VIETNAM NATIONAL UNIVERSITY, HO CHI MINH CITY
HO CHI MINH CITY UNIVERSITY OF TECHNOLOGY
FACULTY OF COMPUTER SCIENCE AND ENGINEERING

WEB PROGRAMMING

Assignment

English Testing Website

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Contents

1 Introduction **4**
1.1 Project description . . . 4
1.2 Report organization . . . 4

2 Requirements **5**
2.1 Functional requirements . . . 5
2.2 Non-functional requirements . . . 5

3 Design **6**
3.1 Database design . . . 6
3.1.1 ER Model . . . 6
3.1.2 Relational Model . . . 6
3.2 Website design . . . 7
3.2.1 Use-case diagram . . . 7
3.2.2 Class diagram . . . 8
3.2.3 Sequence diagram . . . 9
3.2.4 Activity diagram . . . 10

4 Result **11**
4.1 Sign-up and Login . . . 11
4.1.1 Sign-up . . . 11
4.1.2 Login . . . 12
4.1.3 Logout . . . 13
4.2 Take exams . . . 14
4.2.1 Select Category . . . 14
4.2.2 Exam page . . . 15
4.2.3 Unfinished Submit . . . 16
4.2.4 Exam Result . . . 17
4.3 View submissions . . . 18
4.4 Manage exams . . . 18
4.4.1 Add questions . . . 18
4.4.2 Delete questions . . . 19
4.4.3 Modify question . . . 20
4.5 Manage accounts . . . 21
4.5.1 Add staff members . . . 21
4.5.2 Delete staff members . . . 21

5 Verification **28**
5.1 Sign Up . . . 28
5.2 Log In . . . 28
5.3 Log Out . . . 29
5.4 Add question . . . 29
5.5 Delete question . . . 29
5.6 Modify question . . . 29
5.7 Add staff . . . 30
5.8 Delete staff . . . 30
5.9 View category . . . 30
5.10 Take exam . . . 31

5.11 View ranking 31
5.12 View history 31

6 Conclusion **32**
6.1 Summary 32
6.2 Future works 32

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1 Introduction

1.1 Project description

The main purpose of this project is to program a English testing online which provides various exams with multiple categories and difficulties.
This project helps us to understand more clearly about applying the MVC model in Web Programming.

1.2 Report organization

In our report consists of three main parts: "Requirement", "Design", and "Result".

1. Requirement: describe functional and non-functions of the website.
2. Design: describe the design of the website via UML diagrams.
3. Result: show the working cases of our website.
4. Conclusion: summarizing and future works.

2 Requirements

2.1 Functional requirements

- Sign-up and Login
  - New users can create a new account for the website with username and password. The notification is displayed to demonstrate the success or failure.
  - Registered users can login into their accounts. The notification is displayed to demonstrate a failure in case of invalid username or password.
  - Staff members and an admin can login to manage the website.
- Take exams
  - Users can select a category and a level to take an English exam.
  - If users log in, a result is stored to display in their exam history and processed in the website ranking. Otherwise, the results are displayed but not stored in the history.
- View a personal exam history
  - Users can view their exam history which indicates all information of a submission: category, level, score and date.
  - Exam history is displayed in forms of tables and charts, which is easy for users to summarize.
- View a website ranking
  - The ranking of all stored submission is displayed in the home page to show the great performance.
- Manage exams
  - Staff members are granted to manage all exams. They can manipulate exams: add questions, delete questions, and modify questions.
- Manage staff members
  - An admin has a permission to manage the staff members: add members and delete members.

2.2 Non-functional requirements

- The color of the website should be appropriate and beautiful.
- The website should be able to work well on many different types of browser like Chrome, Opera, Microsoft Edge, Firefox,...
- The response time of the website should be fast.
- The interface of the website should be attractive to users.
- The amount of time that the website loads the information from the database should be insignificant.

