ASIA PACIFIC UNIVERSITY OF TECHNOLOGY & INNOVATION

VISUAL BASIC .NET ASSIGNMENT

GROUP ASSIGNMENT

TITLE: APPLICATION DESIGN AND CONNECTION TO DATABASE WITH VB.NET

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0.2   ABSTRACT:

The purpose of this report is to design and develop a working application for a club to be used in management. By using appropriate research materials such as articles, websites and relevant books, we were able to design and develop the application explained in the user interface of this report. The coverage of this study is based on the introduction of the report, identification of the usernames and passwords that are used in the application, the user manual and screen designs of the application, complete and proper justification of the user manual and references from where the information and justification was referred.

1.0   INTRODUCTION:

In this report, we have the overall process involved in the design and development of an application in visual basic that is to be used a club. After we had development the application, we were required to write appropriate code for the necessary controls in this application and later add another code that is used to retrieve information from a database that we created in Microsoft Access in order for the users of this application to be able to interact with the application interface and use the records retrieved from the database.

The main scope and limitations of this project are to ensure that certain information and or functionality in the application can only be accessed by certain users and not all, for example; the club secretary is the only one with the authorization to delete the users and their credentials records while others can only view, journal entries can only be recorded by either the president or secretary and edited by either one of them respectively. It is also expected to let the user add, update and delete records where necessary, as well as allow the users to navigate through the records in the database. We were also required to include a form that can let users generate reports of the user profiles as well as journal entries but since we face an issue while trying to achieve this, we were forced to improvise by using a Data Grid View control to act as the report interface.

1.1   CREDENTIALS: USERNAMES, PASSWORDS AND ROLES:

The user credentials which contain usernames and passwords are what the users of this application use whenever they login. The following are the usernames, passwords as well as roles of each user in the database records;

S/NO.	USERNAME	PASSWORD	ROLE
01.	thomas	abc123	admin
02.	mrisho	674746	president
03.	giorgio	012345	vice
04.	fatma	secret	secretary
05.	azlina	pass	treasurer

2.0   USER MANUAL: INTERFACE DESIGNS:

The following are the interface designs of the application that are explained appropriately so that they can provide the knowledge to the users on how to use the application correctly and efficiently.

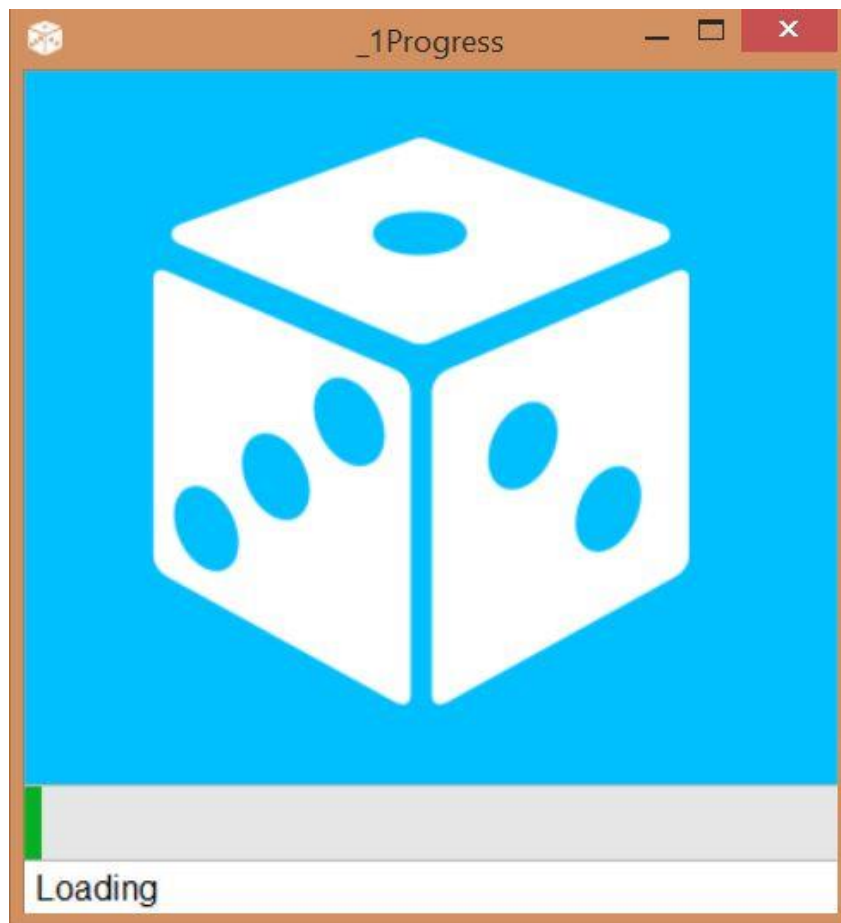## 2.1   APPLICATION INITIALIZATION PAGE:

FIGURE 1: APPLICATION INITIALIZATION PAGE

Immediately after starting the executable (.exe) application file, the application initialization screen will appear in order to indicate to the user that the initializing stage of the application has been initiated. This page contains the logo of the application (a dice), a progress bar which shows how much progress of the loading process has been completed and text which illustrate the processes being completed as the application loads (see figure 1).

