Competitor NRIC No   : _____

Work Station No   : _____

WORLD SKILLS SINGAPORE 2020

IT SOFTWARE SOLUTIONS FOR BUSINESS

DAY 2, SESSION 2

3 HOURS

FRIDAY 2 OCTOBER 2020

INSTRUCTIONS

1   You are required to answer <u>ALL</u> the questions.
2   Do not open this question paper until you are told to do so.
3   Write your NRIC Number and Work Station Number clearly at the top right-hand corner on the front page of this question paper.
4   Return this question paper at the end of the test.
5   Please read all instructions before you begin.

1. COMPETITION JUDGING PLATFORM (CJP)

The ASEAN Skills Competition 2020 (ASC 2020) brings together close to 300 top youth talents from the 10 ASEAN member countries to compete in 22 skills areas.

The organising committee is planning to deploy the Competition Judging Platform (CJP) to achieve the following:
- Digitise the whole competition scoring process
- Make the competition more engaging by having a Live Competition Scoreboard that would be displayed on a giant screen to showcase the leaderboard by skill and country

The CJP needs to cater for the following 4 types of users:

1. **Admin.** The admin user is responsible to setup and configure a competition. Setup includes configuring the required skill areas, scoring criterias, inviting competitors and judges the platform.

2. **Competitor.** A competitor participates in a particular skill area and does an online submission of his/her entry.

3. **Judge.** A judge is assigned entries for a specific skill area to score. The judge gets his/her own dashboard to do an online scoring.

4. **Public.** Members of the public are allowed to see the Live Competition Scoreboard.

While the organising committee is looking at building the CJP to be used for ASC 2020, the solution's design needs to be generic enough to be used for other editions of the competition or even other types of competitions also.

2. BUILDING CJP

You are required to build CJP as an online web application. The following types of users needs to be authenticated in order to get access the application:
1. Admin
2. Competitor
3. Judge

In addition, the **Live Competition Scoreboard** is a page that unauthenticated users (i.e. Public) can access.

The major functionalities will be described in the next 4 sections (2.1 to 2.4). You are required to report the various aspects of the system in **Section 2.5**.

2.1. Admin Portal

Build an online admin portal that allows admin users to login to setup and configure the competition.

To help you get started, you are provided with a set of CSV files that you need use as data input:
- Area.csv
- Area-Competition.csv
- Area-Criteria.csv
- Area-Judge.csv
- Area-Competitor.csv

The above files do not necessarily contain all the information that you may require to build the application. So, do make relevant assumptions and enhance them, if required. You are required to

use a relational database to load the above data as configuration data for CJP. Check the appendix for further information on the CSV data files.

Build an admin portal with the following features:
a.   Login page for admin
b.   Judges Management screen, with the possibility to Add, Edit & Delete a record.
c.   Competitor Management screen, with the possibility to Add, Edit & Delete a record.

Deliverables:
1. Design a database schema that makes CJP generic enough to be used for any competition. Submit your design in a powerpoint file with the following filename format: ***ASC2020_Competition_<candidate_no>.pptx***
List down the assumptions that you may have taken when coming up with the design in the document. Please note that you may need to revise your database design as you complete the next sections (based on further requirements).
2. See section 2.5 for additional deliverables.

2.2. Competitor Submission

Each skill area may consist of multiple rounds of judging, as defined in the "***Area-Competition.csv***" file. During each round, a competitor can submit an "attempt" for the judges to evaluate. The attempt is simulated as a text of no more than 1024 characters.

Functionalities:
1. Login page for competitor
   * Credential [ID, Password]. For simplicity, you can use the competitor ID as the default password.
2. Attempt submission page
   * Selection list for specific competition round.
   * Competitor can fill in the attempt (i.e. a text field) and submit for judging. You can assume a **single attempt is allowed per competition round.**

Deliverables:
* See section 2.5 for the deliverables.
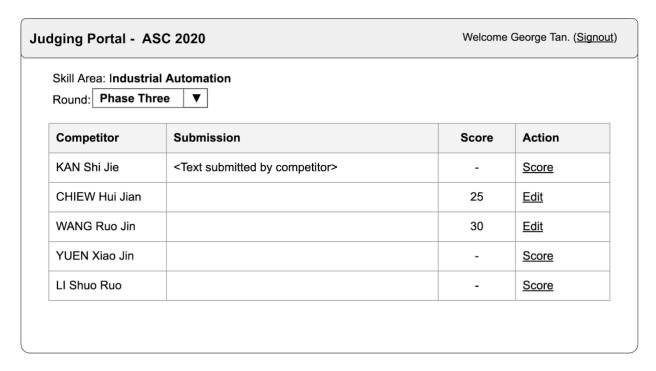
2.3. Judging Portal

Judges are given access to a portal where they can view the competitors' submissions by skills area and score them according to the area criteria for each round.

