CO3098/CO7098
Coursework 2

Servlets and JSPs

Important Dates:

Handed out: 2-Nov-2017
Deadline: 21-Nov-2017 at 23:59 GMT

The deadline is strict and will not be changed. Please ensure that you submit your work in time.

- This coursework counts as 10% of your final mark.
- Please read guidelines on plagiarism in the study guide and course documentation.
- This coursework requires knowledge about Servlet and JavaServer Page

Coursework Description

Your task is to implement an e-Petition system using HTML, Java servlets/JSP and MySQL.

Members of the public in Shangri-La now have a new way to influence what is debated in Parliament. The e-Petition is a web application that allows citizens of Shangri-La to create or sign a petition. Any citizen can create a petition about anything that the government is responsible for, and if at least 20% of the voting-eligible population[1] signed a petition, it is considered for debate in Parliament by the Members of Parliament (MPs).

Citizens are required to register with the system online before creating or signing a petition. The details they are likely to have to provide during the registration are email, full name, date of birth, full address, password and a National Identity Code (NIC). NIC is a unique 8-digit PIN that each citizen in Shangri-La is issued. MPs are citizens elected by the public to represent their interests and concerns in Parliament. MP can attend the online parliamentary debate on any petition that reached the required signature threshold. The details of all citizens and a list of all MPs are stored in the database (see **DB_ePetition.sql** attached).

A user must enter a valid NIC to complete the registration. e-Petition should display the corresponding error message if:

- The NIC entered by the user does not match the records.
- An existing user has already used the provided NIC.
- The email address entered by the user is associated with another NIC.

A user can sign-in with the email address and password after registering an account. A user (as a citizen) will be able to

- Create new petitions.
- Browse all petitions.
- View a petition (including title, content, the number of people who have signed it, any comments posted by MPs related to a petition)
- Sign any open petition (a user can only sign a petition once. After 7 days, if the petition has not reached the minimum number of valid signatures, it will be closed)

In addition to the rights enjoyed by ordinary citizens, an MP has the privilege to comment on any open

[1] This refers to the total number of NIC records.

petitions that have reached the signature threshold.

Tasks

You need to implement the following pages/servlets:

(1)	Registration (including form validation, NIC verification)	[25 marks]
(2)	Login (use authentication)	[15 marks]
(3)	View, create, edit and sign petitions	[40 marks]
(4)	Comment on petitions (for MPs only)	[15 marks]
(5)	Error page (or error message box)	[5 marks]

Note that you should

- Use appropriate techniques to prevent common SQL injection vulnerabilities
- Use HttpSession to avoid unauthorised access to the internal pages
- Use appropriate hashing function to protect passwords (Hints: SHA-256, see Appendix 1.2 for more information)
- Use cookies to remember the last login username

DB_ePetition.sql contains three tables (PETITIONS, NIC_RECORDS and COMMENTS). You will have to create other necessary tables (e.g. for storing users, recording signatures for each petitions etc.).

Good coding practice will be taken into account when allocating marks. Extra bonus points will be awarded for (1) use of AJAX on some pages. (2) Create a report page for MPs to display summary statistics (e.g. in pie charts/bar charts) related to the petitions [maximum 10 marks]

Submission

- Zip all files in a single zip file for submission:
    - Your Dynamic Web project folder
    - WAR file (Your_email_ID.war)
    - Your SQL schema and data (Your_email_ID.sql)

- The archive should be named **CO3098_CW2_email_id.zip** or **CO7098_CW2_email_id.zip** (e.g. CO3098_CW2_yh37.zip).

Note: You are allowed to change the DB schema but please make sure that you have imported all tables to the departmental MySQL server (mysql.mcscw3.le.ac.uk) and tested the connection string before submission.

Your submission should also include a completed coursework plagiarism coversheet (print and signed PDF or image). You need to submit the zip file via Blackboard and you are allowed to re-submit as many times as you like **before** the deadline. Marks for any coursework which does not have the accompanying cover sheet will be withheld till you provide one.

Appendix

1.1 Below is a list of valid NIC (assume there are only ten citizens in Shangri-La). A user will need to enter one of the following codes to complete the registration.

```
MM2874Z6
FEQQ6UUG
34GC829B
CB8FBCCM
8RL4ENTK
57UBS5J6
4F7YKH9G
R9KZ2NXL
YBQUVXHL
CCZTQ8KW
```

1.2 How to generate SHA256 Password hash in Java
See HashGenerator.java

```
public static String getSHA256(String data) {
        String result = null;
        try {
            MessageDigest digest = MessageDigest.getInstance("SHA-256");
            byte[] hash = digest.digest(data.getBytes("UTF-8"));
            return DatatypeConverter.printHexBinary(hash);
        }catch(Exception ex) {
            ex.printStackTrace();
        }
        return result;
    }
```