3 Design

3.1 Database design

3.1.1 ER Model

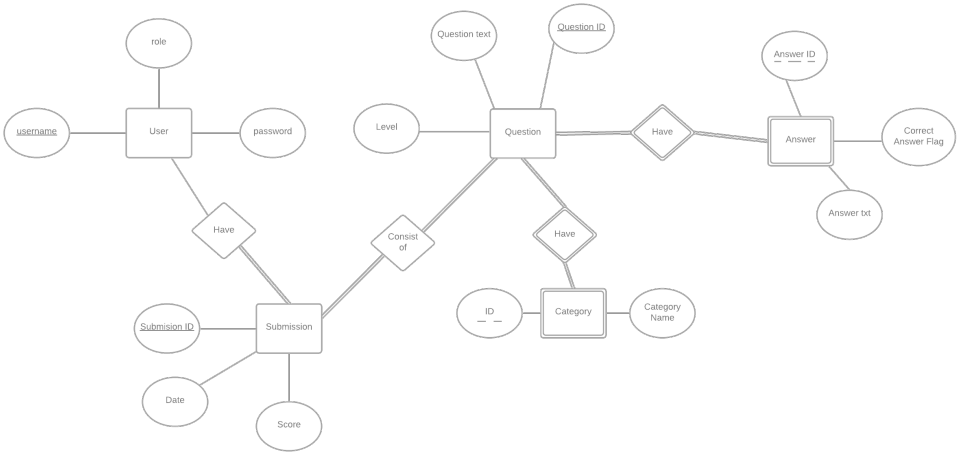

Figure 1: ER diagram

3.1.2 Relational Model

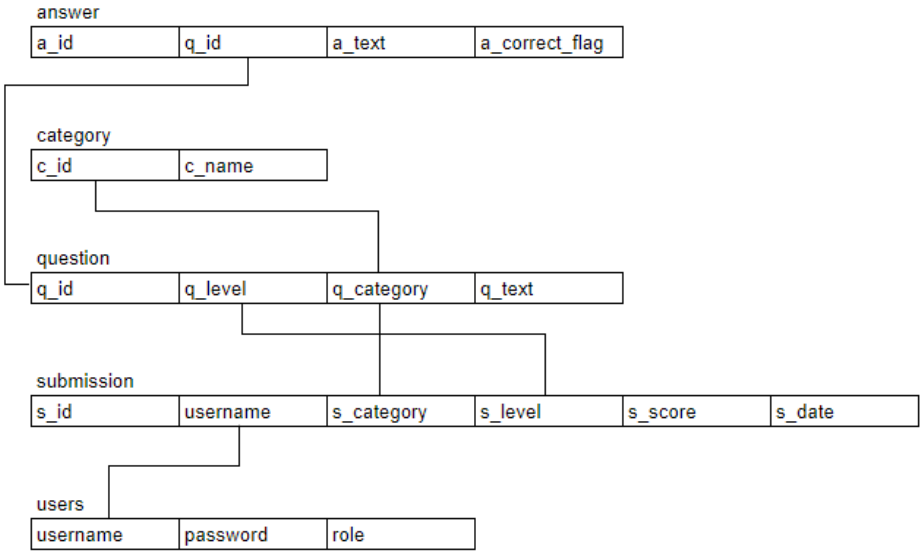

Figure 2: Relational diagram

3.2 Website design

3.2.1 Use-case diagram

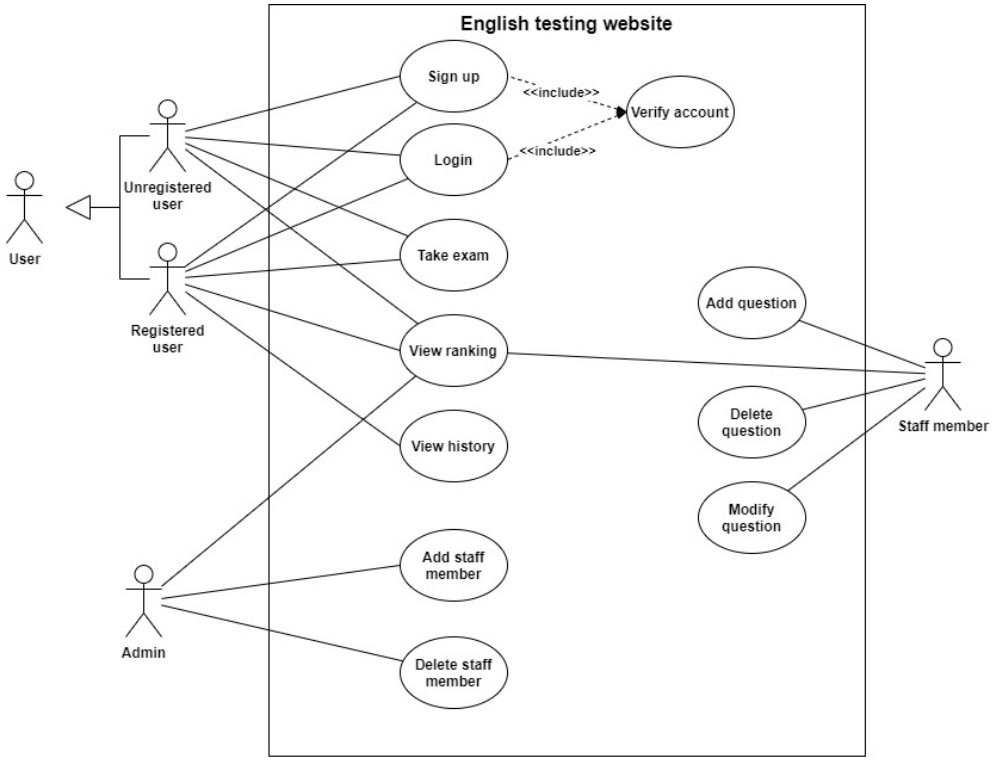

Figure 3: Use-case diagram

3.2.2 Class diagram

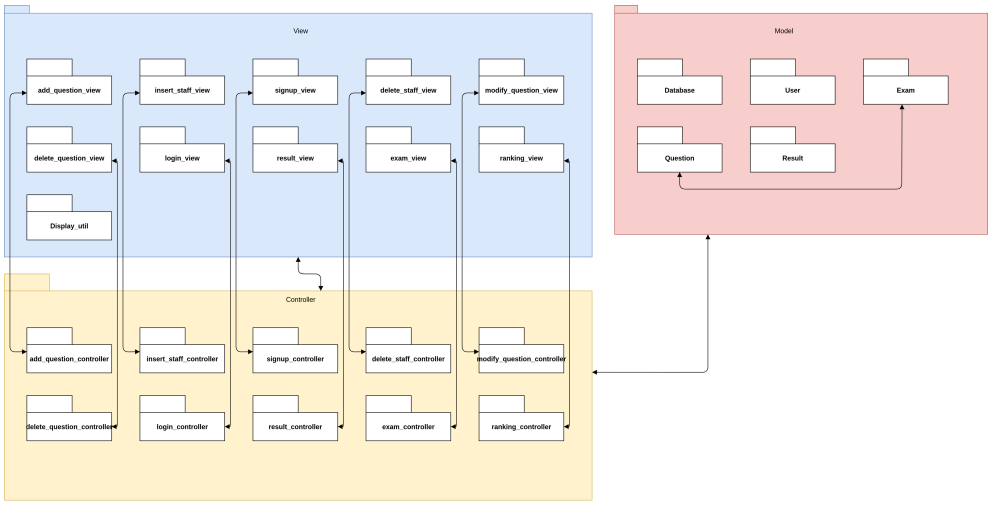

Figure 4: Class diagram

3.2.3 Sequence diagram

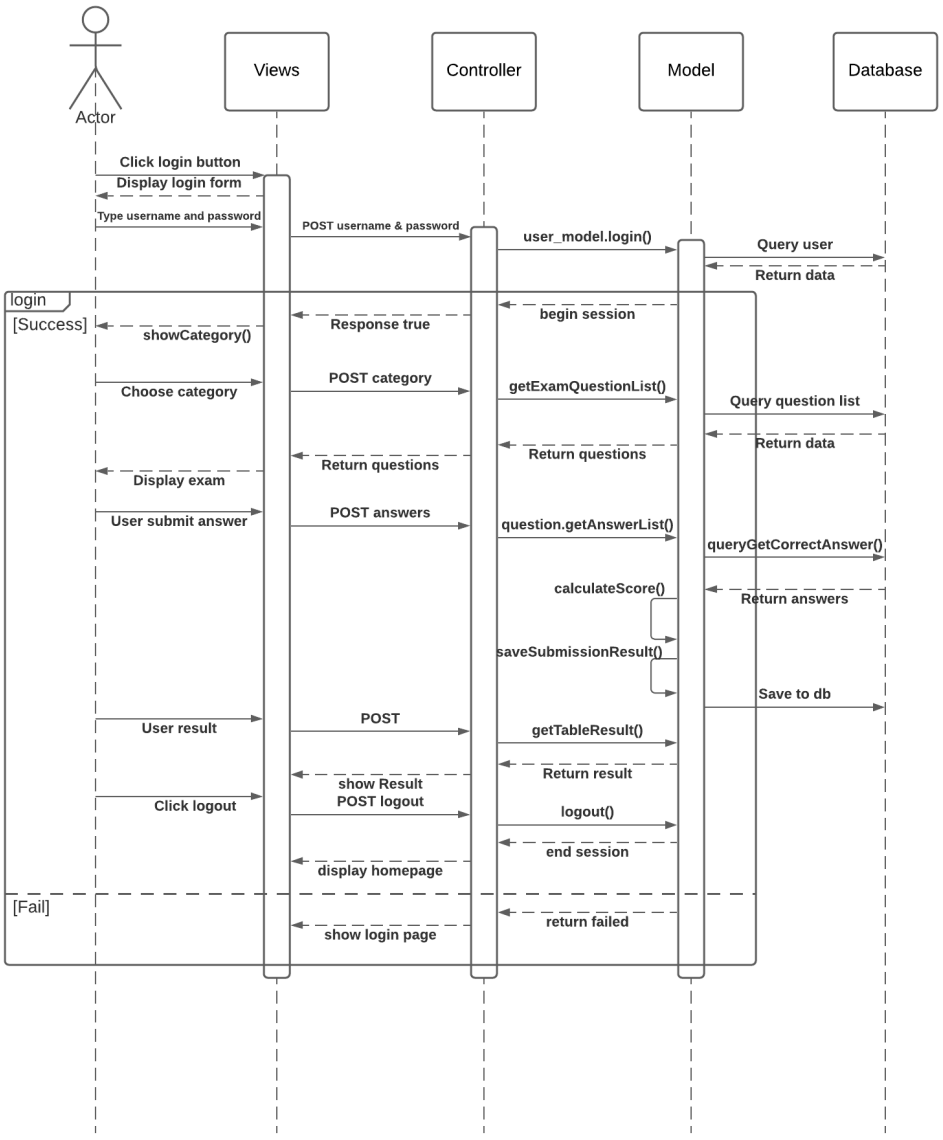

Figure 5: Sequence diagram

3.2.4 Activity diagram

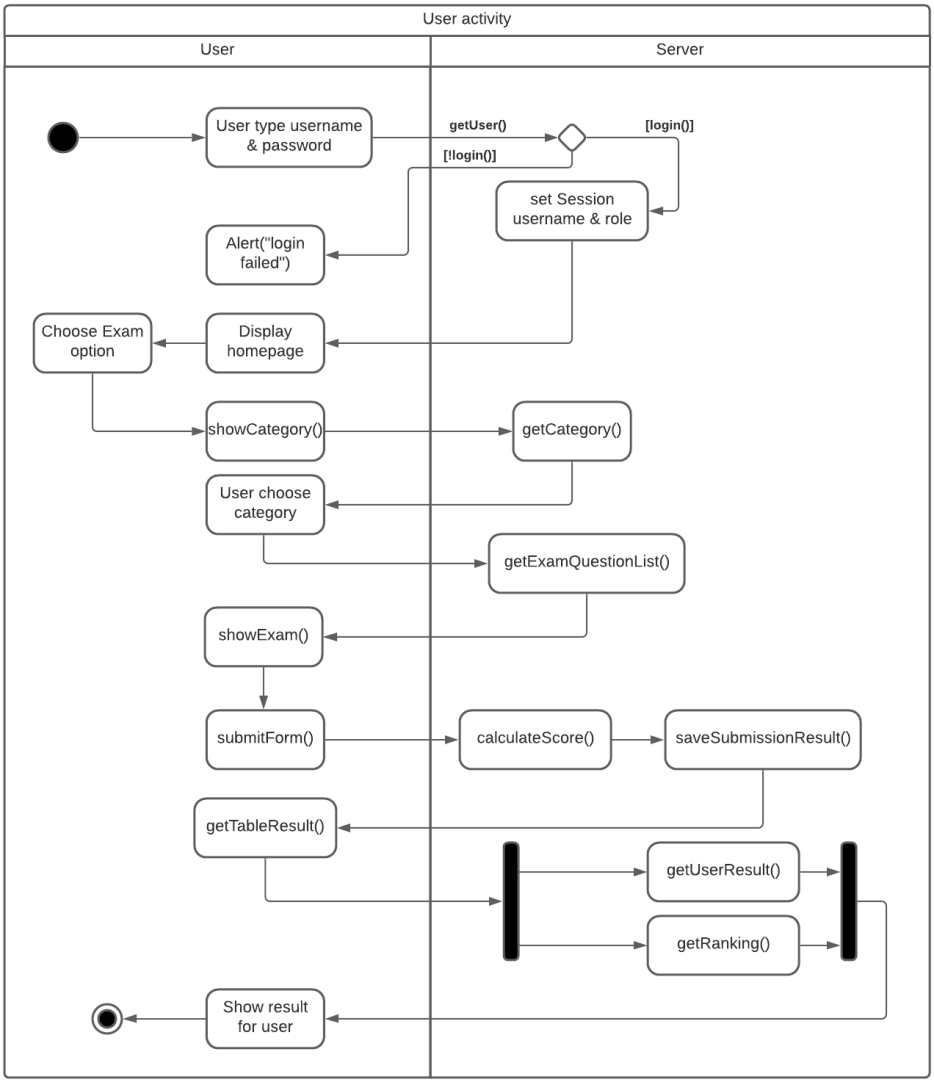

Figure 6: Activity diagram

4 Result

4.1 Sign-up and Login

4.1.1 Sign-up

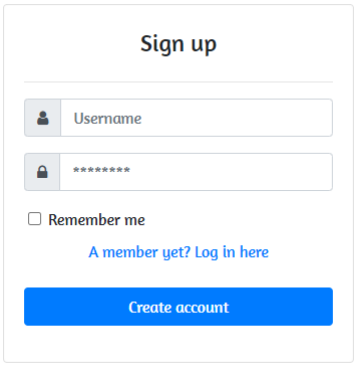

Figure 7: Sign-up page