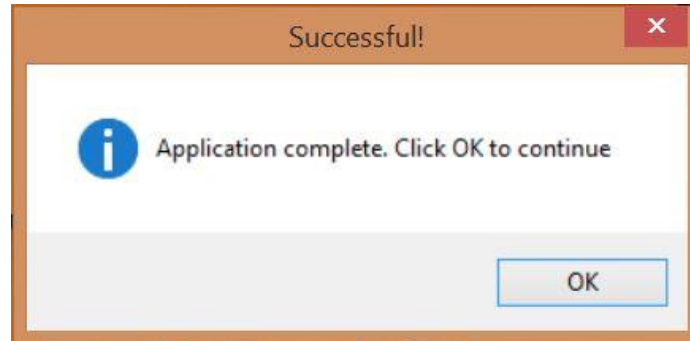### 2.1.1   MESSAGE BOX: INITIALIZATION COMPLETE:

FIGURE 2: INITIALIZATION COMPLETE: MESSAGE BOX

Once the progress bar is completely full indicating that the application has completed loading, an information message box will appear in order to notify the user that the progress is completed and that the application is ready. When the user see this notification, he/she will be required to press the OK button on the message box in order to start the application (see figure 2).
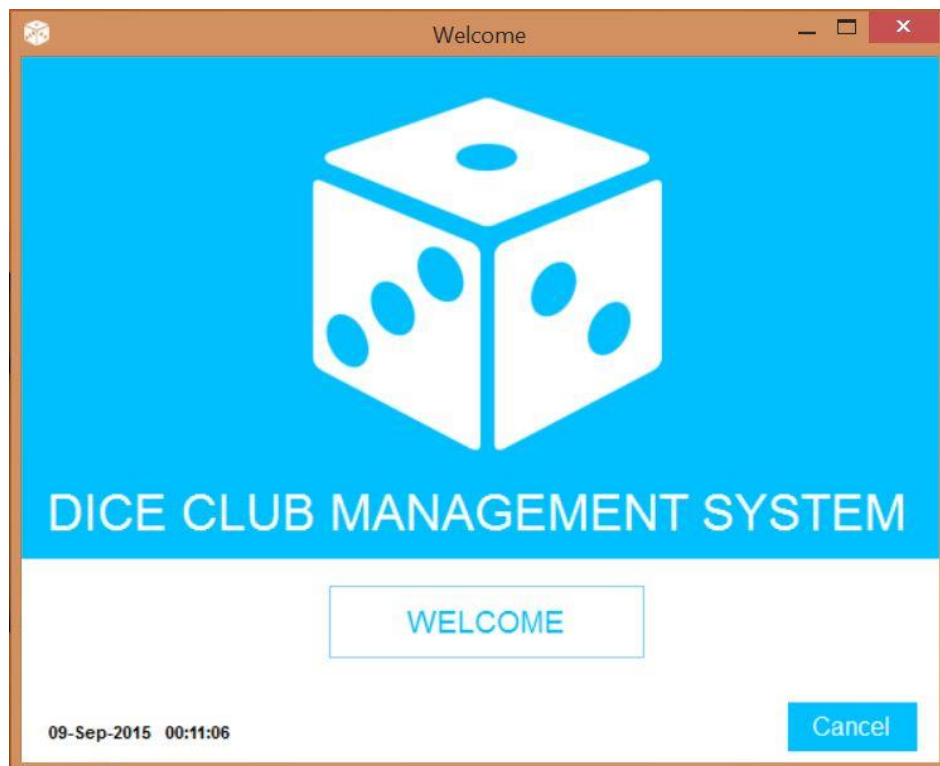
2.2   WELCOME PAGE:

FIGURE 3: WELCOME PAGE

After the user has selected the OK button on the message box indicating that the application has completed loading (see figure 2), the welcome page will appear. This page contains the logo and name of the application, the current date and time, a welcome and a cancel button. By selecting the WELCOME button, the user will be led to a login page (see figure 4) where as if the user selects the CANCEL button on the other hand, the application will close (see figure 3).
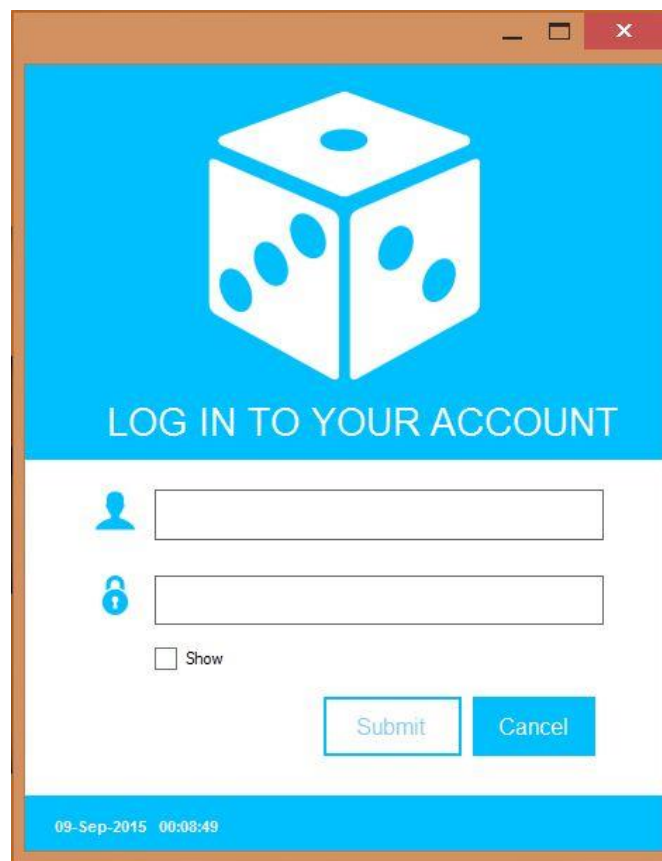
2.3   LOGIN PAGE:

FIGURE 4: LOGIN PAGE

The LOGIN page will appear once the user selects the welcome button on the welcome page (see figure 3). This login page will be used by any user with an existing account within the application so that they can access the application's main interface. It provides the user with the username and password fields, a show password checkbox field, a button to submit which will validate the username and password credentials where if they are true it will provide the access and if they are false it will restrict them, it also has a button to cancel which will close the application, the current date and time as well as the logo and the title showing the description of the page (see figure 4).