Functionalities:
You are required to build a Judging Portal with the following functionalities:
* Ability for Judge to login
* Dashboard to view submissions applicable to him/her only
* Ability to score competitor's submission based on the criterias set for the skill area

As a reference, the Judging Portal Dashboard should at the minimum contain the functionalities as shown in the wireframe below:

You will be required to demonstrate the judging portal functionalities as described above.

2.4. Live Competition Scoreboard

The general public is able to view a live scoreboard page for each skill area. The live scores would typically be shown on a screen at each skill area. The live scoreboard page is effectively a web application that refreshes itself on a near real-time basis.

You are required to build a page on the following URL format:
`http://<domain>/livescore/<competiton id>/<area id>`

E.g. "http://localhost/livescore/ASC2020/C5584" will render the live scoreboard for "Rapid Transit Systems" area.

The following is a wireframe that shows the minimal functionalities of the live scoreboard page:

Live Score
ASC 2020

Rapid Transit Systems

Rank	Competitor	Judging Rounds Completed	Overall Score
1	KAN Shi Jie	2/3	42
2	CHIEW Hui Jian	2/3	38
2	WANG Ruo Jin	2/3	38
4	YUEN Xiao Jin	1/3	15
5	LI Shuo Ruo	1/3	12

Based on the sample data provided, simulate the login for the judges assigned for skills area "Automobile Technology" so as to be able to score the candidates. You may choose to give the scores you like, but simulate 2 candidates having a tied score. You will be required to demonstrate the live scoreboard, as well as the automatic updating of the scoreboard based on updated marks from Judges.

2.5 Sample Usage Scenario for Evaluation

To evaluate your implementation of the **Competition Scoring System**, the following usage scenario is provided. The scenario encompasses all areas of the system and you are expected to use the web app to carry out the steps.

You are asked to provide **screenshots of your system** and **a final CSV report** for evaluation purpose. Compile the screenshots into a single document ***ASC2020_Competition_Final_ <candidate_no>.docx (or .pdf***).

Step 1. Administrator add new judge and competitor

Using the **administrator** portal, perform the following two additions.

New Judge

Add the following new judge to the competition area "**Internet-of-Things**":
Name: James Bourne
Id: J7007
Password: JBJ1234

```
Deliverables:

a.      Screenshot of the Judge Addition page with the information keyed in.
b.      Screenshot of the Judge list after addition.
```

New Competitor

Add the following new competition to the competition area "**Internet-of-Things**":
Name: Chin Neo Bee
Id: P99999

```
Deliverables:

    c.  Screenshot of the Competitor Addition page with the information keyed in.
d.      Screenshot of the Competitor list after addition.
```

Step 2. Competitor submit attempt

Using the **competitor** portal as the **new competitor** "Chin Neo Bee" from Step 1, perform the following:

Submit an attempt for the competition round "Stage Three" for the area "**Internet-of-Things**". The attempt (a text file) reads "This is just a test. Thanks!".

```
Deliverable:

a.      Screenshot of the Attempt Page with the attempt filled in (before submission).
```

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Step 3. Judge evaluate attempt

Using the **judge** portal as the **new judge** "James Bourne" from Step 1, perform the following:

Evaluate the attempt submitted by the competitor "Chin Neo Bee". Give the following scores to the criteria:
- **Validation**   = 3 marks
- **Conceptualization**   = 8 marks
- **Proposal**   = 7 marks
- **Coordination**   = 18 marks

Deliverable:

a.   Screenshot of Judging Portal Dashboard for judge, "James Bourne"
b.   Screenshot of the Judge Scoring page for the competitor, "Chin Neo Bee".