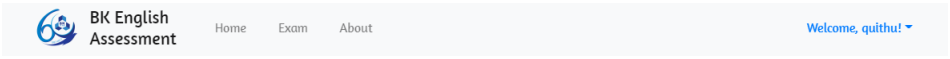

Figure 8: Sign-up success and log in automatically

When sign up with blank username or password:

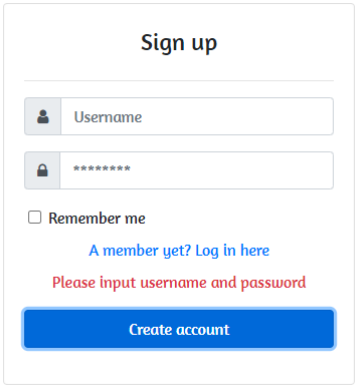

Figure 9: Sign-up with blank username or password

When sign up with an registered username:

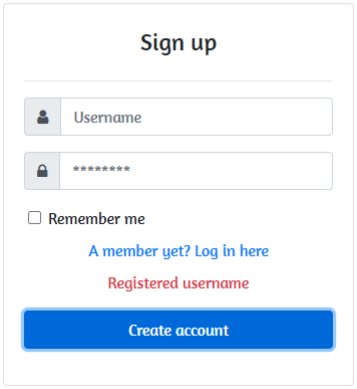

Figure 10: Sign-up with an registered username

4.1.2 Login

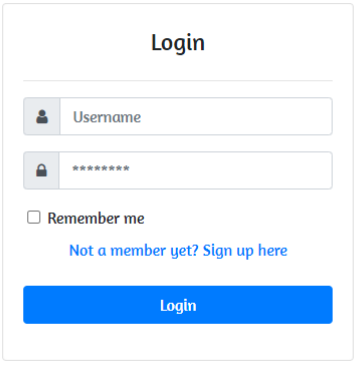

Figure 11: Login page

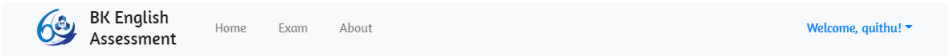

Figure 12: Login success

When login with blank username or password:

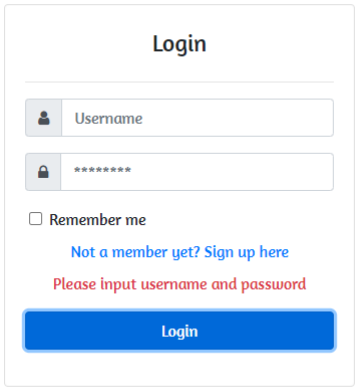

Figure 13: Login with blank username or password

When login with wrong username or password:

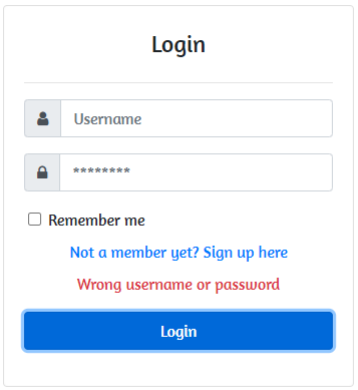

Figure 14: Login with wrong username or password

4.1.3 Logout

When logout, user go directly to homepage

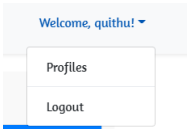

Figure 15: Logout

4.2 Take exams

4.2.1 Select Category

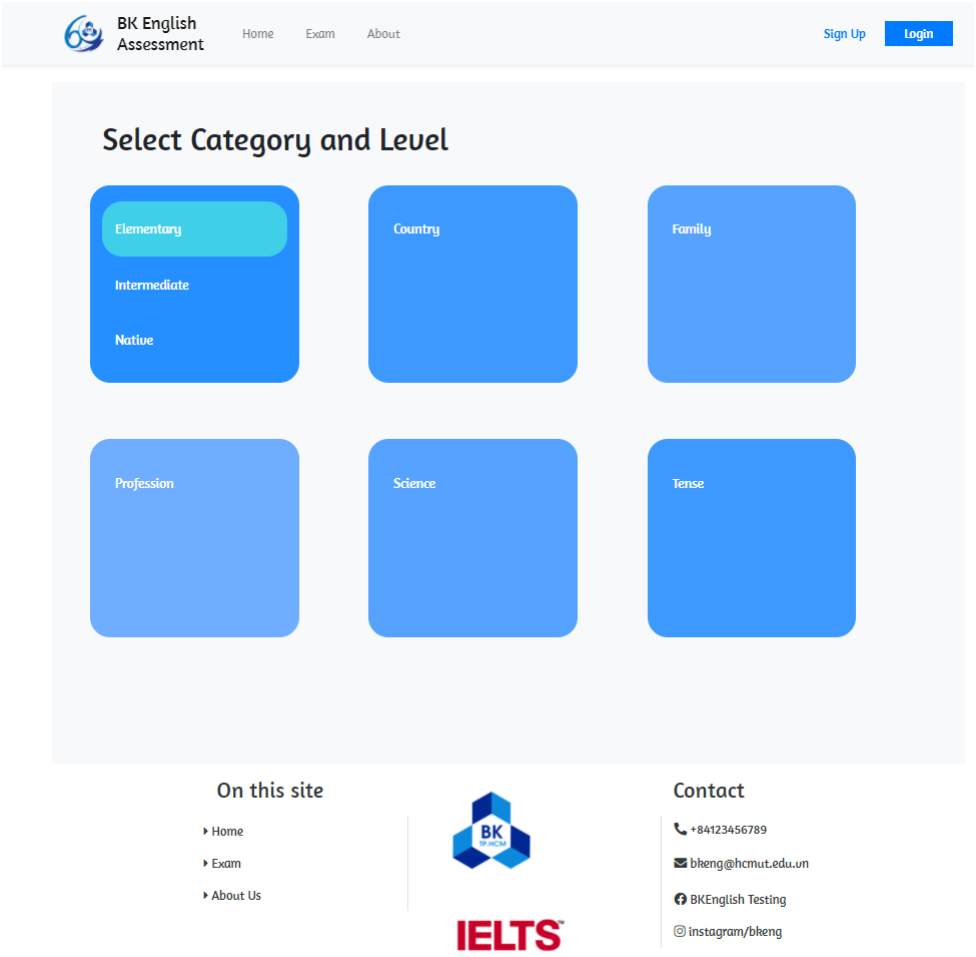

Figure 16: Category Selection

4.2.2 Exam page

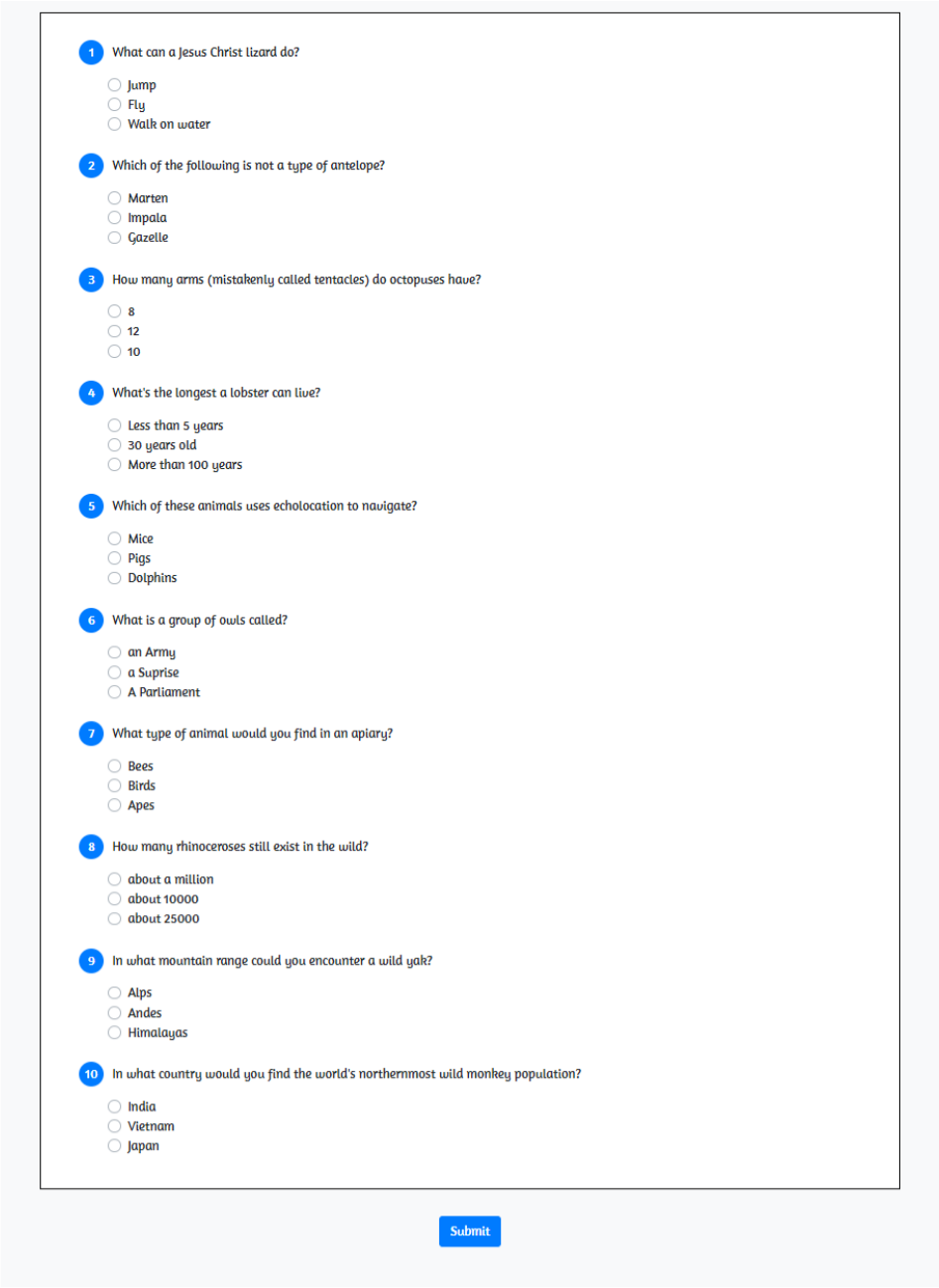

Figure 17: Clear Exam Page

4.2.3 Unfinished Submit

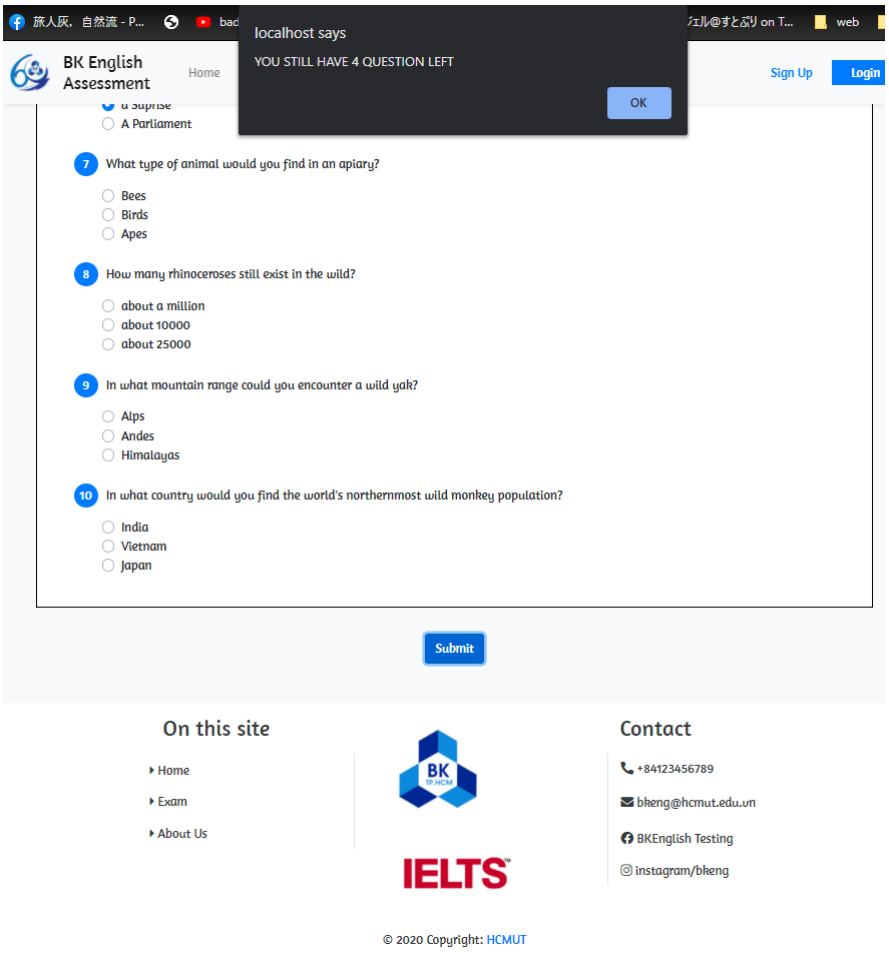

Figure 18: Submit Half Way

4.2.4 Exam Result

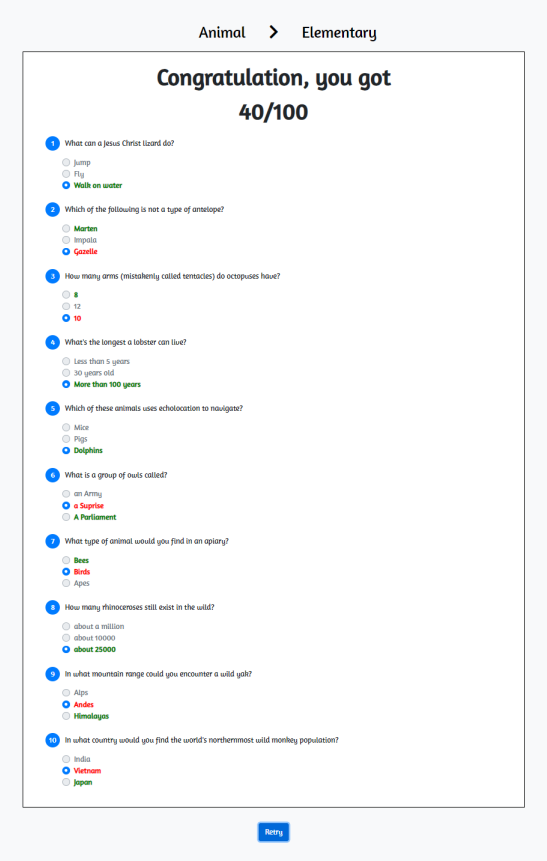

Figure 19: Submission Result

4.3 View submissions

There are 2 options to go to profiles (view submissions)

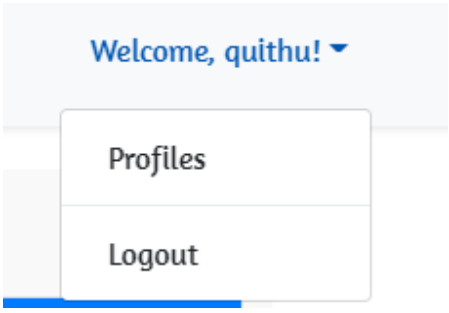

Figure 20: Profiles at header

Figure 21: Profiles at footer

If user already did a exam a pie chart appear at profiles page, otherwise, nothing will be showed