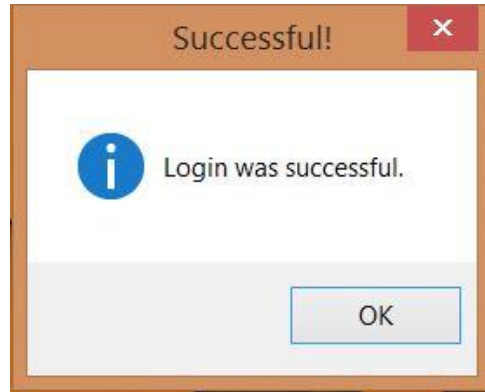### 2.3.1   MESSAGE BOX: SUCCESSFUL LOGIN:

FIGURE 5: SUCCESSFUL LOGIN MESSAGE BOX

Once the user has provided his/her credentials and the application has verified them and found that they are correct or true, an information message box will appear in order to notify the user that their credentials have been validated and that they are correct which means they can continue to access the application (see figure 5).

2.3.2   MESSAGE BOX: ERROR LOGIN:

FIGURE 6: ERROR LOGIN MESSAGE BOX

However, if the credentials provided by the user were incorrect, the application will restrict them to go any further and then display an error message box to notify the user that the information that he/she has provided is incorrect hence they cannot proceed any further until the validation process has confirmed their credentials to be true (see figure 6).

FIGURE 7: MAIN INTERFACE PAGE

The main interface as seen in the figure above shows 3 main categories of forms which are user profiles that will be used to add, update, delete and navigate the user information in the database, journal records which will be used to add, update, delete and navigate the journal records in the database, credentials which will be used to add, update, delete and navigate the usernames and passwords in the database and finally the reports which will be used to generate the active users reports as well as a journal entries report. Except from reports which are generate by a data grid view, each one of these forms has been linked to a corresponding table in the database from where the records are retrieved.

The interface also has a menu strip tool which contains a File and Help dropdown tabs as seen at the top of the image, a logo and the name or title of the window or form, a status bar that has a date and time label on the left hand corner as well as an image with a left pointing arrow on the right hand corner which will act as a back button to go to the previous page or window.

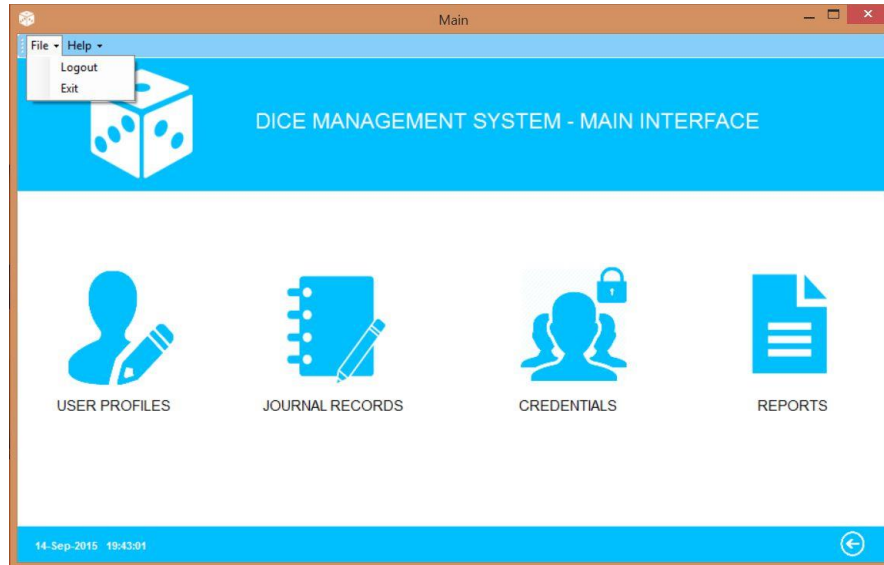## 2.4.1   MAIN INTERFACE PAGE: FILE DROPDOWN LIST:

FIGURE 8: MAIN INTERFACE PAGE SHOWING THE FILE DROPDOWN LIST

Once the user has selected the File dropdown tab on the menu strip as seen in the figure above, a dropdown list will appear revealing 2 options which are LOGOUT and EXIT. The Logout option will log the current user out of the application and close the current window (Main Interface) and open the Login window. The Exit option on the other hand will close the application all together and return to the very first window (Application Initialization Page).

2.4.2   MAIN INTERFACE PAGE: HELP DROPDOWN LIST:

FIGURE 9: MAIN INTERFACE PAGE SHOWING THE HELP DROPDOWN LIST

When a user selects the Help dropdown list on the menu strip, he/she will see only one option which is ABOUT. By selecting the about option, the application will open a different window that contain the information about the application.

<div align="center">2.4.2.1 ABOUT PAGE:</div>
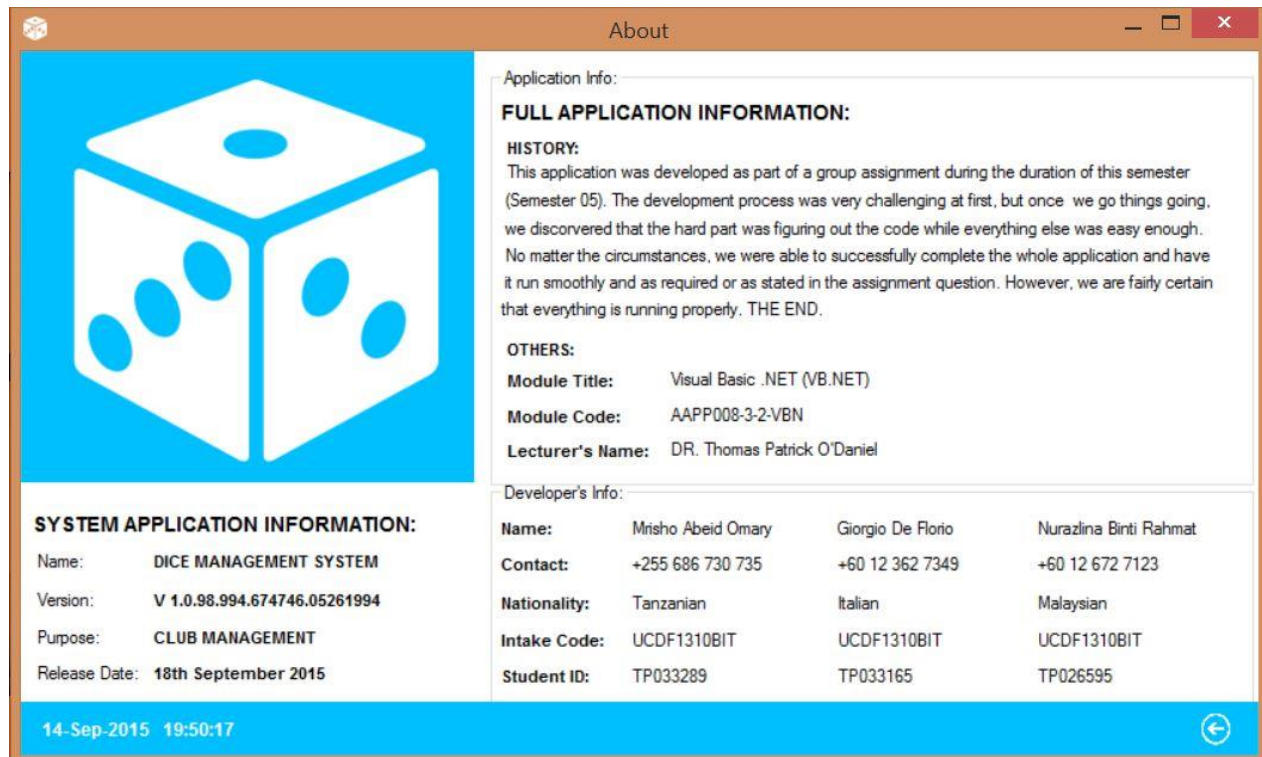
FIGURE 10: ABOUT PAGE

