Marking Scheme

Informatics College Pokhara

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Application Development

CS6004NI

Course Work 1

Submitted By: **Pratima Gautam**
London Met ID: Enter ID Here

Submitted To: Ishwor Sapkota
Module Leader

Component Grade and Comments	
A. Implementation of Application	
User Interface and proper controls used for designing	User Interface is complete but not separated and have proper use of controls
Manual data entry or import from csv	appropriate use of data types but missing some properties required or missing CRUD operation
Data Validation	missing most of the validation
Enrollment Report & weekly report in tabular format	Any one of the report is missing or not complete
Course wise enrollment report & Chart display	any one component is missing or inappropriate data is shown
Algorithm used for sorting & proper sorting of data	Default sorting provided by .net is used
B. Documentation	
User Manual for running the application	User Manual is good. Contains all varieties of forms.

Marking Scheme

Application architecture & description of the classes ad methods sued	average work with very limited explanation of the classes and methods used
Flow chart, algoriathms and data sctructures used	average work with very limited explanation and missing diagramatic representation.
Reflective essay	satisfactorily written about experience and learnings
C. Programming Style	
Clarity of code,Popper Naming convention & comments	Code is poorly written and lacks comments
System Usability	System can't be used and have issues

Overall Grade:	**B+**	**B+**

Overall Comment:

Code should be self explainable with less comments. Need some proper naming of the componen and require to add comments on required area.

In overall the code is working and all the functionality seems working and system can be used

Year and Semester

2019-20 Autumn / 2019-20 Spring

Module Code & Module Title

CS6004NP Application Development

Assessment Weightage & Type

30% Individual Coursework 1

Year and Semester

2019-20 Autumn

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I confirm that I understand my coursework needs to be submitted online via Google Classroom under the relevant module page before the deadline for my assignment to be accepted and marked. I am fully aware that late submissions will be treated as non-submission and a mark of zero will be awarded.

DECLARATION

I certify that this report is my own work, based on my personal study and research and that I have acknowledged all material, sources and references used in its preparation, whether they be books, articles, journals, reports, lecture notes, and any other kind of document, electronic or personal communication. I further commit that all deliverables and the research study emanating from this proposal shall be original content. I also certify that this assignment/report has not previously been submitted for assessment at London Metropolitan University or elsewhere, and that I have not copied in part or whole or otherwise plagiarised the work of other students and /or persons. I confirm that I have read and understood the University regulations on cheating, plagiarism and collusion. I understand that validation from this declaration and commitment shall be subject to consequences and shall be dealt with accordingly by the London Metropolitan University.

Student Name: Pratima Gautam

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Date: 2020/1/10

ACKNOWLEDGEMENT

I would like to warmly acknowledge and express my deep sense of gratitude, unrestrained appreciation and indebtedness to our module leader Mr. Ishwor Sapkota for his keen guidance, constant encouragement and prudent suggestions during our study. I would like to place on record my sincere appreciation for his painstaking efforts to deliver the core idea of course contents, for his continuous support for the coursework, from initial advice and contacts in the early stages of conceptual inception and through on-going advice and encouragement to this day. His guidance in stimulating suggestions and encouragement, helped me to co-ordinate on this coursework especially in planning, requirements modelling and designing part of the coursework.

In the same token, I would like to thank the Lecturers of Informatics College Pokhara from whom I received comments and suggestions which have tremendously helped me in improving this coursework. Not to mention, I'm deeply grateful to Mr. Ishwor Sapkota for giving the clear concepts on C#, design over the WPF with the concise explanation and detailed practical approach of desktop based application as well as helping us with third-party libraries, tools and frameworks for determining an optimum solution from the scenario in view of available resources on Internet. He encouraged to carry the research independently to avoid the plagiarism to the great extent. Without his meticulous supports and constant efforts, the coursework would remain incomplete and insufficient.

In nutshell, I would like to acknowledge heartfelt thanks to all friends for their invaluable co-operation and constant inspiration during this coursework. I would like to thank all the people for their help directly and indirectly to complete this assignment within the time frame.

Any omission in the brief acknowledgement doesn't mean lack of gratitude.

THANKS AGAIN TO ALL WHO HELPED US.

Pratima Gautam

ABSTRACT

This documentation contains the detailed explanation about all the related tasks and techniques that will be carried out during the development of the project. This is an individual coursework for the module “Application Development” for Student Information System which is developed using Visual Studio Platform using C# as a programming language in Windows Presentation Framework (WPF). With the great contribution of Mr. Ishwor Sapkota the course work was completed within the time frame.

The application allows the user to input the student personal detail including registration date so that a system can generate a weekly enrolment report of the student. System includes detail like Name, address, contact no, email, program enrol and registration date of the students. The application keeps track of the student’s details, program enrol and registration date.

In this desktop-based C# project different aspects of student information system is considered for maintaining student detail. The application implements the following features:

a) Imports a record from .CSV format for bulk data input, or to allow manually inputting details like ID number, name, address, contact no, course enrol, registration date etc.
b) Generate and display two different reports, listing the student’s detail like id, name, program enrol and registration date:
    i. one sorted by student first name and
    ii. the other sorted by registration date.
c) Display weekly tabular report showing total number of students enrolled so far in each program offered by the institution.
d) Display chart showing total number of students on each program (computing, multimedia, networking etc).
e) Save and retrieve the student enrol status with the student details.

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1. Introduction

1.1 Introduction to the topic

The designed system is Student Information System which is highly designed developed and tested under various circumstances. The features and functions that are required in Student Information System are almost fulfilled by the developed system. This coursework is assigned to us as an individual task to cope with the data model for the persistent company or organization. It consists of features like adding student's details like name, address, contact number, registration date and the course enrolled. In addition to that, details information of the students can be added such as their first name, email address, contact number and course enrol from the uploaded CSV files. Furthermore, there is a feature to view weekly report and chart of the total students enrolled to the program. Other available features are well explained in other sections of the report.

1.1.1 Current Scenario

There are numerous schools/institutions who keep record of their data in old traditional system which is paper-based system. System administration seems more onerous as the number of file increases in the paper-based system. In addition to that, there are some institutions with digital system but are well lacking the features which are needed for a management of the students record.

1.1.2 Proposed System

The proposed system is digitized system which is specially designed to overcome problem mentioned above. The system ensures security with the presence of login section. Entry of data and display of data have been made easy with the presence of easy user-interface. Strictly speaking, the designed system will be used to maintain the data that is used and generated to support the operations of the company.

1.2 Objectives of the Project

a. Enrol Student

b. Generate Report of the Students into the data grid.

c. Export the data to the XML file

d. Bulk Import the data from the CSV and the save it to the XML.

e. Input data and validation of all the fields to avoid errors in data, not accept blank field values and controlling amount of input.

2. System Overview

2.1 Instruction Manual

The screenshots below will illustrate a user how to operate the system.

As the end user operates the system, the login system will be opened that either allows the user to bypass through the system or exit the application. The username and password of the system is “admin”. Only a valid username and password can provide access to the system. If the user provide with the incorrect username and password, then an error message to try again will be prompted to the user.

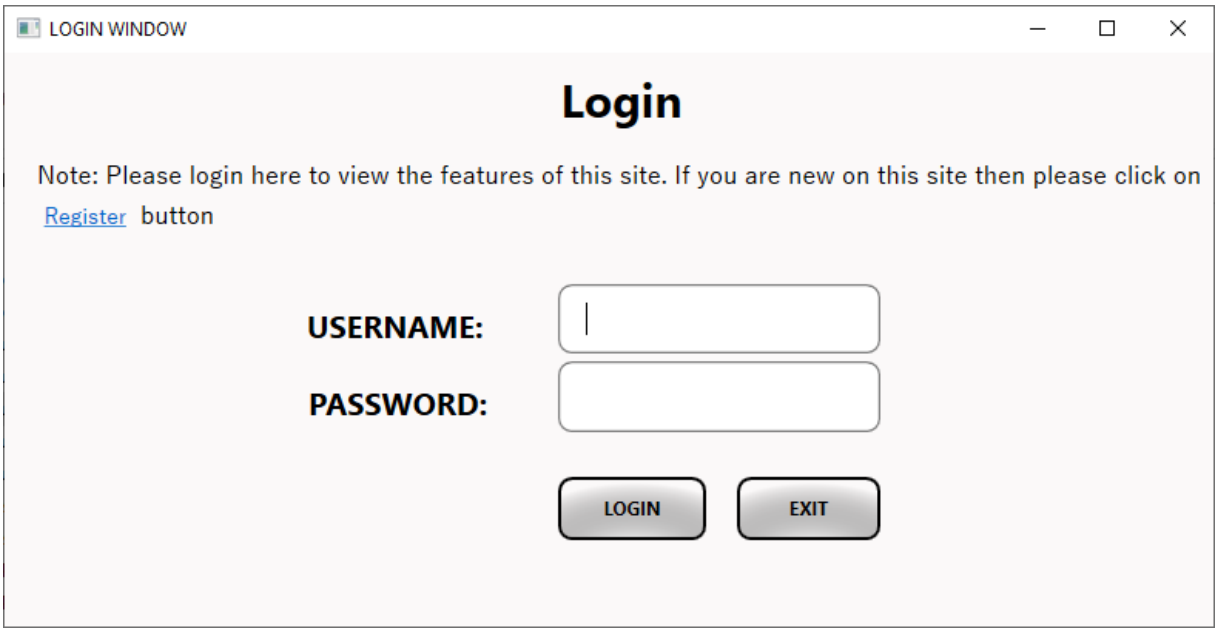


Figure 1: Login Window

If the user hasn’t yet registered, then he/she can even get registered by clicking on the Register Button.