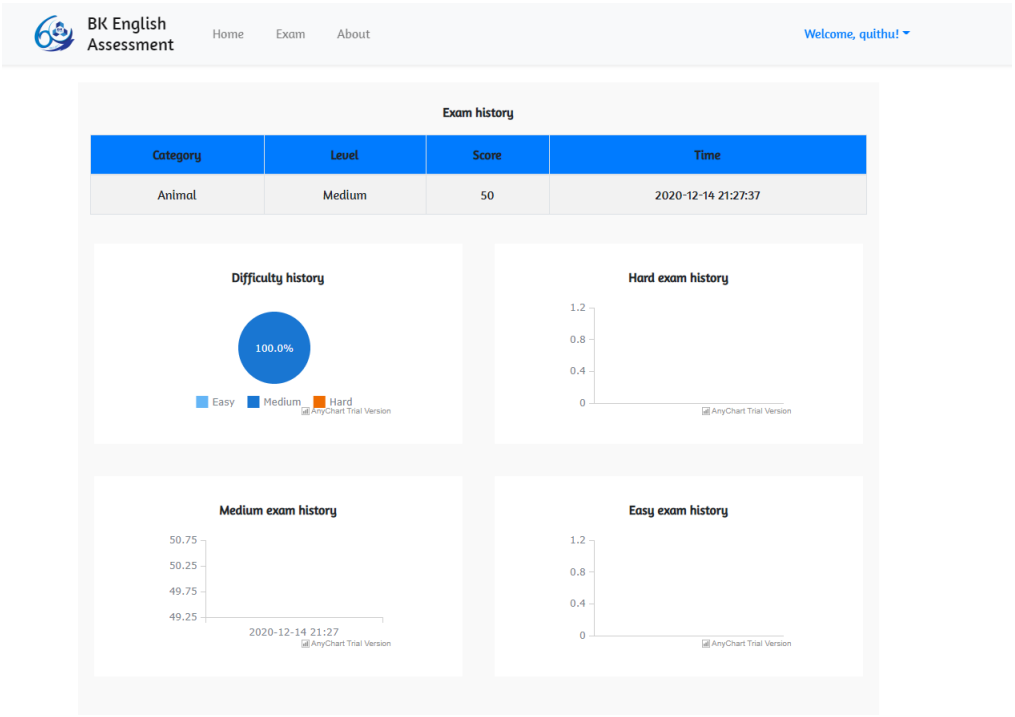

Figure 22: Profiles

4.4 Manage exams

4.4.1 Add questions

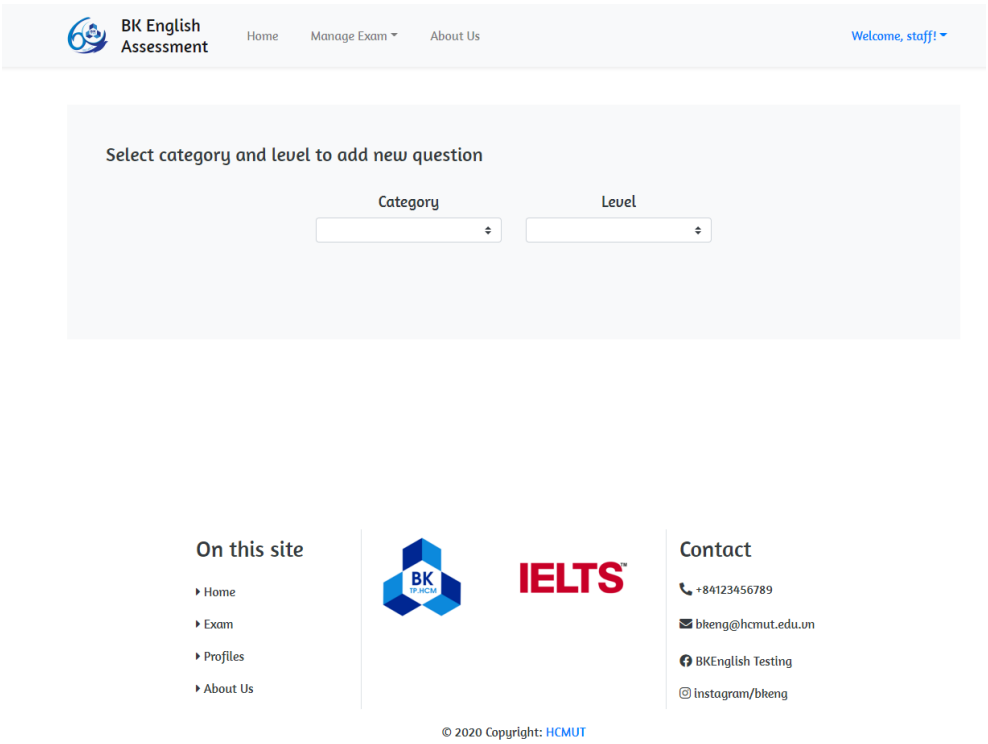

Figure 23: Select Category and Level

4.4.2 Delete questions

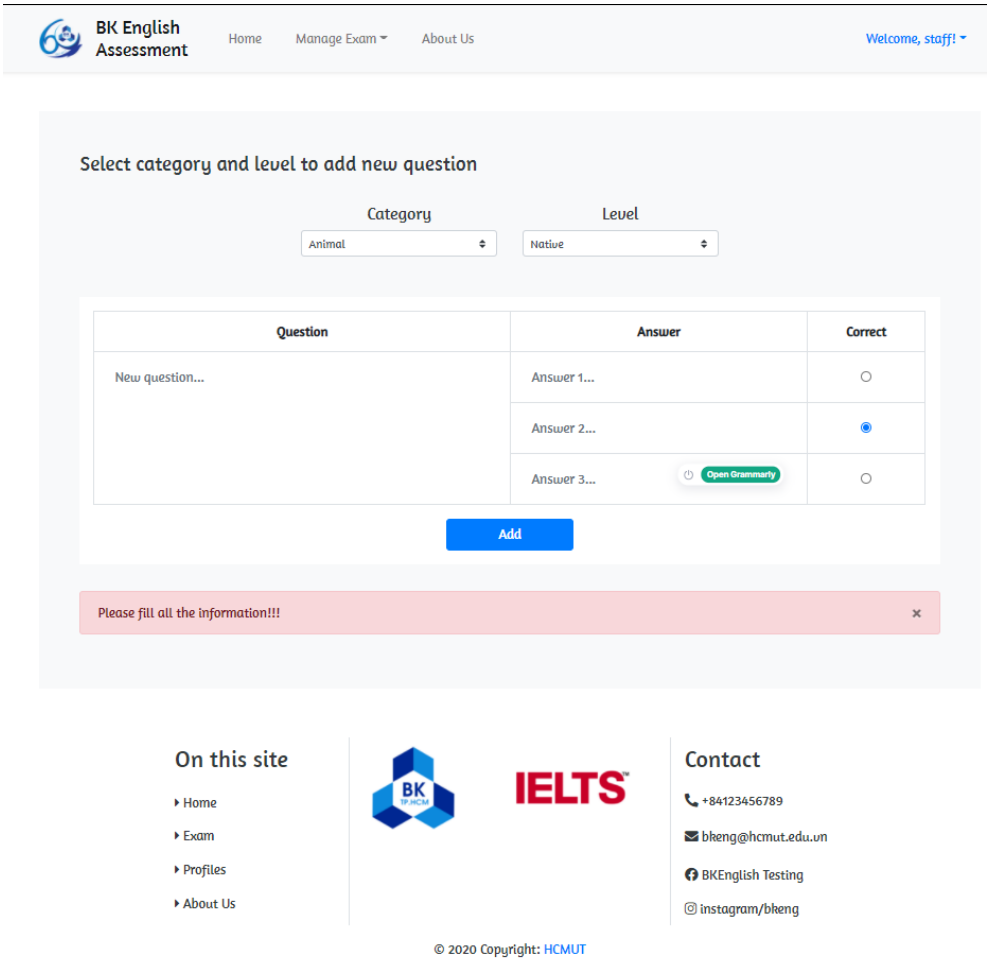

Figure 24: Add Empty Cell

4.4.3 Modify question

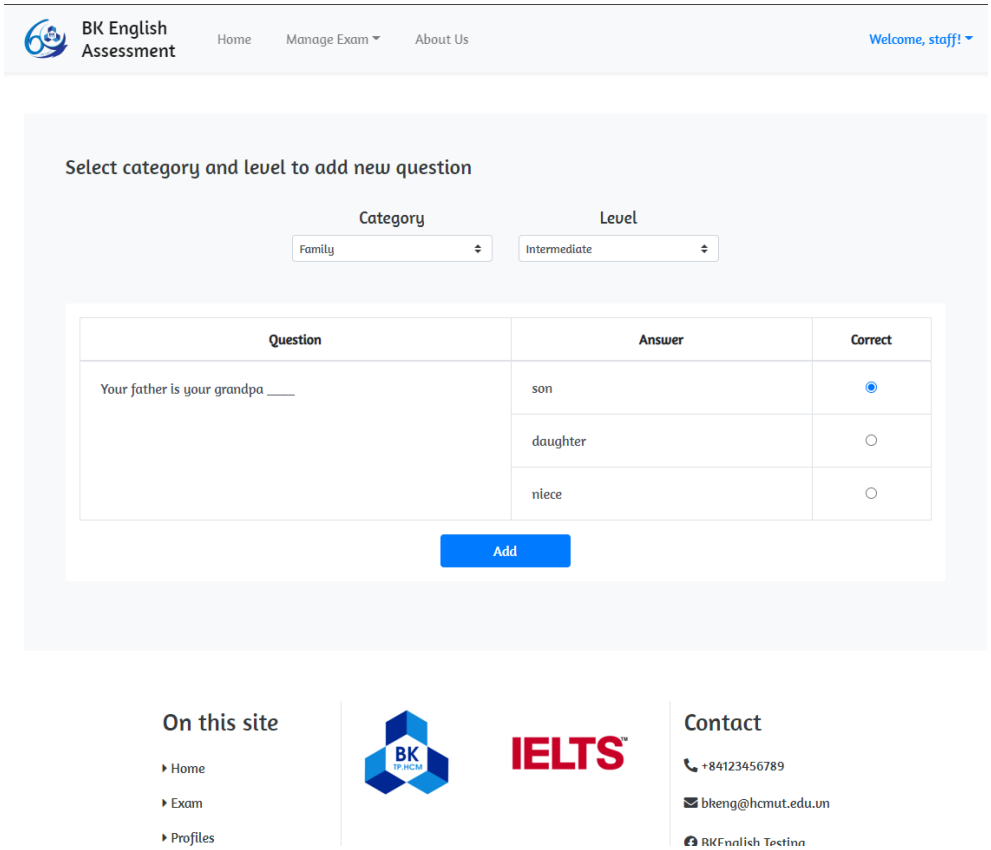

Figure 25: Fill The Cell

4.5 Manage accounts

4.5.1 Add staff members

4.5.2 Delete staff members

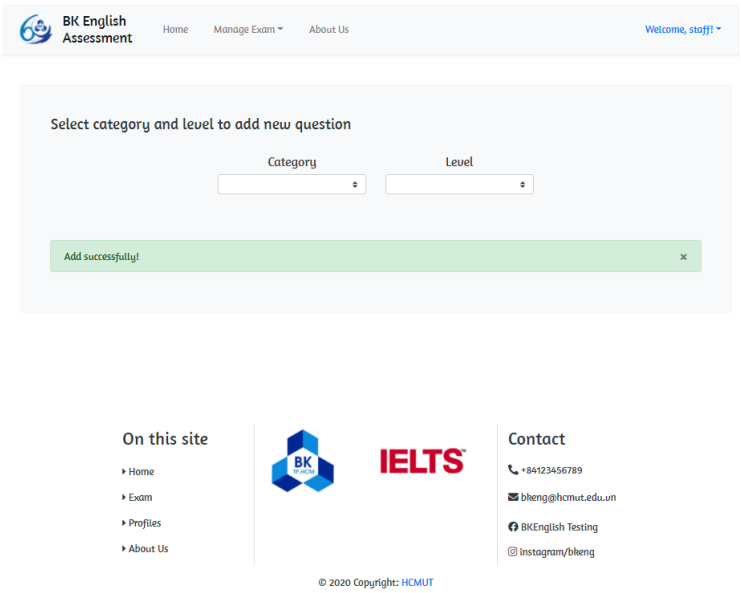

Figure 26: Add Successful

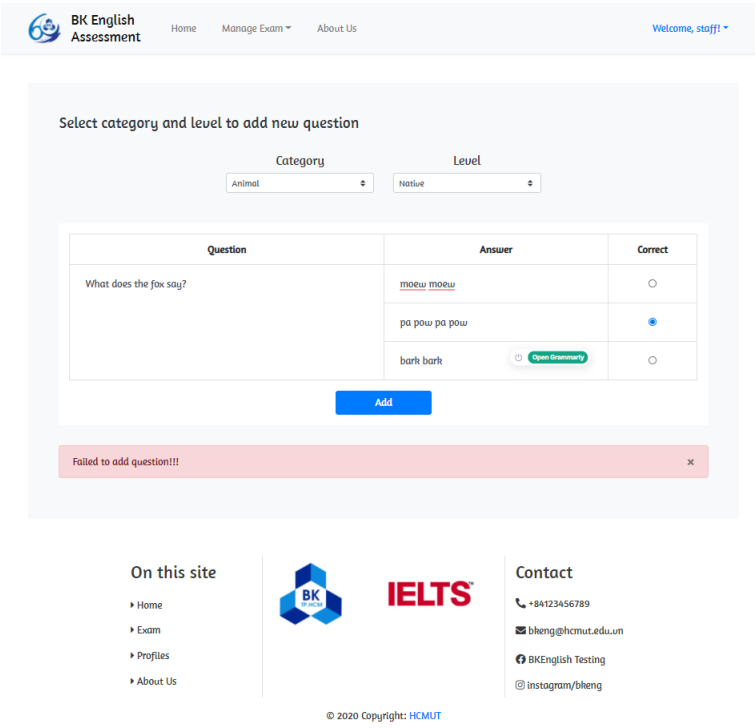

Figure 27: Add duplicate question

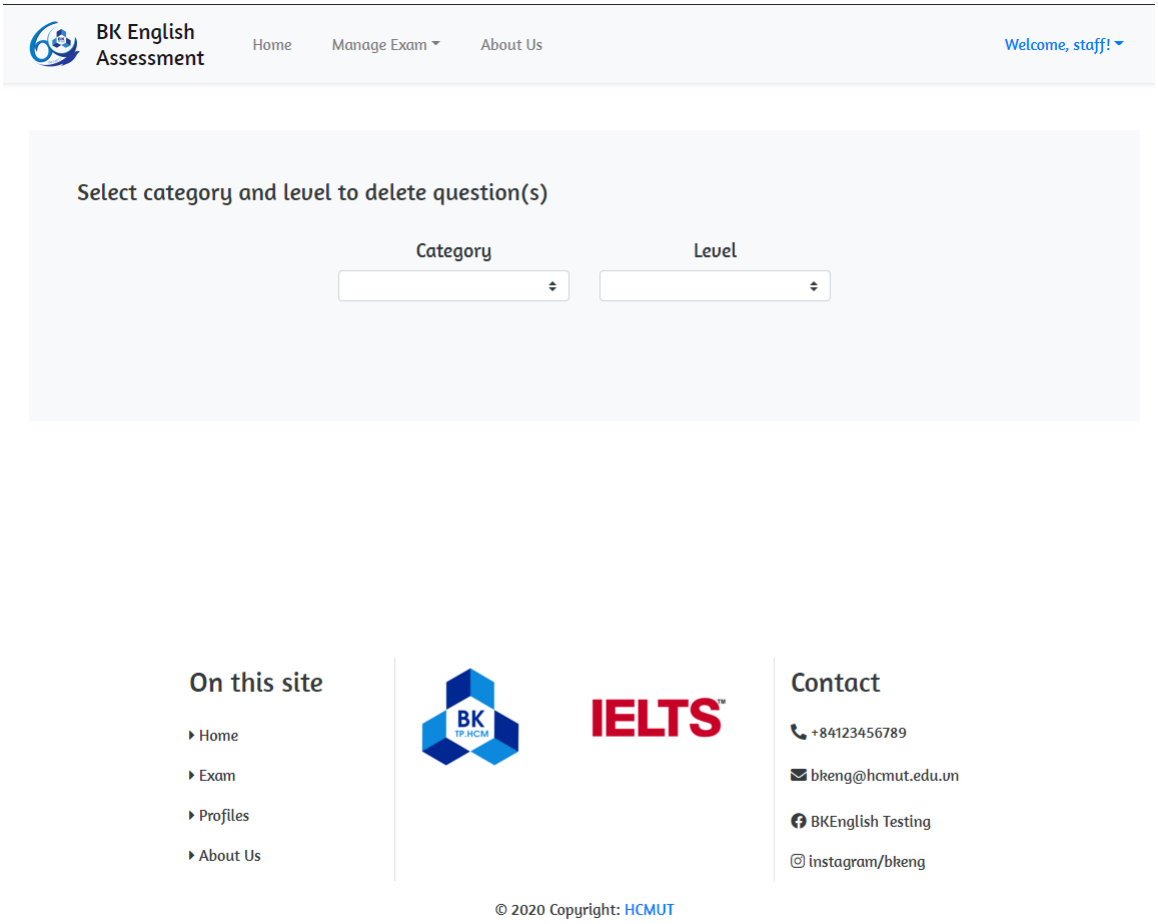

Figure 28: Select Category and Level

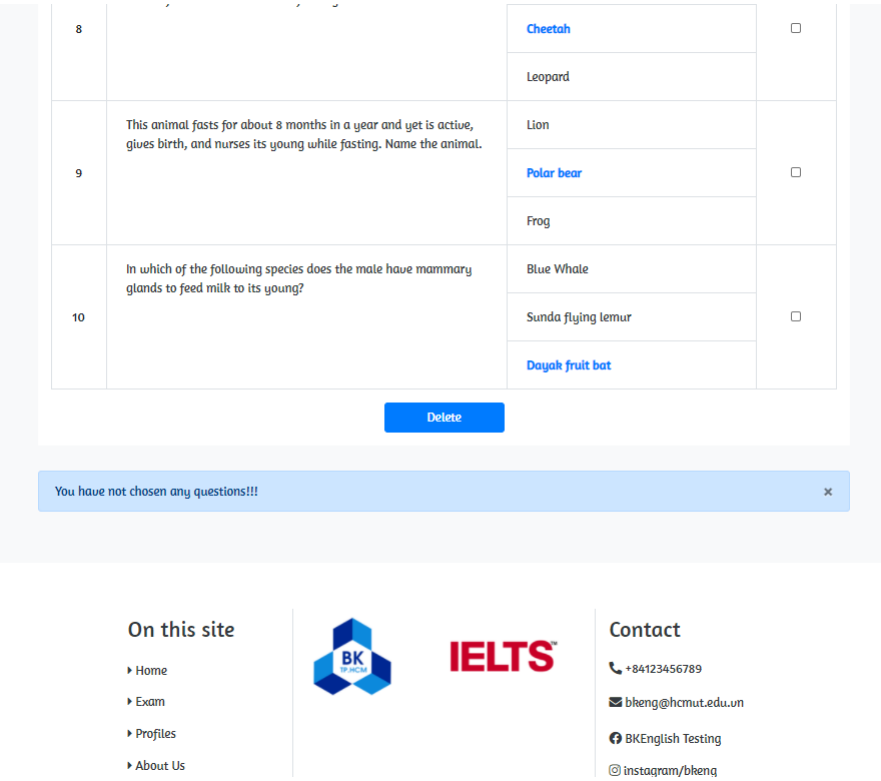

Figure 29: Delete Nothing

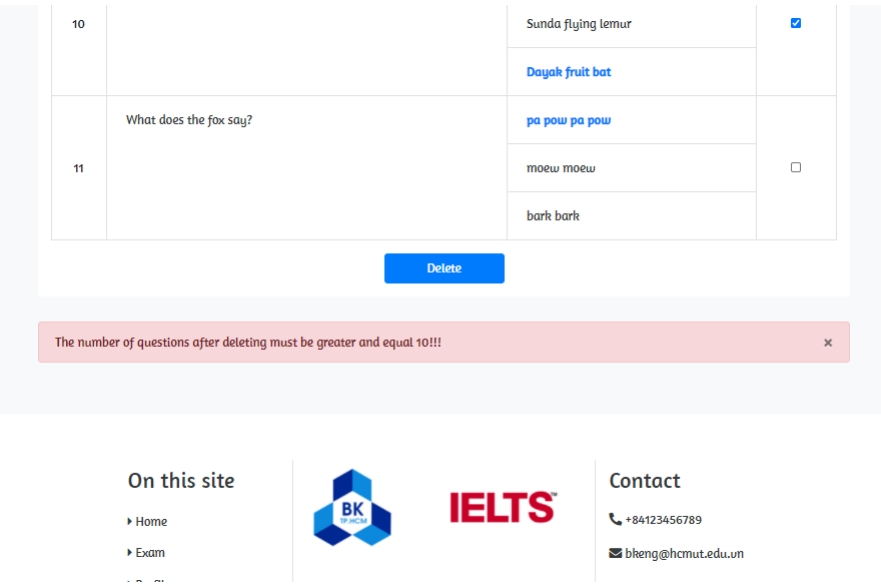

Figure 30: Delete Fail

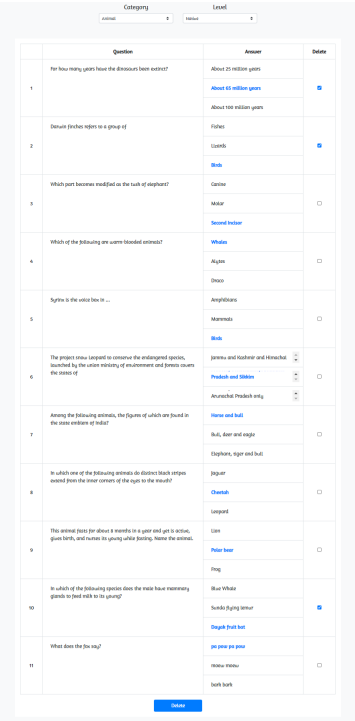

Figure 31: Delete With Select

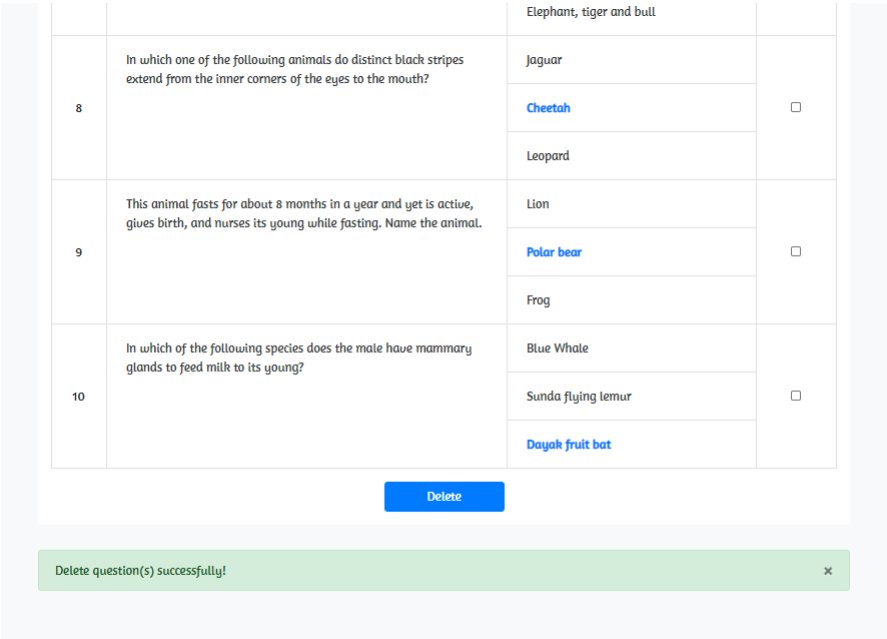

Figure 32: Delete Success

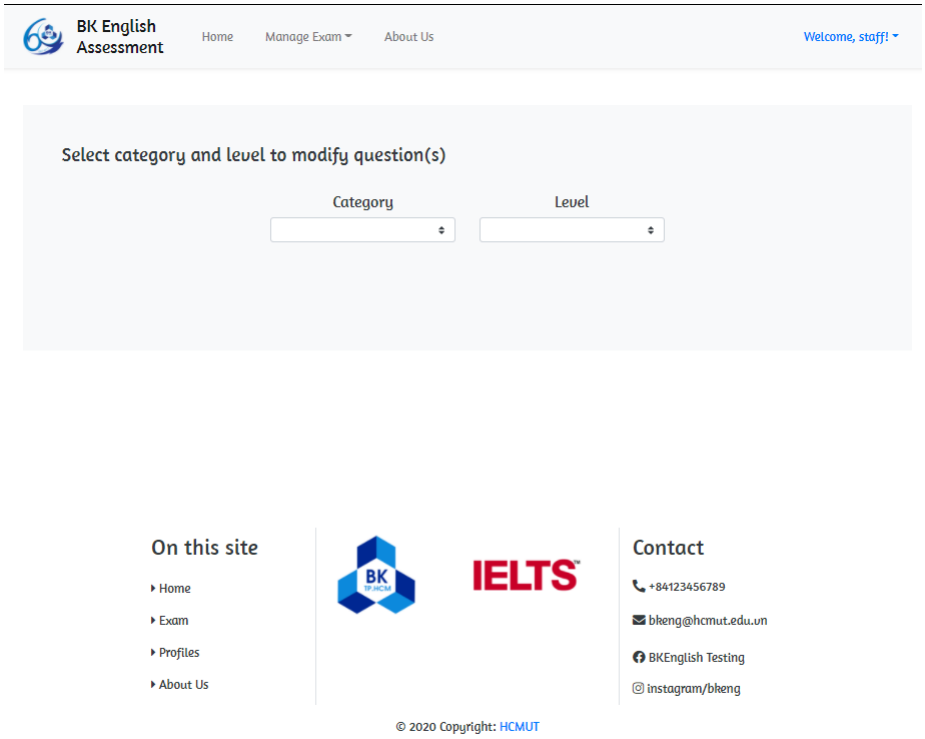

Figure 33: Select Category and Level

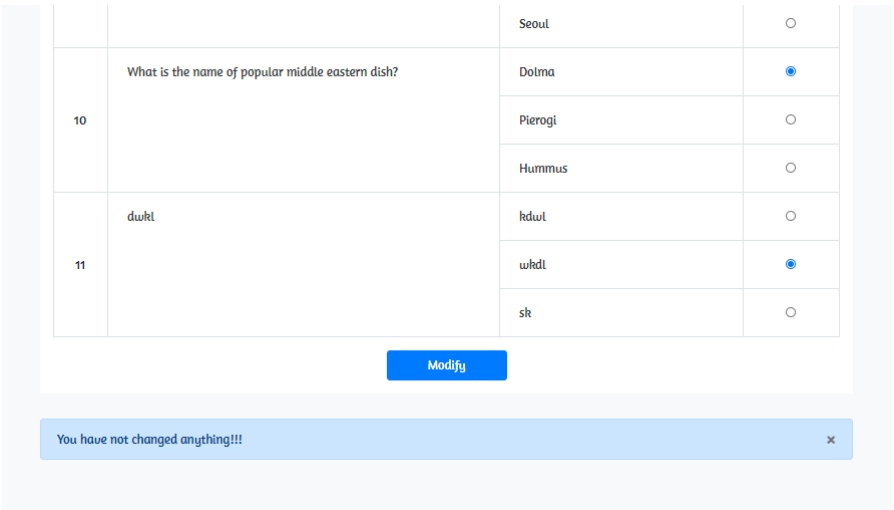

Figure 34: Delete Success

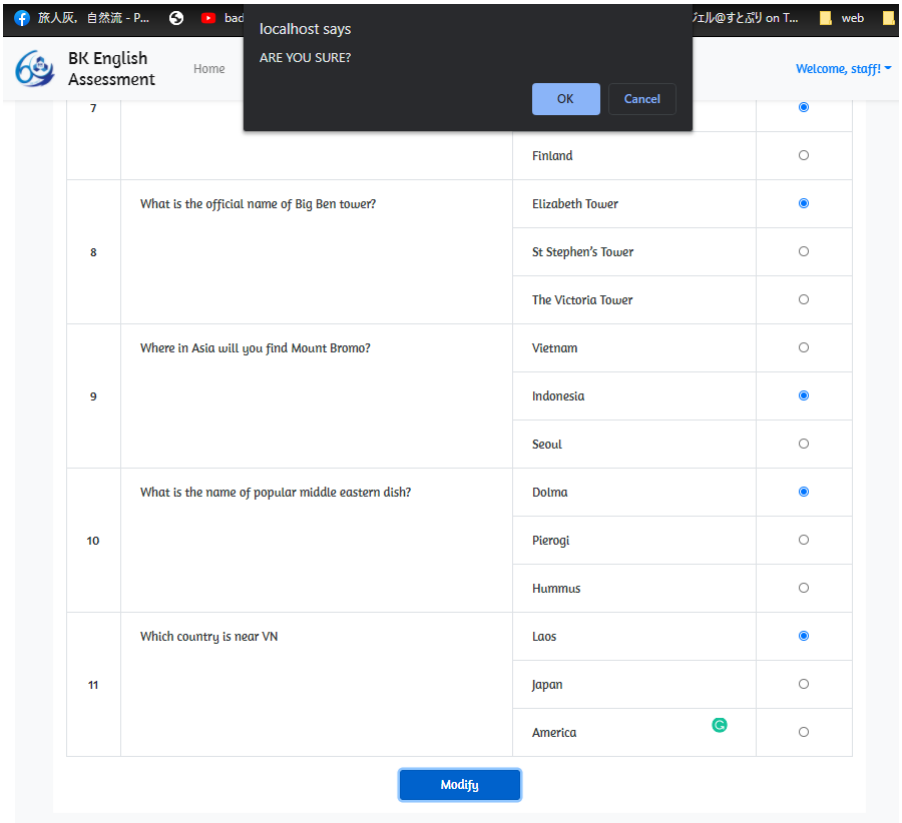

Figure 35: Delete Success

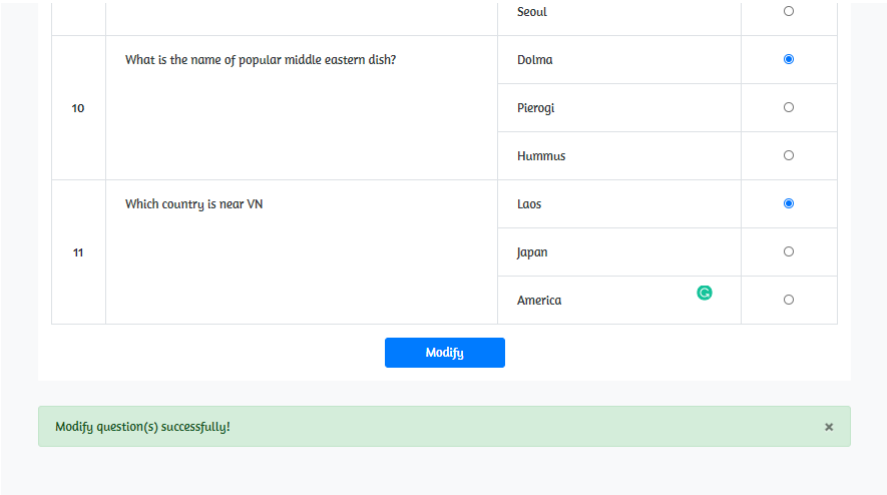

Figure 36: Delete Success

5 Verification

5.1 Sign Up

Testcase	Set up	Action	Expected result
1	No user in the database	Enter any username and password	Sign up successfully, display home page and change header for user role
2	Have one or more users in the database	Enter username which not exist in the database with any password	Sign up successfully, display home page and change header for user role
		Enter username which exist in the database with any password	Sign up failed and stay at singup page

5.2 Log In

Testcase	Set up	Action	Expected result
3	No user in the database	Enter any username and password	Login failed and stay at login page