The about page or window as seen in the figure above shows that application's information. It shows that logo of the application as seen on the top-left hand corner of the window, the main details of the application including the name, version, purpose and date of release on the bottom-left hand corner of the page, the main or other application information of the top-right hand corner of the window and finally the developer's information including the name, contact, nationality, intake code and student ID on the bottom-right hand corner of the page. It also shows the current date and time on the status bar on the bottom-left hand corner as well as an image with a left pointing arrow which can be used to go to the previous page on the bottom-right hand corner or the window.

2.5   USER PROFILE SETTINGS WINDOW:

FIGURE 11: USER PROFILE SETTINGS: MEMBERS SIGN UP FORM

In the user profile settings window, users can interact with the application with the 3 group box controls which are add new member which will have the form controls showing the user's information, control panel which will have the buttons that can be used to control the add new member group box and finally the navigation buttons which will be used to navigate through the records in the database. The window also contains the logo and title or name of the form and a status bar which contains a current date and time on the bottom-left hand corner of the page as well as an image with a left pointing arrow on the bottom-right hand corner of the page that can be used to go back to the previous page (Main Interface).

2.5.1   ADD NEW MEMBER GROUP BOX:

As seen in figure 11 above, the Add new member group box contains the main fields of the form that display the content to the user. Each field is directly connected to corresponding field in the database so that the information retrieved is allocated in the relevant field to help the users understand. The label that have the * symbol next to them such as Student ID, Intake Code, First and Last Name, Contact, Email and Status indicate that those fields must be completed or field as they are required and important. The Record label indicates the current and total number of records in the database which will change as the user navigates through other records in the database. The Status which contains the Active and Inactive checkboxes provides the users with the ability to indicate who in the club is still active or otherwise.

2.5.2   CONTROL PANEL GROUP BOX:

The following section illustrates and explains the button in the control panel by elaborating on what they do or what they are used for.

2.5.2.1 ADD BUTTON:

FIGURE 12: ADD BUTTON CONTROL INTERFACE

Once the add button is selected as seen in figure 12 above, it will clear out all fields in the add new member form and then deactivate itself as well as the delete button leaving the update and cancel active and activated. This will let the user enter new records in the respective fields and then by using the Update button, all entries will be committed or saved in the database. In case the user decides to change his/her mind about adding a new record once they have selected the add button, they can select the cancel button to close the interface.