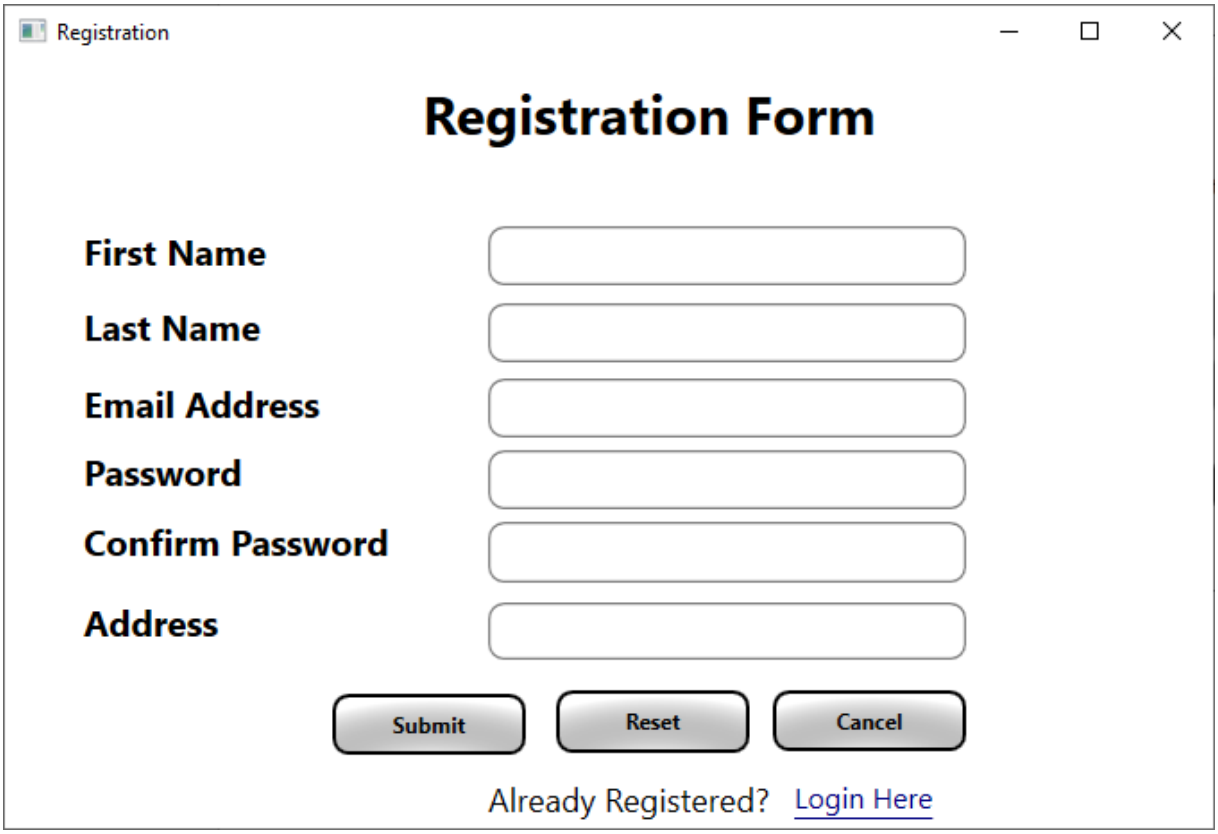


Figure 2: Registration Window

After the User successfully logs in to the system, the main screen will be loaded which looks like this:

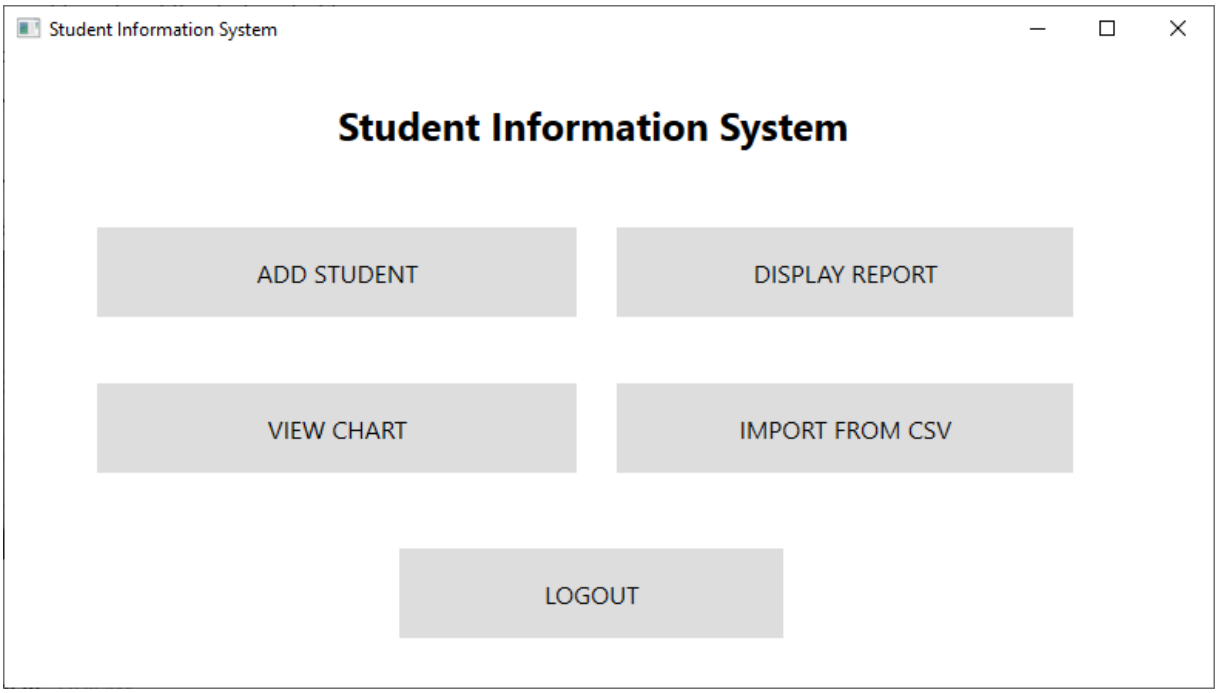


Figure 3: Main Window (Home Page)

The main screen provides services which are Add Student section, Display Report section, View Chart section, Bulk Import section and the Logout feature.

To add the new student, the user must click on Add Student button which prompts them to the new window. As user clicks following screen appears:

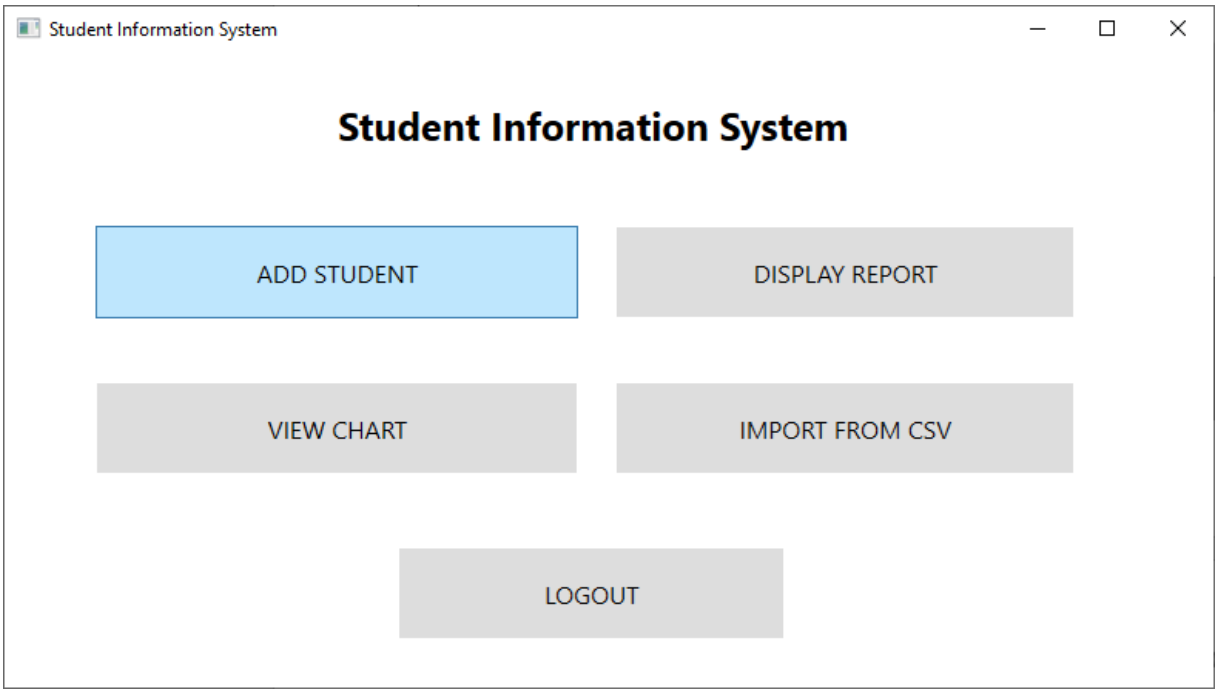


Figure 4: Clicking on "Add Student" Button

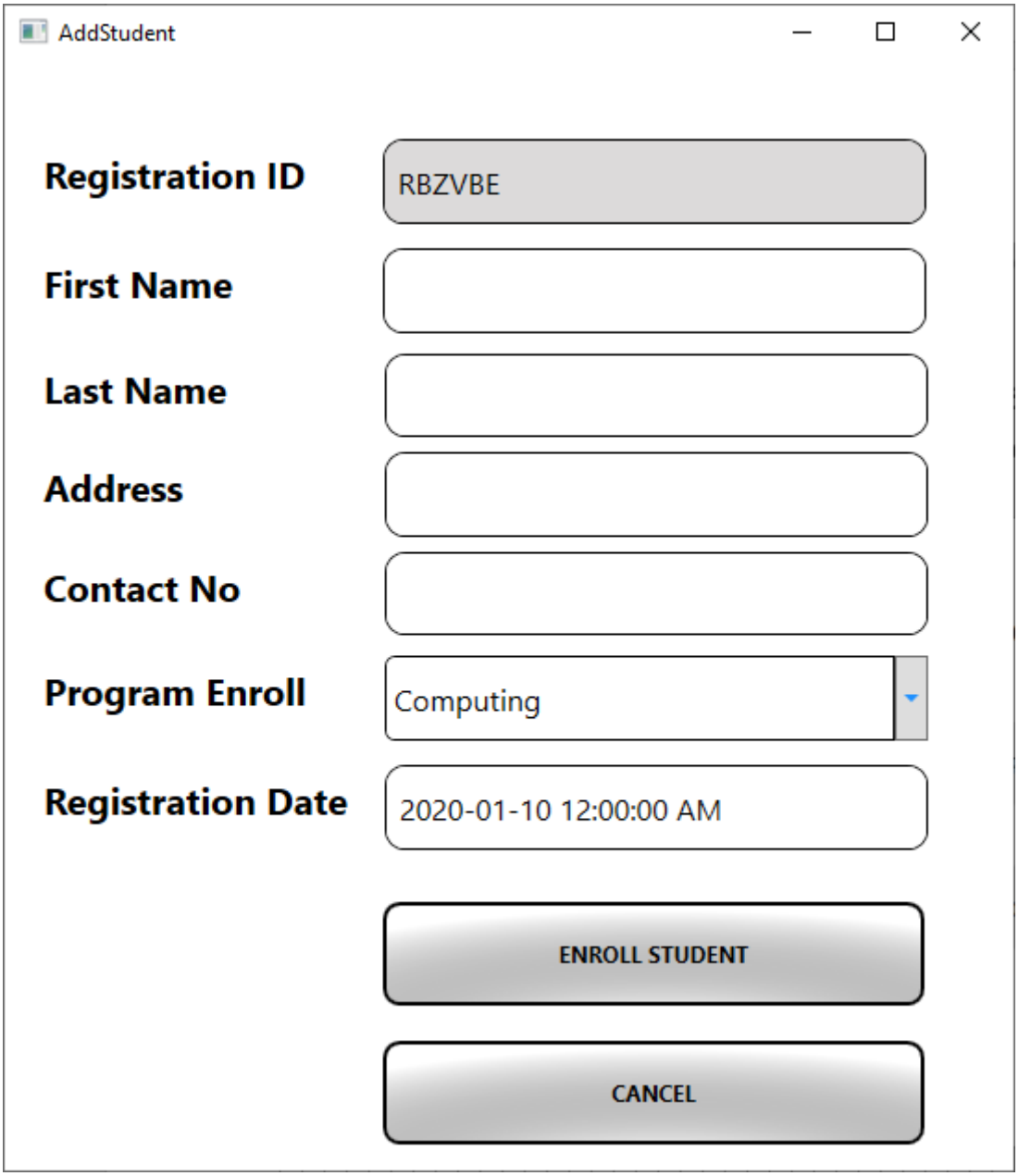


Figure 5: Add Student Window

The student's registration ID is autogenerated and the registration date is automatically picked from the system at the time the student is registered. This way if the correct data are fed to the system, then the user can register the student to the system.

On the main window different buttons works with different functionalities. Some of them are as follows:

a) ADD STUDENT: Through this button, new student can be registered to the system.

b) DISPLAY REPORT: Through this button, the preloaded user data can be displayed in the grid. Those data can be sorted with name and registration date. The weekly report showing total number of students enrolled so far in each program offered by the institution can also be generated when going to the new window through the same button.
c) IMPORT CSV: Through this button, bulk upload feature is enabled which can be used to upload the bulk data through the chosen CSV to the data grid and used to register those students details to the system.
d) LOGOUT: This button is used to logout from the whole system or exit the application.
e) VIEW CHART: This button is used to view the chart of the total students enrolled to the on each program (computing, multimedia, networking, etc.)

2.2 Concept Analysis and Functionality

The system requires a correct username and password to login. The user gets access to the main page only after a successful login to the system. Main window page holds student's information like name, contact number, address, registration date and course enrol which can be changed. The user can logout from the system and exit the application.

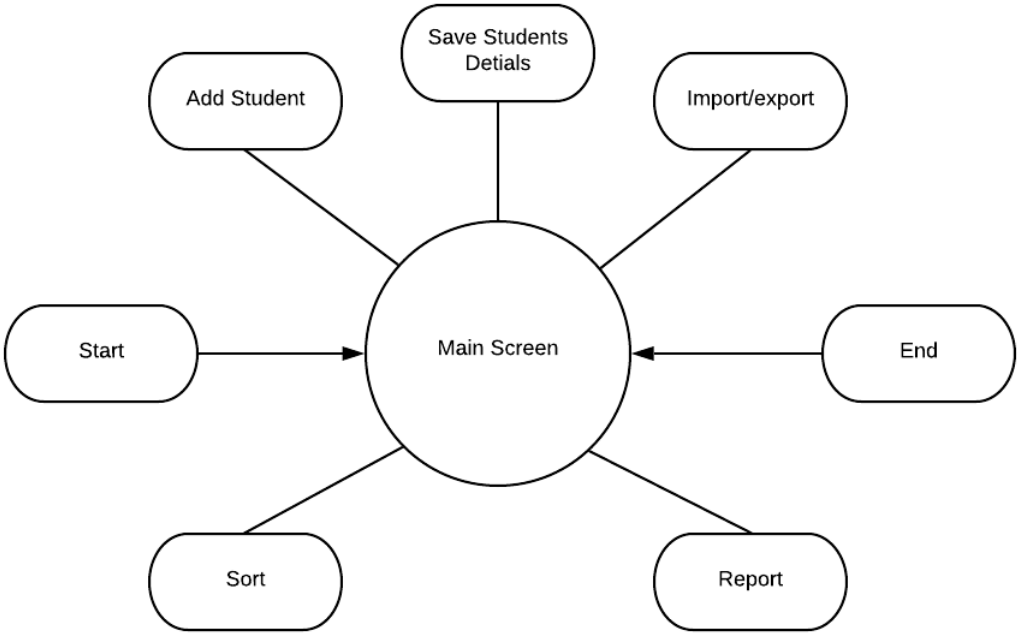


Figure 6: System Architecture

The system's sole purpose is to enter students' data. It requires 2GB Ram on the computer system as well as Windows operating system.