4	Have admin, staff and user in the database	Enter username which not exist in the database with any password	Login failed and stay at login page
		Enter username which exist in the database with wrong password	Login failed and stay at login page
		Enter username of user with corresponding password	Login successfully, display home page and change header for user role
		Enter username of admin with corresponding password	Login successfully, display home page and change header for admin role
		Enter username of staff with corresponding password	Login successfully, display home page and change header for staff role

5.3 Log Out

Testcase	Set up	Action	Expected result
5	Already login	Press logout button	Logout successfully and display login page

5.4 Add question

Testcase	Set up	Action	Expected result
6	Already login as staff. Have categories, levels, questions and answers in database. Already choose category and level	Leave some or all inputs as blank and click add button	Nothing changed in database and a notification appear to notify that not fill enough information.
		Enter all inputs and the question which appear in database	Nothing changed in database and a notification appear to notify the failure.
		Enter all inputs and the question which not exist in database	The question is added to the database and a notification appear to notify the success.

5.5 Delete question

Testcase	Set up	Action	Expected result
7	Already login as staff. Have categories, levels, questions and answers in database. Already choose category and level	Not choose any questions	Nothing changed in database and a notification appear to notify that nothing chosen.
		Choose one more more questions so that the remaining question after delete must be at least 10	Chosen questions deleted in database and on the web. A notification appear to notify the success.