2.5.2.2 UPDATE BUTTON:

FIGURE 13: RECORDS TO BE UPDATED

After the user inputs all relevant information in their respective field as seen in the figure above, he/she would need to commit to those changes so that the information can be saved in the database. To do that, the user will be required to select the Update button. Once the user updates the information and all records are successfully saved in the database they will receive a message box indicating all fields affected and that the commitment has been successfully carried out (see figure 14 below), otherwise the application will show an error message indicating that the commitment was not successfully carried out.
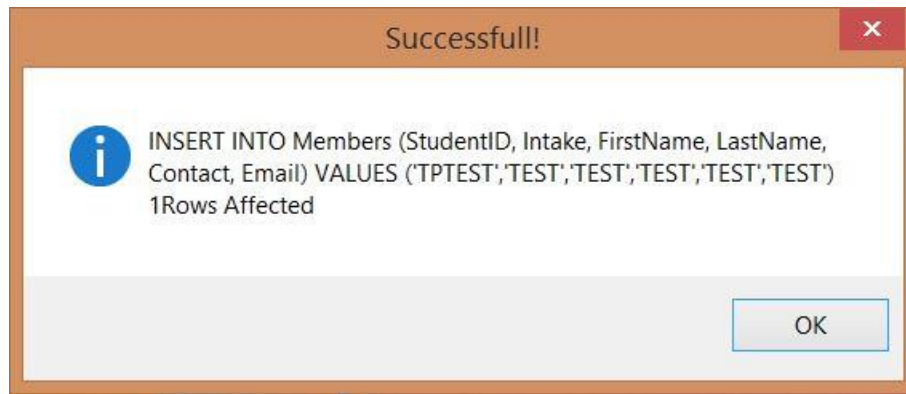
FIGURE 14: MESSAGE BOX: SUCCESSFUL RECORDS UPDATE
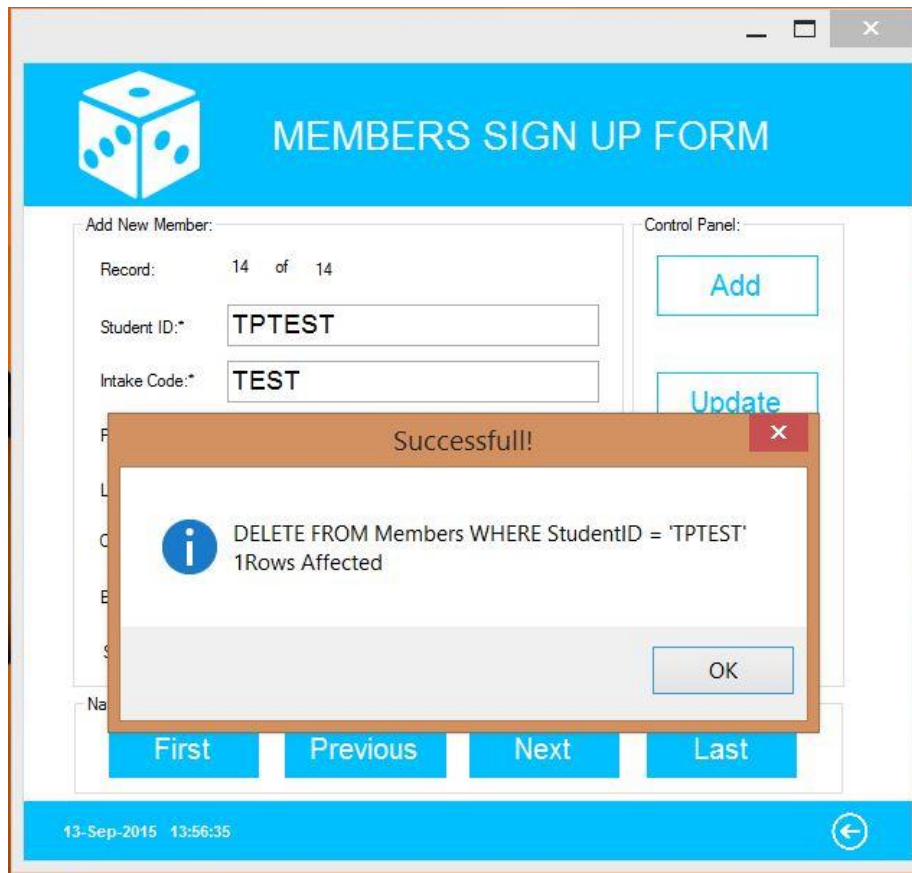
2.5.2.3 DELETE BUTTON:

FIGURE 15: MESSAGE BOX: SUCCESSFUL DELETED RECORD

When a user deletes a record from the database, a message box will appear to notify the user the record has been successfully deleted from the database. It will also indicate the fields and records affected.

2.5.3   NAVIGATION BUTTONS:

Each of the navigation buttons have their own respective functions that are executed in the application. They are used to navigate through the records in the database. The following are the justifications of each one individually.

First: The first navigation button lets the user view the very first entry as seen in the database records. For instance, if the database has many record entries and the user if piloting through and wishes to go back to the very first entry, he/she can select the "first" navigate button and the application will execute the function in the navigation button and redirect the user back to the very first record in the database. In order for the user to know that they are on the first record, they can look at the "Record" label which indicates the current record against the total number of records in the database (see figure 16).

FIGURE 16: FIRST BUTTON SHOWING THE FIRST RECORD IN THE DATABASE

Next: The next navigation button lets the users view the following record entry in the database. By the use of a function that adds 1 to the current record number in order to produce the next number in the following row, the user can view the following record easily just by selecting the next navigation button. For instance: if the user is on the 9th entry in the database and wishes to go one record forwards, he/she can select the next navigation button which will add 1 to 9 which is 10 and then the application will reveal the next record entry which is the 10th. In order for the user to know that they are on the next record, they can look at the "Record" label which indicates the current record against the total number of records in the database (see figure 17).


FIGURE 17: NEXT BUTTON SHOWING THE 10TH RECORD IN THE DATABASE

Once the user has gone through all the records in the database and is currently on the very last record, he/she will no longer be able to go further since there are no more records to view. In order for the user to know that he/she can no longer navigate forward since there are no more rows to

view, the application will provide a message box to the user which will indicate an error that reads "No more rows" so that the user can know that he/she can no longer navigate any further. In order for the user to know that they can no longer navigate any further, they can look at the "Record" label which indicates the current record against the total number of records in the database (see figure 18).
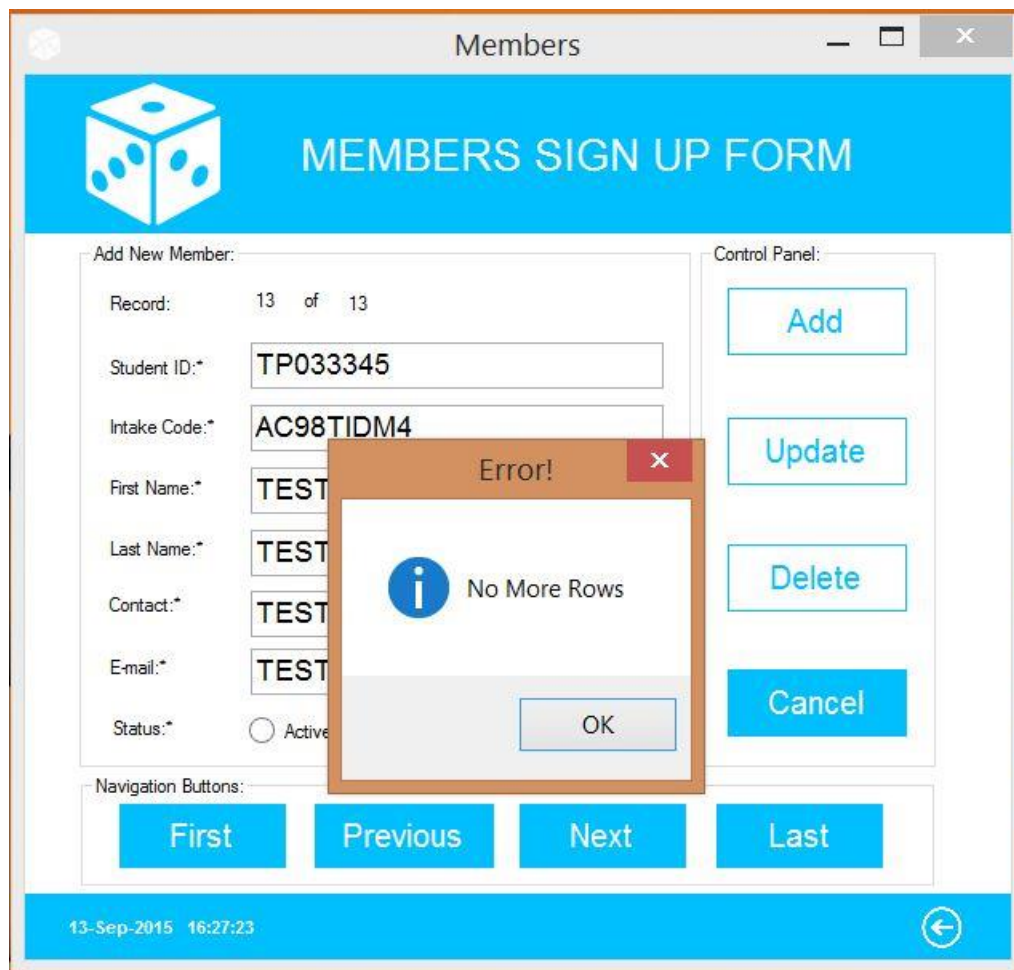
FIGURE 18: ERROR MESSAGE BOX: NO MORE ROWS FORWARD