Step 4. Live scoreboard

Access the live scoreboard for the area "**Internet-of-Things**".

Deliverable:

a.   Screenshot of the live scoreboard page.
Ensure page **url** is visible, the competitor "Chin Neo Bee" score is visible.

Step 5. Generate Consolidated Score CSV

Using the relevant web pages **or direct database insertion**, add the following information:

Competition Area and Competition Round:
IT Software Solutions for Business, Phase Three

Competitor:
YUEN Xiao Kai

Score
Presentation   7
Efficiency   3
Abstract   9
Proposal   2
Verification   9

Competition Area and Competition Round:
IT Software Solutions for Business, Phase Two

Competitor:
YUEN Xiao Kai

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Score
Presentation   8
Efficiency   4
Abstract   6
Proposal   6
Verification   6

Competition Area and Competition Round:
Rapid Transit Systems, Round Three

Competitor:
WANG Ling Yue

Score
Judgement   8
Effectiveness 3
Speed 13

Generate a CSV ***ASC2020_Competition_Score_Report_ <candidate_no>.csv*** that consolidate the judging results in your system (i.e. the 3 competitors above **and "Chin Neo Bee"** from previous steps). See **"Sample Report.csv"** for the expected fields and format. Essentially, each competitor will have one row per judge evaluation. For example, if competitor X participated in Y rounds of competition and Z number judges evaluated X's attempt, then there are total of Y * Z rows for X in the CSV.

Deliverables Summary:

a. ***ASC2020_Competition_Final_ <candidate_no>.docx (or .pdf***). Contains the required screenshots.
b. ***ASC2020_Competition_Score_Report_ <candidate_no>.csv.*** Contains the consolidated score result of the competitors.

-END OF PAPER-

APPENDIX 1 – DATA FILES

Note: There are 6 files provided to you in comma-delimited CSV format. These files contain sample data that you will use to populate your database. The files provided MAY NOT contain all the information that you need to build the CJP, and your database may need additional tables and columns. However, the data provided IS SUFFICIENT for you to derive this additional information solve the tasks given to you.

It is your responsibility to decide what further information you require, and to design your database schema and data dictionaries accordingly.

File 1: `Area.csv` – Competition Area Information

Column Name	Data Type	Description
ID	String	The area ID, a unique string identifier for the competition area.
Area	String	Name of the competition area.

File 2: `Area-Competition.csv` – Competition round information for a skill area

Column Name	Data Type	Description
Area ID	String	The area ID, a unique string identifier for the competition area.
Area	String	Name of the competition area.
Round	String	Name of the competition round of an area.

File 3: `Area-Competitor.csv` – Competitor (participant) for each area

Column Name	Data Type	Description
Participation ID	String	The participant's ID, a unique string identifier.
Area	String	Name of the competition area.
Participant Name	String	The participant's name.

File 4: `Area-Criteria.csv` – Evaluation criteria for each competition area.

Column Name	Data Type	Description
Area	String	Name of the competition area.
Criteria	String	Name of the evaluation criteria.
Maximum Mark	Integer	Maximum mark for the particular criteria.

File 5: `Area-Judge.csv` – Transport Company Information

Column Name	Data Type	Description
Judge ID	String	The Judge's ID, a unique string identifier for a competition judge. Also used for login.
Area	String	Name of the competition area.
Name	String	The judge's name.
Passowrd	String	The default password for the judge login.

File 6: `Sample Report.csv` – An example consolidated score report

Column Name	Data Type	Description
Area	String	Name of the competition area.
Round	String	Name of the competition round of an area.
Participant Name	String	The participant's name.
Criteria1	String	Name of the evaluation criteria (1)
Mark	Integer	Participant's score for the evaluation criteria
Criteria2	String	Name of the evaluation criteria (2)
Mark	Integer	Participant's score for the evaluation criteria
Criteria3	String	Name of the evaluation criteria (3)
Mark	Integer	Participant's score for the evaluation criteria
Criteria4	String	Name of the evaluation criteria (4), can be "NA" if not applicable
Mark	Integer	Participant's score for the evaluation criteria
Criteria5	String	Name of the evaluation criteria (5), can be "NA" if not applicable
Mark	Integer	Participant's score for the evaluation criteria