		Choose one more more questions so that the remaining question after delete less than 10	Nothing changed in database and a notification appear to notify the failure.

5.6 Modify question

Testcase	Set up	Action	Expected result
8	Already login as staff. Have categories, levels, questions and answers in database. Already choose category and level	Not change any questions	Nothing changed in database and a notification appear to notify that nothing changed.
		Change any questions, answers and correct answer's flags	Changed questions, answer and correct answer's flags changed in database and notification appear to notify the success.

5.7 Add staff

Testcase	Set up	Action	Expected result
9	Already login as admin and no user in the database	Enter any username and password	Add staff successfully
10	Already login as admin and have one or more users in database	Enter username which not exist in database with any password	Add staff successfully.
		Enter username exist in database with any password	Add staff failed.

5.8 Delete staff

Testcase	Set up	Action	Expected result
11	Already login as admin and have staff(s) in database	Not choose any staffs	Nothing changed in database and a notification appear to notify that nothing chosen.
		Choose one more more staffs	Chosen staffs deleted in database and on the web. A notification appear to notify the success.

5.9 View category

Testcase	Set up	Action	Expected result
12	Have not login or already login as user. Have categories, levels, questions and answers in database	Press exam button	Display all the categories in database with three different levels.

5.10 Take exam

Testcase	Set up	Action	Expected result
13	Already view category and choose category, level for the exam	Not choose anything and press submit and submit.	Alert having 10 questions not chosen.