Previous: The previous navigation button lets the users view the prior record entry in the database. By the use of a function that subtracts 1 to the current record number in order to produce the previous number in the preceding row, the user can view the previous record easily just by selecting the previous navigation button. For instance: if the user is on the 5th entry in the database and wishes to go one record backwards, he/she can select the previous navigation button which will subtract 1 to 5 which is 4 and then the application will reveal the previous record entry which

is the 4th. In order for the user to know that they are on the previous record, they can look at the "Record" label which indicates the current record against the total number of records in the database (see figure 19).

FIGURE 19: PREVIOUS BUTTON SHOWING THE 4TH RECORD IN THE DATABASE

Once the user has gone through all the records in the database and is currently on the very first record, he/she will no longer be able to go further since there are no more records to view. In order for the user to know that he/she can no longer navigate backwards since there are no more rows to view, the application will provide a message box to the user which will indicate an error that reads "No more rows" so that the user can know that he/she can no longer navigate any further. In order for the user to know that they can no longer navigate any further, they can look at the "Record" label which indicates the current record against the total number of records in the database (see figure 20).
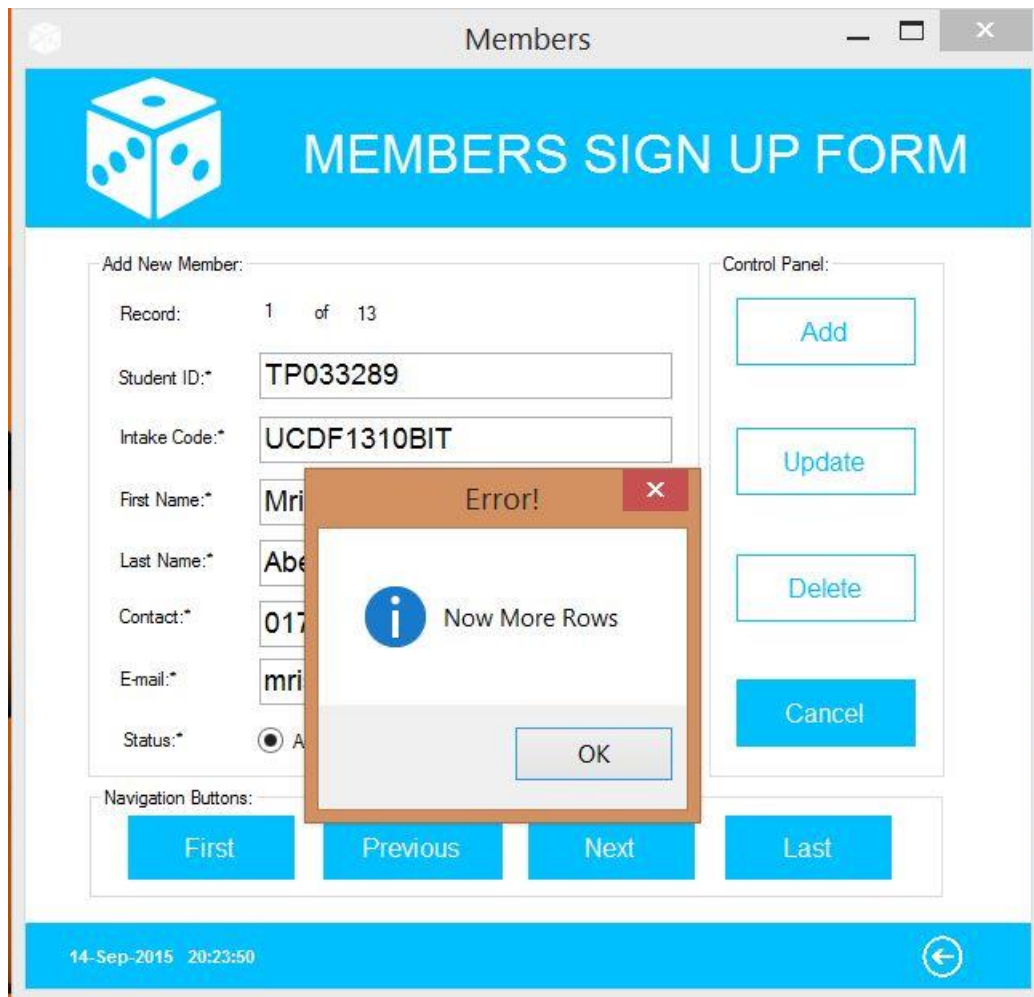
FIGURE 20: ERROR MESSAGE BOX: NO MORE ROWS BACKWARD

Last: The last navigation button lets the user view the very last entry as seen in the database records. For instance, if the database has many records and the user is piloting through and wishes to go to the very last entry, he/she can select the "last" navigate button and the application will execute the function in the navigation button and redirect the user to the very last record in the database. In order for the user to know that they are on the last record, they can look at the "Record" label which indicates the current record against the total number of records in the database (see figure 21).