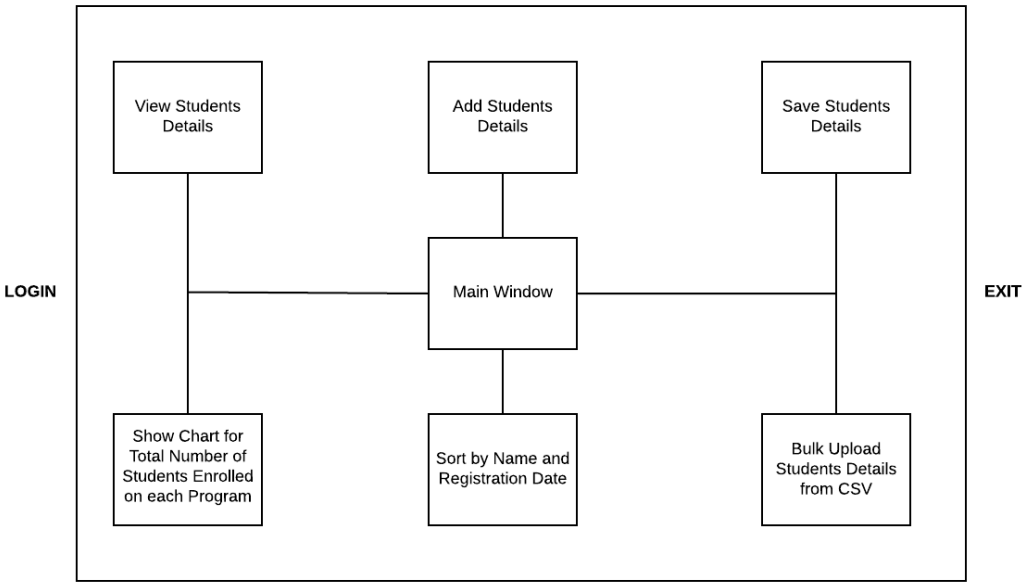


Figure 7: Further System Concept Analysis

Figure 8: Class Diagram

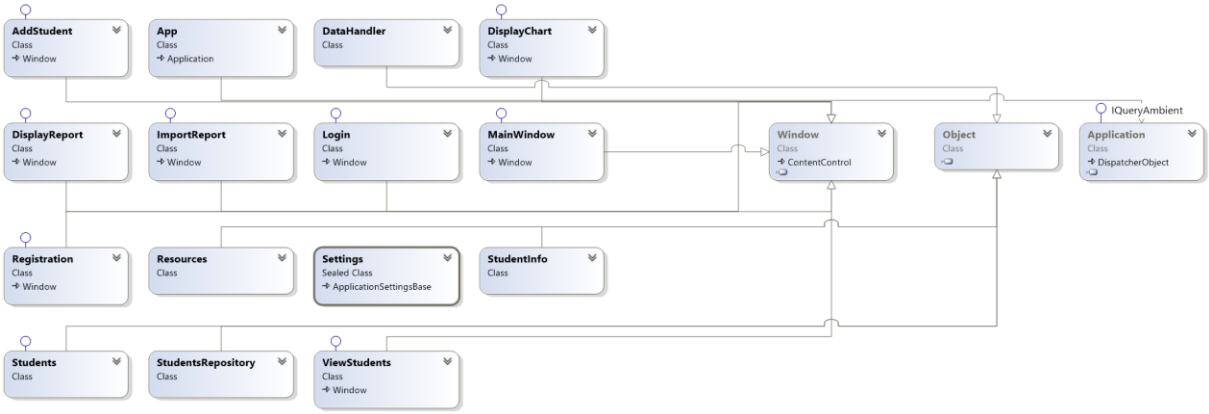
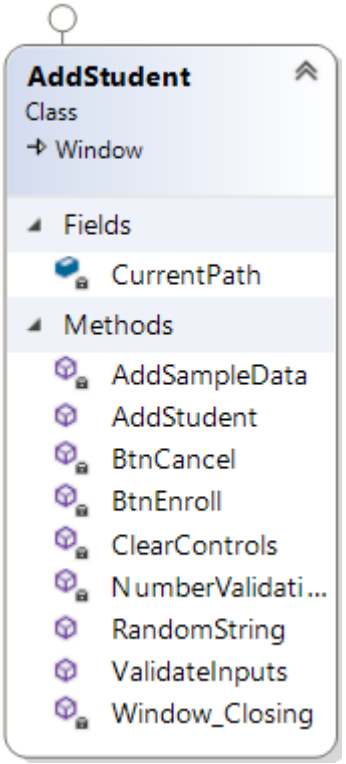


Figure 9: Class Diagram Showing the Associations

2.3 Classes properties and methods

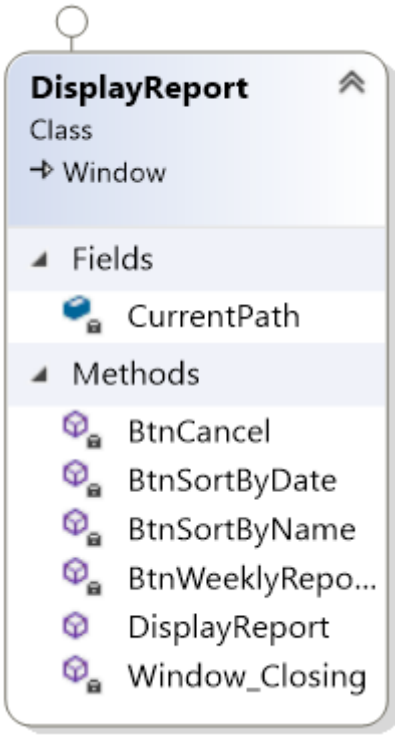
2.3.1 Add Student Class

Table 1: Method Descriptions for Add Student Class

Methods	Description	Properties
AddSampleData	Inserting the new dataset values to the table student	
AddStudent	Constructor class which initializes the registration date and call the method RandomString() for the autogenerates the six digits strings.	
BtnCancel	Closes the current window and redirect back to the MainWindow() class	
BtnEnroll	Enrol the students to the system	
ClearControls	This method clears all the text in the controls like textbox and combo box.	

2.3.2 Display Report Class

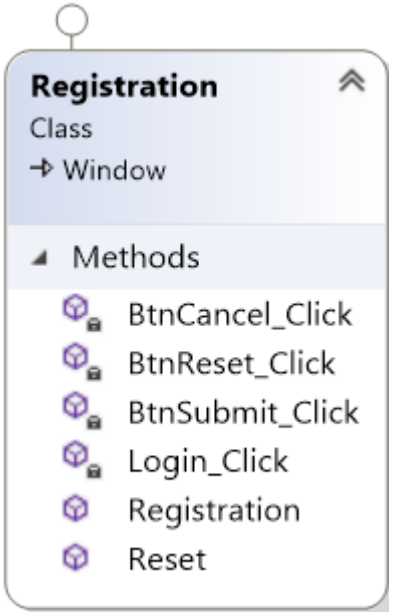
Table 2: Method Descriptions for Display Report Class

Methods	Description	Properties
BtnCancel	Closes the current window and redirect back to the MainWindow() class	
BtnSortByDate	Sorts the registration date in the data grid in accordance to the date	
BtnSortByName	Sorts the name in the data grid in accordance to the name	
BtnWeeklyReport	This method generates the weekly report showing total number of students enrolled so far in each program offered by the institution.	
DisplayReport	Constructors which initializes the DataHandler() to retrieve/load the students data to the data grid.	
Window_Closing	This event will hides the current window and stop from exiting	

	the application process.	

2.3.3 Registration Class

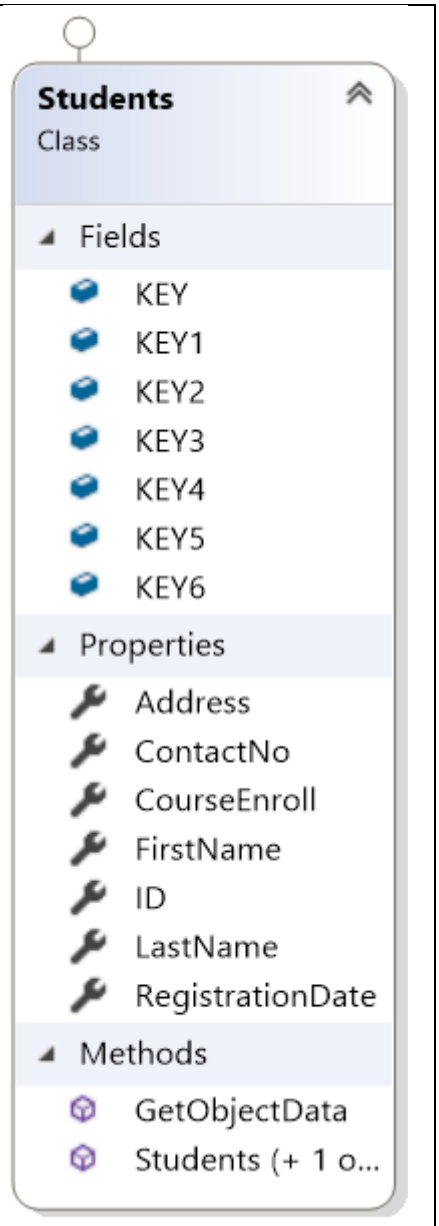
Table 3: Method Descriptions for Registration Class

Methods	Description	Image
BtnCancel_Click	Closes the program	
BtnReset_Click	This click event calls the Reset() method to clear up all the controls	
BtnSubmit_Click	Trigger the submit event to register the user to the system after the user fills up information in the field	
Login_Click	Redirect the user to the Login Page	
Registration	Constructor Call which InitializeComponent()	
Reset	Clears all the controls that has been filled up	

2.3.4 Students class

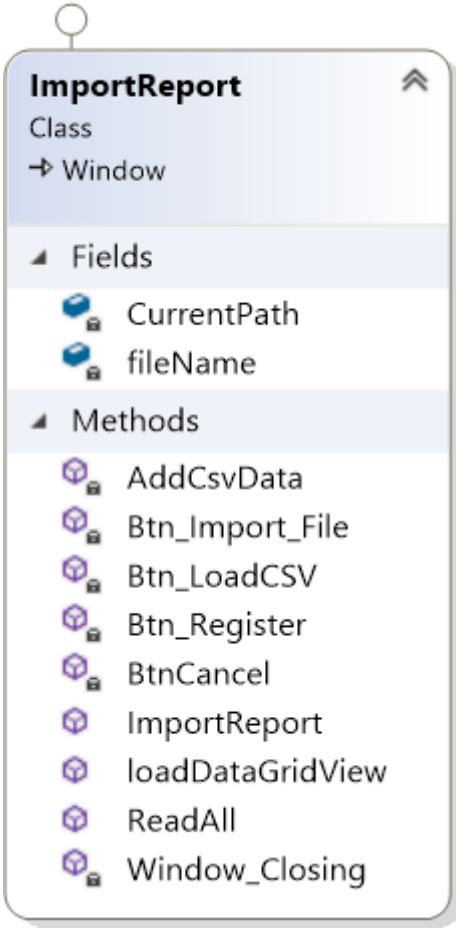
Table 4: Method Descriptions for Students Class

Methods	**Description**	**Properties**

GetObjectData	This method converts the properties to object data using Key value mentioned above	
Students	Deserialization constructor which gets value from object data and converts to c# property.	

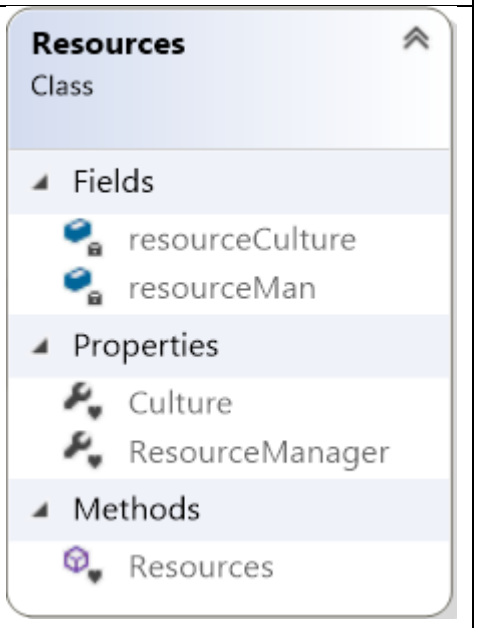
2.3.5 ImportReport class

Table 5: Method Descriptions for ImportReport Class

Methods	Description	Properties
AddCsvData	Creating Dataset table for inserting the CSV data	
Btn_Import_File	After clicking this button, user can import the saved data file of the recorded students.	
Btn_LoadCSV	Call the method loadDataGridView()	
Btn_Register	Register all the students that have been imported to the system and write to the XML.	
ImportReport	Constructor of the given class	
loadDataGridView	This method reads the XML schema and file and call the function to load the students details to the data grid.	

