8080/Project1Task3-1.0-SNAPSHOT/getP1T3Servlet
Distributed Systems Class Clicker
Your "A" has been registered
Submit your answer to the current question:
A
B
C
D
Submit


localhost:8080/Project1Task3-1.0-SNAPSHOT/getResults
Distributed Systems Class Clicker
A: 1
B: 0
C: 0
D: 0


localhost:8080/Project1Task3-1.0-SNAPSHOT/getP1T3Servlet
Dimensions: Responsive
400
779
100%
Distributed Systems Class Clicker
Your "A" has been registered
Submit your answer to the current question:
A
B
C
D
Submit



Code Snippet

```
String path = request.getServletPath();
if(path.equals("/getResults")){
    int numA = acm.answer.get("A");
    int numB = acm.answer.get("B");
    int numC = acm.answer.get("C");
    int numD = acm.answer.get("D");
    int sum = numA + numB + numC + numD;
    request.setAttribute("numA", numA);
    request.setAttribute("numB", numB);
    request.setAttribute("numC", numC);
    request.setAttribute("numD", numD);
    request.setAttribute("sum", sum);
    nextView = "check.jsp";
}
else{
```

```
    /*
     * Check if the search parameter is present.
     * If not, then give the user instructions and prompt for a search
string.
     * If there is a search parameter, then do the search and return the
result.
     */
    if (ans != null) {
        String picSize = (mobile) ? "mobile" : "desktop";
        /*
         * Attributes on the request object can be used to pass data to
         * the view.  These attributes are name/value pairs, where the
name
         * is a String object.  Here the pictureURL is passed to the view
         * after it is returned from the model interestingPictureSize
method.
         */
        acm.addNAnswer(ans);

        request.setAttribute("answer", ans);
        // Pass the user search string (pictureTag) also to the view.
        nextView = "result.jsp";
    } else {
        // no search parameter so choose the prompt view
        nextView = "prompt.jsp";
    }
}
```