FIGURE 21: LAST BUTTON SHOWING THE LAST RECORD IN THE DATABASE

2.6   JOURNAL RECORD ENTRIES WINDOW:

In the journal records form, the president and secretary of the club are the only authorized users who can record new journal entries as well as edit them in respect to who entered them, meaning, if the president entered the record then the secretary cannot edit or delete it. Other users are only permitted to view the records by navigation. As see in this example (see figure 22 below), the generate journal ID button (which creates a new journal ID by taking the highest number in the journal ID and adding it to 1 in order to get a new ID), add, update and delete buttons are deactivated which means the user who is currently logged into the application is not the president or club secretary hence he or she cannot alter the records.

The interface as seen in the figure below has a logo and title of the form, the current date and time as well as an image with a left-pointing to act as a back button, it also has a similar design to that of the user profile settings form, containing 3 group boxes (namely: add new record, control panel and navigation buttons). Since the controls here do exactly the same functions and have the same features and uses as those in the user profile form, we won't explain these in order to avoid repeating the same things (see pages 10-18).

FIGURE 22: JOURNAL RECORD SETTINGS WINDOW

FIGURE 23: CREDENTIALS SETTINGS WINDOW:

The user credentials form authorizes any of the club to add usernames and passwords that can be used later to login into the application. However, since the secretary is the only member who has the authorization to delete the member's records in the database, he/she will be able to see all buttons including the delete button unlikely other users who will not be able to see the delete button as it will not be visible to them since the do not have the authorization to delete any records. The example seen in figure 23 above shows a complete form with the delete button visible, which indicates that the current user who is logged in is the secretary of the club.

The interface as seen in the figure above has a logo and title of the form, the current date and time as well as an image with a left-pointing to act as a back button, it also has a similar design to that of the user profile settings form, containing 3 group boxes (namely: add new user, control panel and navigation buttons). Since the controls here do exactly the same functions and have the same

features and uses as those in the user profile form, we won't explain these in order to avoid repeating the same things (see pages 10-18).

2.8   RECORDS VIEWING FORM:

FIGURE 24: RECORDS VIEWING FORM: MAIN INTERFACE

The records interface can be accessed by any user of this application by selecting the records icon on the main screen on the application (see figure 7: page 6). Once the user has selected the records icon, the interface as seen in figure 24 will appear revealing 2 options (namely: active users and journal entries reports). These 2 reports have been separated since they are derived from 2 different tables originating from the database. Apart from the 2 alternatives to generate the reports, the interface contains the logo and the name or title of the form, the current date and time as well as an image with a left-pointing arrow which acts as a back button to go back to the previous page.
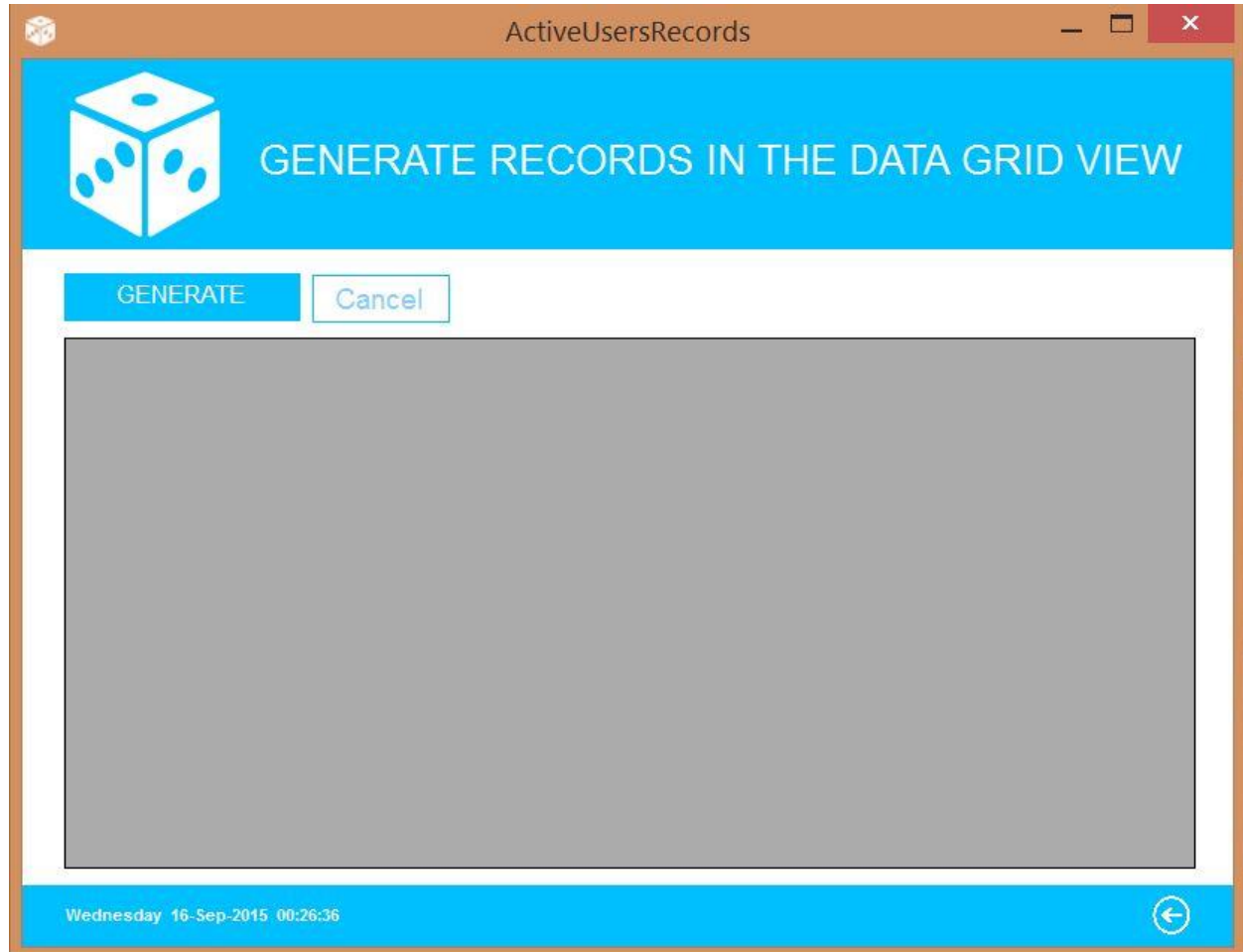
FIGURE 25: ACTIVE USERS REPORT INTERFACE