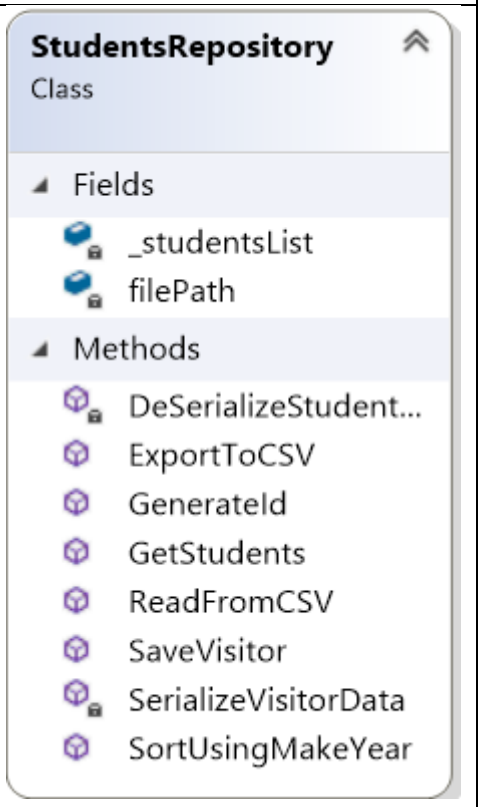
2.3.6 Resources class

Table 6: Method Descriptions for Resources Class

Methods	Description	Image
ResourceManager	Represents a resource manager that provides convenient access to culture-specific resources at run time.	
Resources	Allow to create, store, and manage various culture-specific resources used in an application	

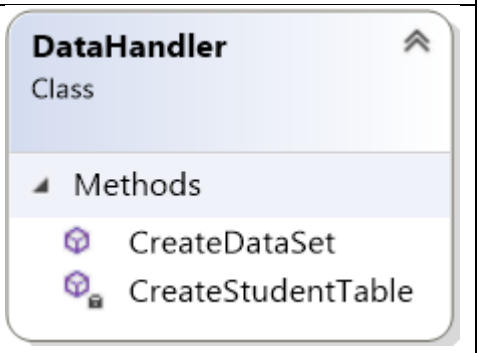
2.3.7 Students Repository class

Table 7: Method Descriptions for Students Repository class

Methods	Description	Image
DeSerializeStudentData	Gets object data from file location and converts to c# list.	
ExportToCSV	Export the list to csv	
GenerateId	Gets the latest identity id.	
GetStudents	Reads student data from object source and returns a list.	
ReadFromCSV	Read from a csv file and conver it to c# object.	
SaveStudent	Calls the method SerializeStudentData()	
SerializeStudentData	Saves c# list object, converts to object data and saves in the file location.	
SortUsingMakeYear	Implements bubble sort algorithm	

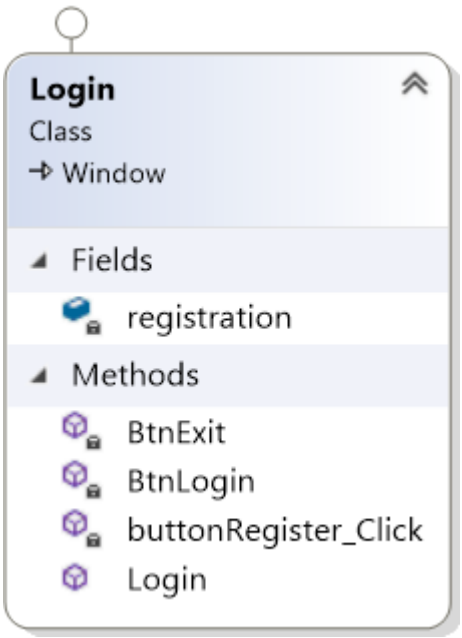
2.3.8 Data Handler class

Table 8: Method Descriptions for Data Handler Class

Methods	Description	Image
CreateDataSet	Methods that creates the dataset	
CreateStudentTable	Methods that describes the way to create student table	

2.3.9 Login Class

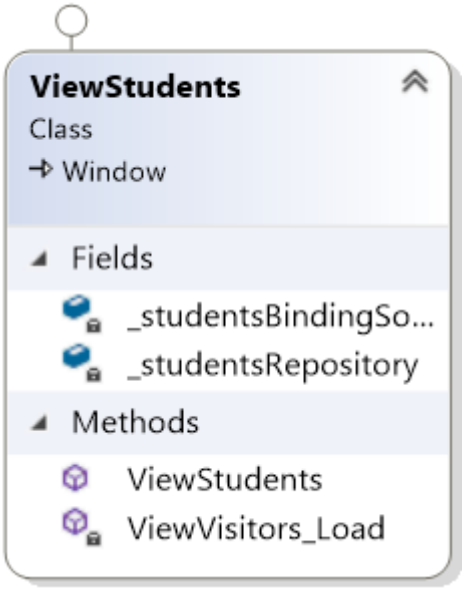
Table 9: Method Descriptions for Login Class

Methods	Description	Image
BtnExit	Closes the application	
BtnLogin	Redirects to the MainWindow if the login credentials are correct as specified	
buttonRegister_Click	Redirect the user to the Register Page if the user hasn't yet registered to	

	the system	
Login	Calling Constructor Login	

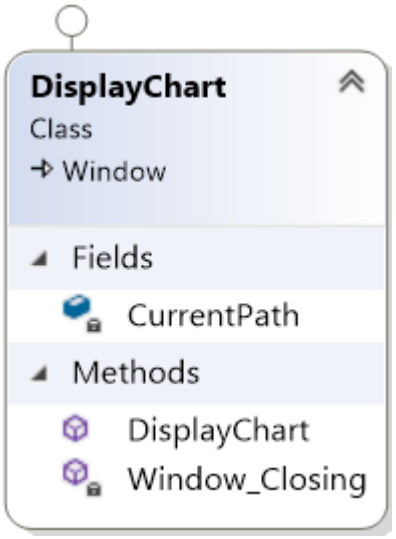
2.3.10 View Students class

Table 10: Method Descriptions for View Students Class

Methods	Description	Image
ViewStudents	Class	
ViewVisitors_Load	Display data in the binding source in the grid and assign the list to the grid and makes the grid readonly.	

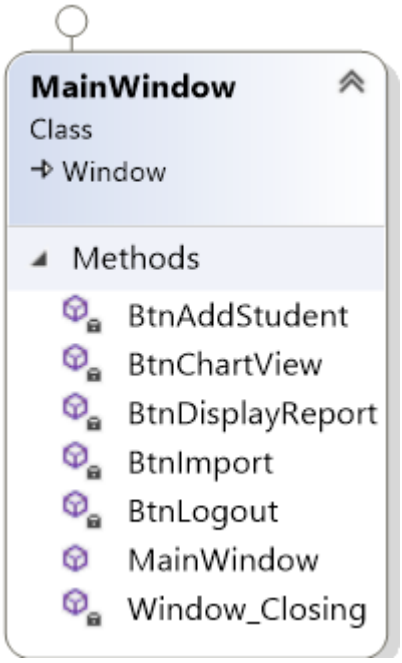
2.3.11 Display Chart class

Table 11: Method Descriptions for Display Char class

Methods	Description	Image
DisplayChart	Constructor class	
Window_Closing	Hides the current window and redirect back to the main window instead of closing the application	

2.3.12 Main Window class

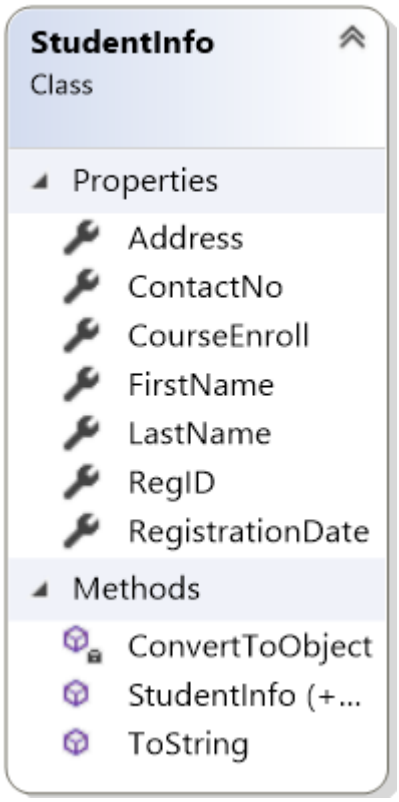
Table 12: Method Descriptions for Main Window class

Methods	Description	Image
BtnAddStudent	Redirect to the Add Student Window	
BtnChartView	Redirect to the Display Chart Window	
BtnDisplayReport	Redirect to the Display Report Window	
BtnImport	Redirect to the Import from CSV Window	
BtnLogout	Prompts user	

	whether to close the application or not	
MainWindow	Calling constructor of same class	
Window_Closing	Redirect to the Login Window on calling OnClosing event	