		Answer some questions and leave some questions unchecked then submit.	Alert still having questions not answered.
		Answer all questions and submit.	Show total points and correct answer of each question.

5.11 View ranking

Testcase	Set up	Action	Expected result
10	Already login as admin and no user in the database	Enter any username and password	Add staff successfully
10	Already login as admin and have one or more users in database	Enter username which not exist in database with any password	Add staff successfully.
		Enter username exist in database with any password	Add staff failed.

5.12 View history

Testcase	Set up	Action	Expected result
10	Already login as admin and no user in the database	Enter any username and password	Add staff successfully
10	Already login as admin and have one or more users in database	Enter username which not exist in database with any password	Add staff successfully.
		Enter username exist in database with any password	Add staff failed.

6 Conclusion

6.1 Summary

Our group has designed the English testing website with beautiful look and easy to use. The website provides various categories and levels for users, and also stores and visualizes exam history in order to make users manage and selects appropriate strategies to learn English. After this assignment, all group members have gained experiences in web programming as well as design a simple database system.

6.2 Future works

In the near future, our group would like to integrate more subjects to the website, more categories. Moreover, it is more practical when the website is deployed on the real hosting domain, and we will improve the security of the website.

References

[1] W3schools, https://www.w3schools.com/.

[2] Boostrap, https://getbootstrap.com/docs/4.5/getting-started/introduction/.