When a user selects the active users report icon as seen in figure 24 above, this interface (see figure 25) will appear. In order for the user to see the report, he/she would need to select the generate button which will then reveal all of the records of the active users in the data grid view (see figure 26) seen in the window. When the user wishes to close this interface and go back to the previous interfaces, he/she can select the cancel button which will redirect them back to the reports interface (see figure 25).

FIGURE 26: ACTIVE USER RECORDS IN A REPORT FORM OF A DATA GRID VIEW

The interface seen in figure 26 above shows the records in a data grid view which act as the report format for this application. This will appear once the user selects the generate button seen on the interface.

FIGURE 27: JOURNAL RECORDS REPORT INTERFACE

When a user selects the journal records report icon as seen in figure 24 above, this interface (see figure 27) will appear. In order for the user to see the report, he/she would need to select the generate button which will then reveal all of the records of the journal records in the data grid view (see figure 28) seen in the window. When the user wishes to close this interface and go back to the previous interfaces, he/she can select the cancel button which will redirect them back to the reports interface (see figure 27).

FIGURE 28: JOURNAL RECORDS IN A REPORT FORM OF A DATA GRID VIEW

The interface seen in figure 28 above shows the records in a data grid view which act as the report format for this application. This will appear once the user selects the generate button seen on the interface.
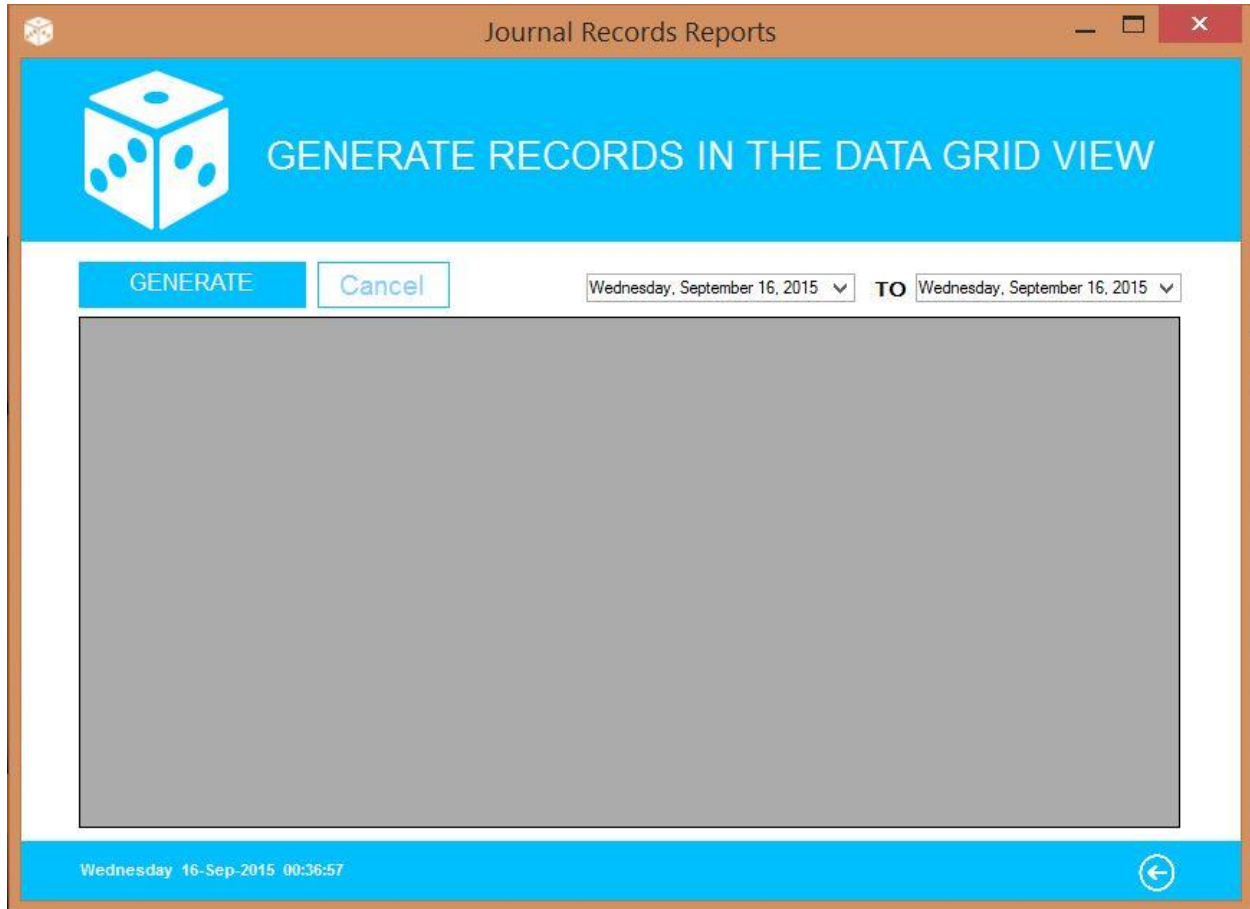
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