2.3.13 Student Info class

Table 13: Method Descriptions for StudentInfo Class

Methods	Description	Image
ConvertToObject	Convert the strings to the objects	
StudentInfo	Empty constructor call	
ToString	Converts to strings	

3. Development

3.1 Pseudocode

```
#PSEUDOCODE FOR STUDENT INFORMATION SYSTEM

BEGIN

DO

   INPUT username && password

   IF username && password == correct

      THEN GET system Access

      LOAD Main Window

      DO

         ADD Student Details to be recorded

            INPUT Details

            THEN ADD students


            IF data is correct

               DO

                  SAVE Data

               END DO

            ELSE

               DO

                  RESET and Enter valid data again

               END DO

            END IF

         SORT the saved Data

         SORT BY StudentId

         SORT BY RegistrationDate
```

```
        IF Student is added
          DO
            EXPORT Student Files in XML Format
          END DO
        ELSE IF student file is exported
          DO
            IMPORT CSV files from the System
          END DO
        END IF
      END DO

      DO
        IF Student details are ready THEN
          DO
            GENERATE PIE CHART FOR total Students enrolled
            VIEW weekly Report FOR total Students enrolled
          END DO
        ELSE IF
          DO
            IF WORK IS DONE
            LOGOUT from the SYSTEM
          END DO
        END IF
      END DO
    END IF
```

END DO

END

3.2 Concept Proof and Algorithm

When we create real-world applications, the ability to store information in your program code is critically important. In this project, I have learned how programming languages make use of various data structures to hold this information. For example, storing a list of values for students. I learnt how C# provides a plethora of data structures from simple arrays to more complex structures that permit the use of “typing”. I learnt that, generics is a concept that C# uses to allow the representation of objects in our data structures to apply “typing”, making it easier to work with specific data types.

The List C# data structure was used on this project which is the generic version of ArrayList because we want to access items by index. Since the List<> object is tailored to a specific data type, there is no need to cast when retrieving values.

In this coursework, sorting algorithm is used to bring the solid foundation for understanding the logic behind the sorting of the name and registration date.

In this program, for sorting, bubble sort is used because it compares all the element one by one and sort them based on their values. The bubble sort stores data in array by swapping those added data repeatedly unless the order is correct.

Example:

<u>First Phase</u>

(6 2 5 3 9) >> (2 6 5 3 9) The first two data are swap 6 > 2.

(2 6 5 3 9) >> (2 5 6 3 9) Swapped 6 > 5.

(2 5 6 3 9) >> (2 5 3 6 9) Swapped 6 > 3.

(2 5 3 6 9) >> (2 5 3 6 9) Since these all elements are already in order (9 > 6). So, the algorithm stops.

Second Phase

(2 5 3 6 9) >> (2 5 3 6 9)

(2 5 3 6 9) >> (2 3 5 6 9) Swapped 5 > 3.

(2 3 5 6 9) >> (2 3 5 6 9)

(2 3 5 6 9) >> (2 3 5 6 9)

The array is already sorted, however algorithm needs one whole phase without any swap to know it is sorted.

Third Phase

(2 3 5 6 9) >> (2 3 5 6 9)

(2 3 5 6 9) >> (2 3 5 6 9)

(2 3 5 6 9) >> (2 3 5 6 9)

(2 3 5 6 9) >> (2 3 5 6 9)

Algorithms of Student Enrolment

Steps:

1. Start
2. Check whether the student data file exists or not.
3. If it doesn’t exist, display error message and restart
4. If exists, read the available data
5. Check whether there is student data or not
6. If data doesn’t exist, display error message and restart
7. If data found, retrieve the data
8. Display the data in the Data Grid
9. Enrol the student to the system
9. Stop

4. Testing and Analysis

4.1 Test Cases

Testing is carried in order to assure that the given GUI works fine and also to check out if the GUI response as per instructed or not. Not only this, testing is done so that the features that were expected to be delivered are achieved or not. In this phase, modification is done if the system is found working incorrectly. Thus, testing helps us to get familiar with the type of error and handle the errors with the necessary formatting in the program.

Test Case 1:

Table 14 : Test Case 1

Objective	To ensure the program execute successfully without any errors.
Action	The project is to be run from the menu bar icon (F6) or right clicking on source code of the main class in the file
Expected Result	The GUI program should efficiently run without any errors in the terminal or unexpected shutdown
Actual Result	The GUI program is successfully executed in NetBeans IDE as proposed by the coursework
Conclusion	Test is successful executed.

Evidence:

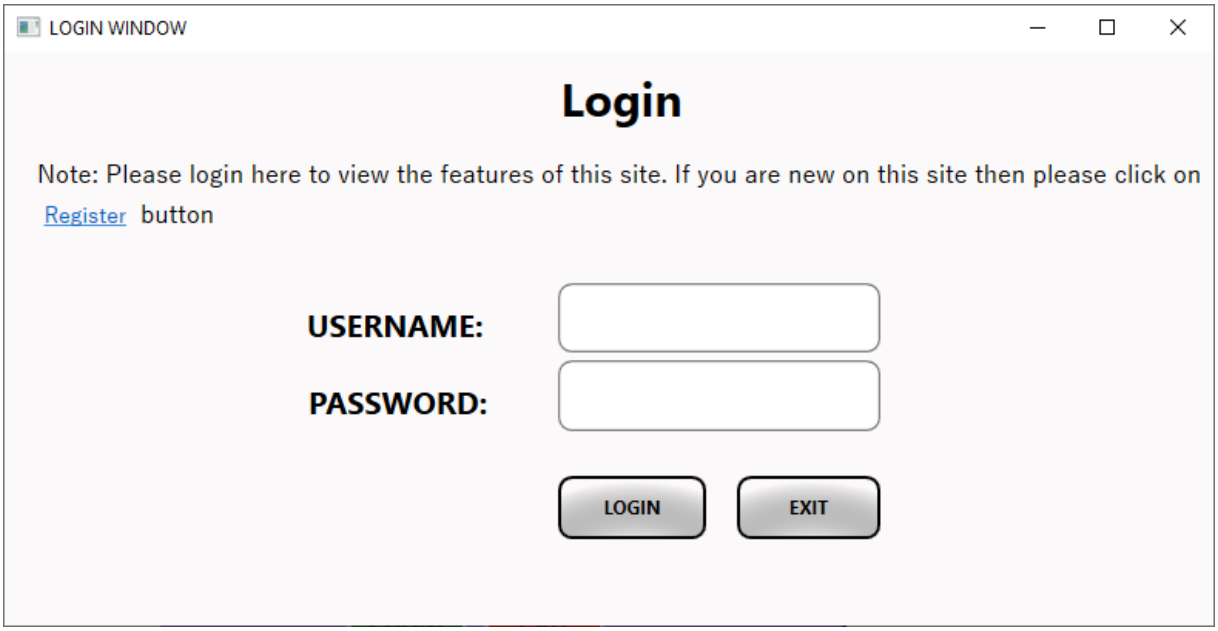


Figure 10: Login Window on Program Start up

Test Case 2:

Table 15: Test Case 2

Objective	To ensure if the login is working properly or not with the matching validation inputs.
Action	The project is built and run to check if the login functionality works or not with the validation checks.
Expected Result	The GUI program should efficiently run without any errors in the terminal or unexpected shutdown
Actual Result	The GUI program is successfully executed in as proposed by the coursework
Conclusion	Test is successful executed.

Evidences and Screenshots:

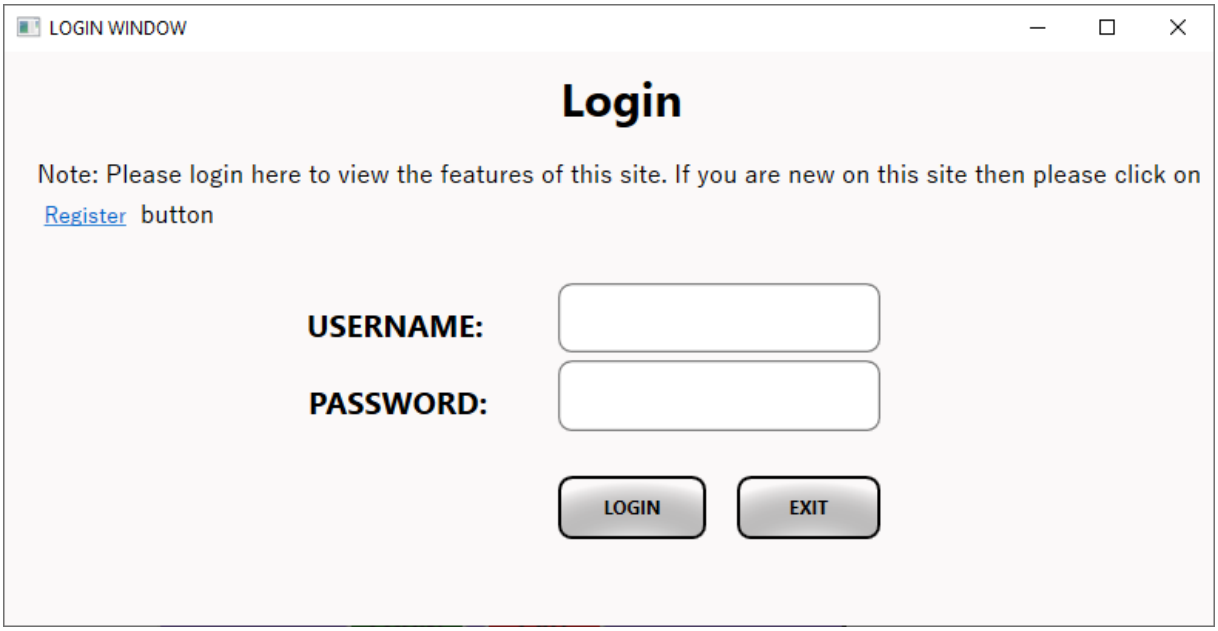


Figure 11: Running the program to check the login window

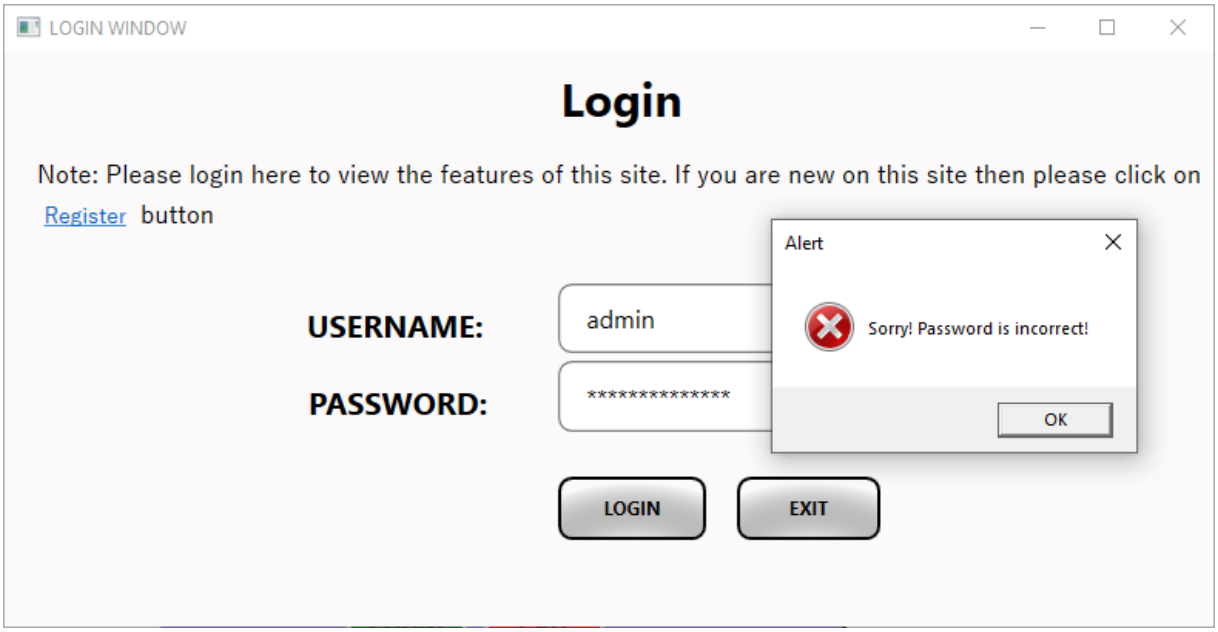


Figure 12: Error Message when Password goes wrong in MessageBox (a)

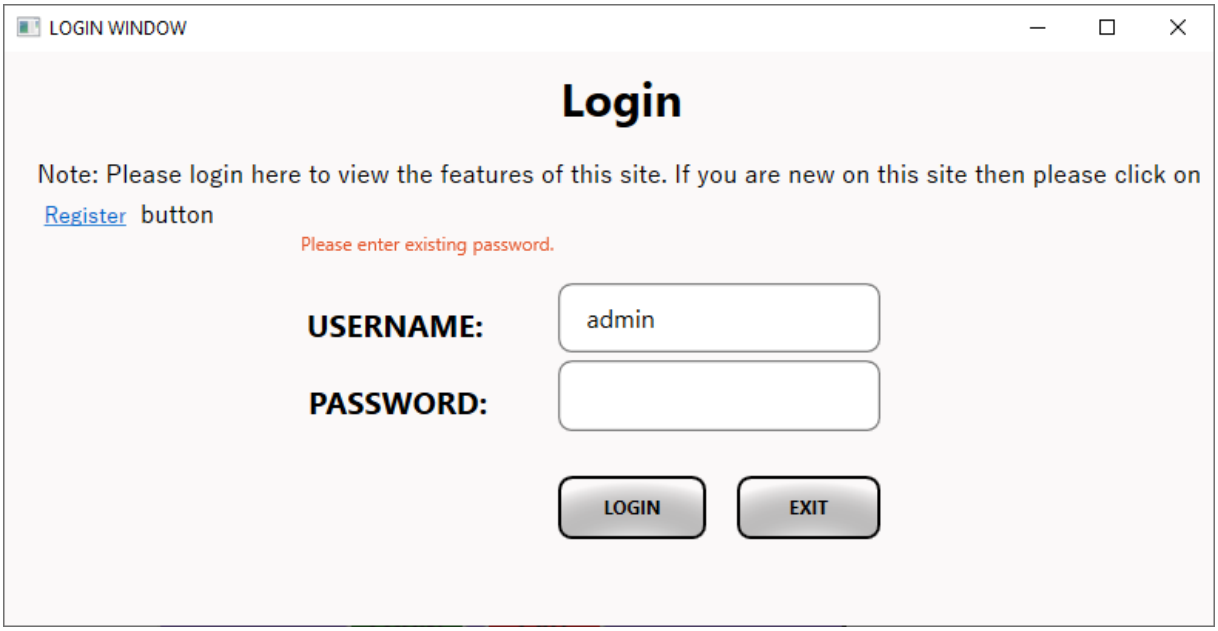


Figure 13: Error Message when Password goes wrong in TextBlock (b)

Figure 14: Error Message when Username goes wrong in MessageBox (a)

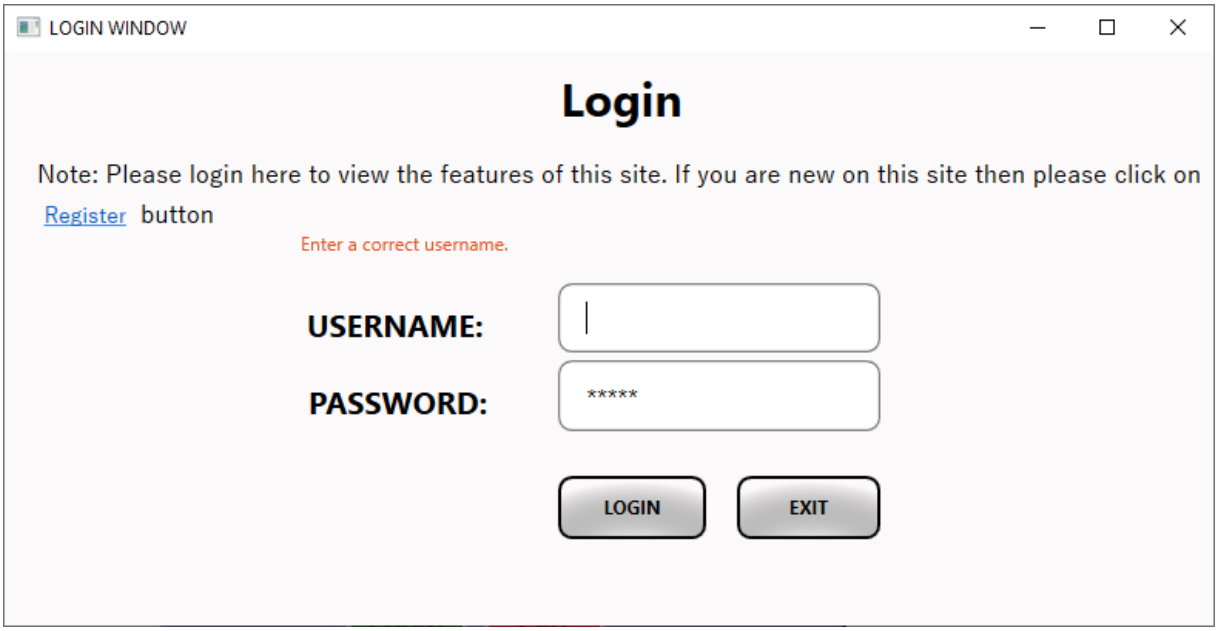


Figure 15: Error Message when Username goes wrong in TextBlock (b)

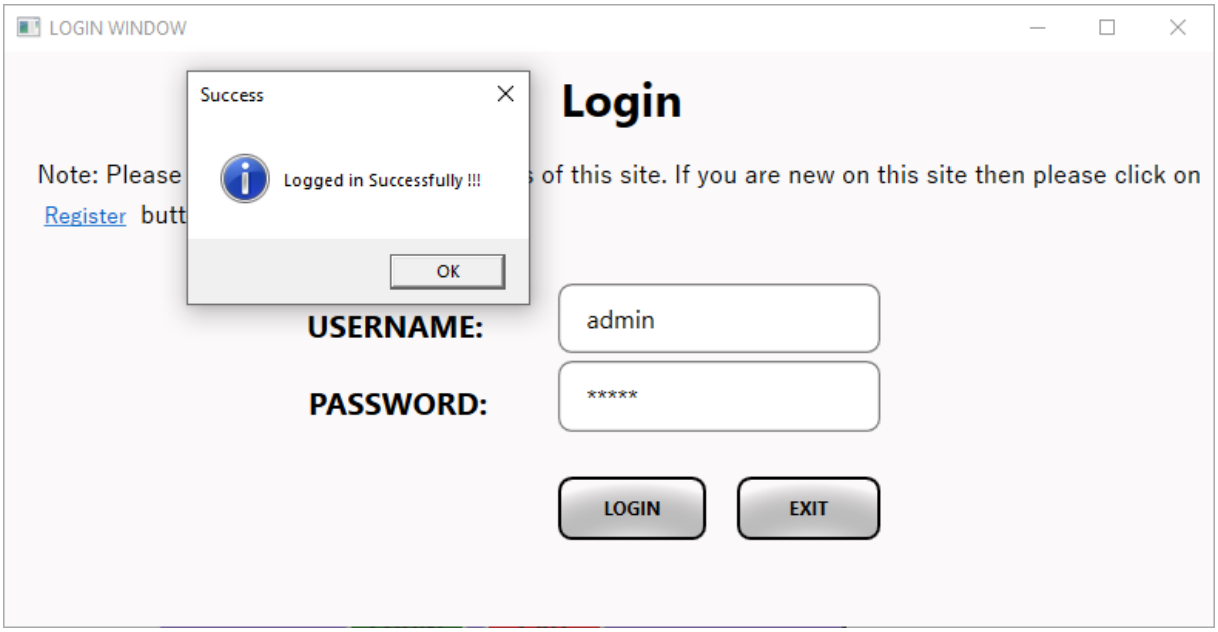


Figure 16: Successfully Logged in with correct credentials

Test Case 3:

Table 16: Test Case 3

Objective	Checking if the students are added or not with the proper validation if the input fields go empty

Action	- Go to the Main Window after being successfully logged in and tap on the “ADD STUDENT” - Fill in the students’ details and enrol the student to the system - Make some fields empty and enrol the student to check if the validation works properly or not.
Expected Result	- The program should work correctly by enrolling the students to the system without any bugs in the code. - The system must show the right message to the user when the fields goes empty.
Actual Result	The students are enrolled successfully.
Conclusion	Test is successful executed.

Evidences/ Screenshots:

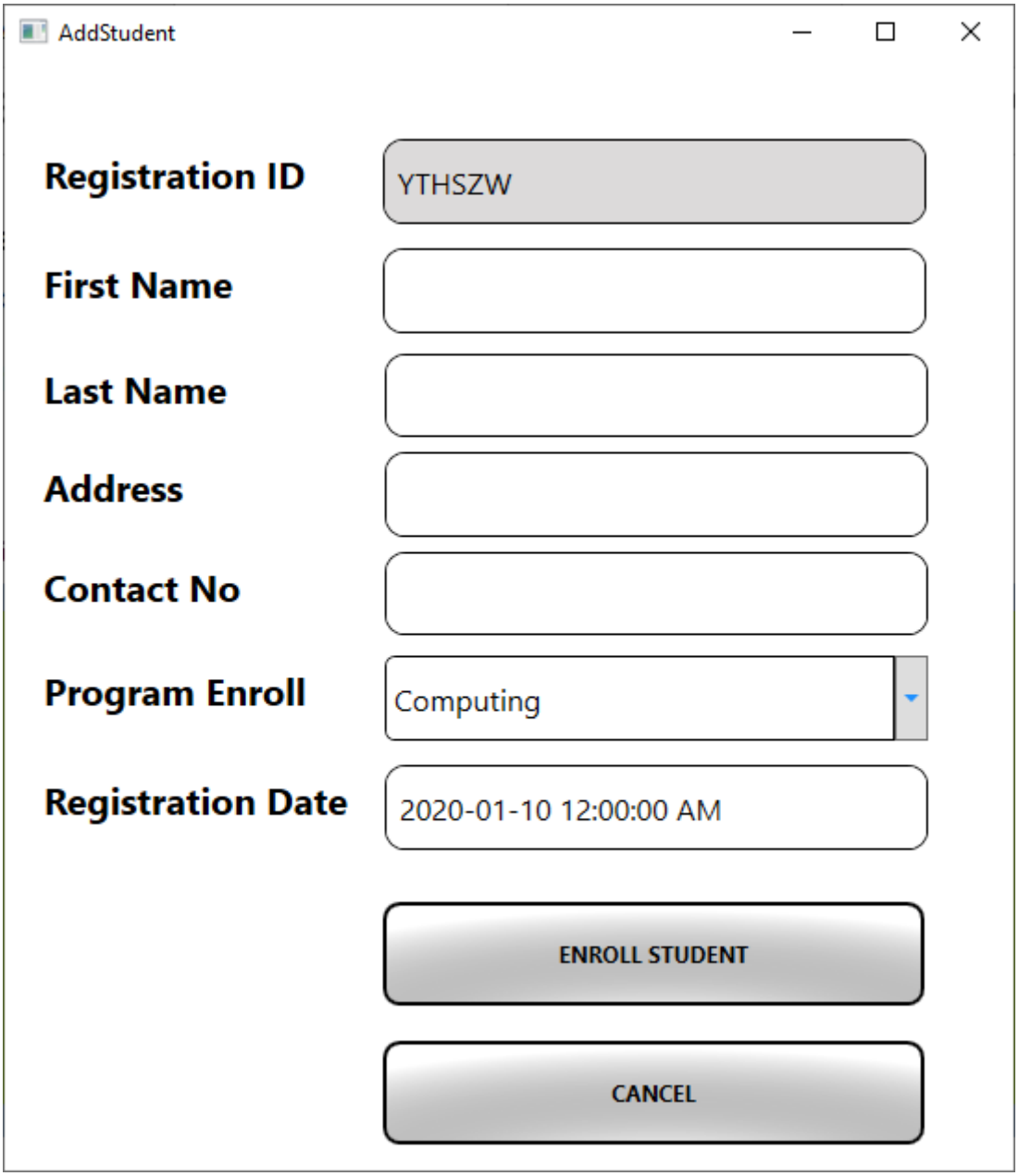


Figure 17: Students Registration UI

Enrolling Students with the empty field will prompt a message box showing the detailed information about the issue.

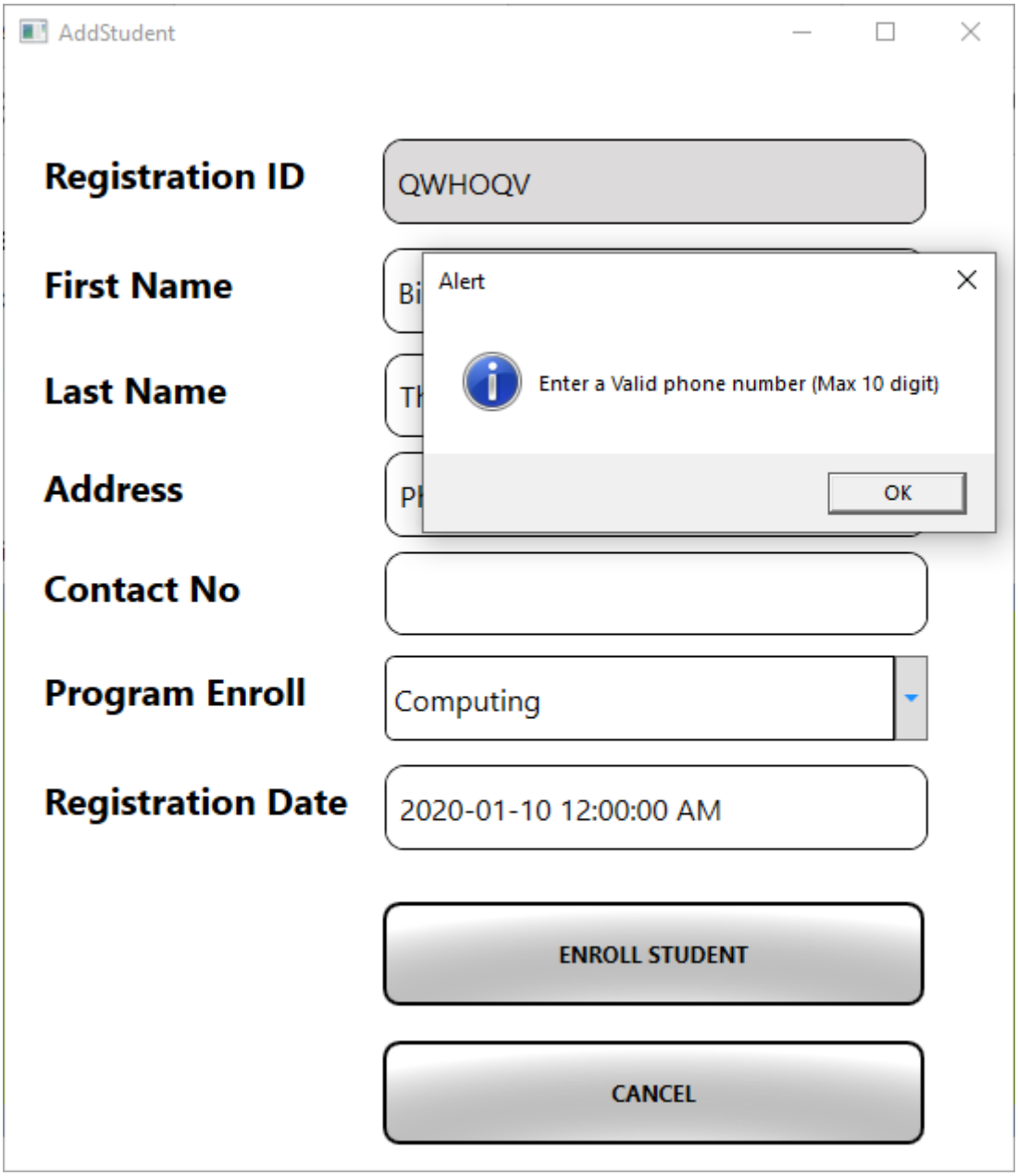


Figure 18: Enrolling students with the Empty Field will result in a message prompt

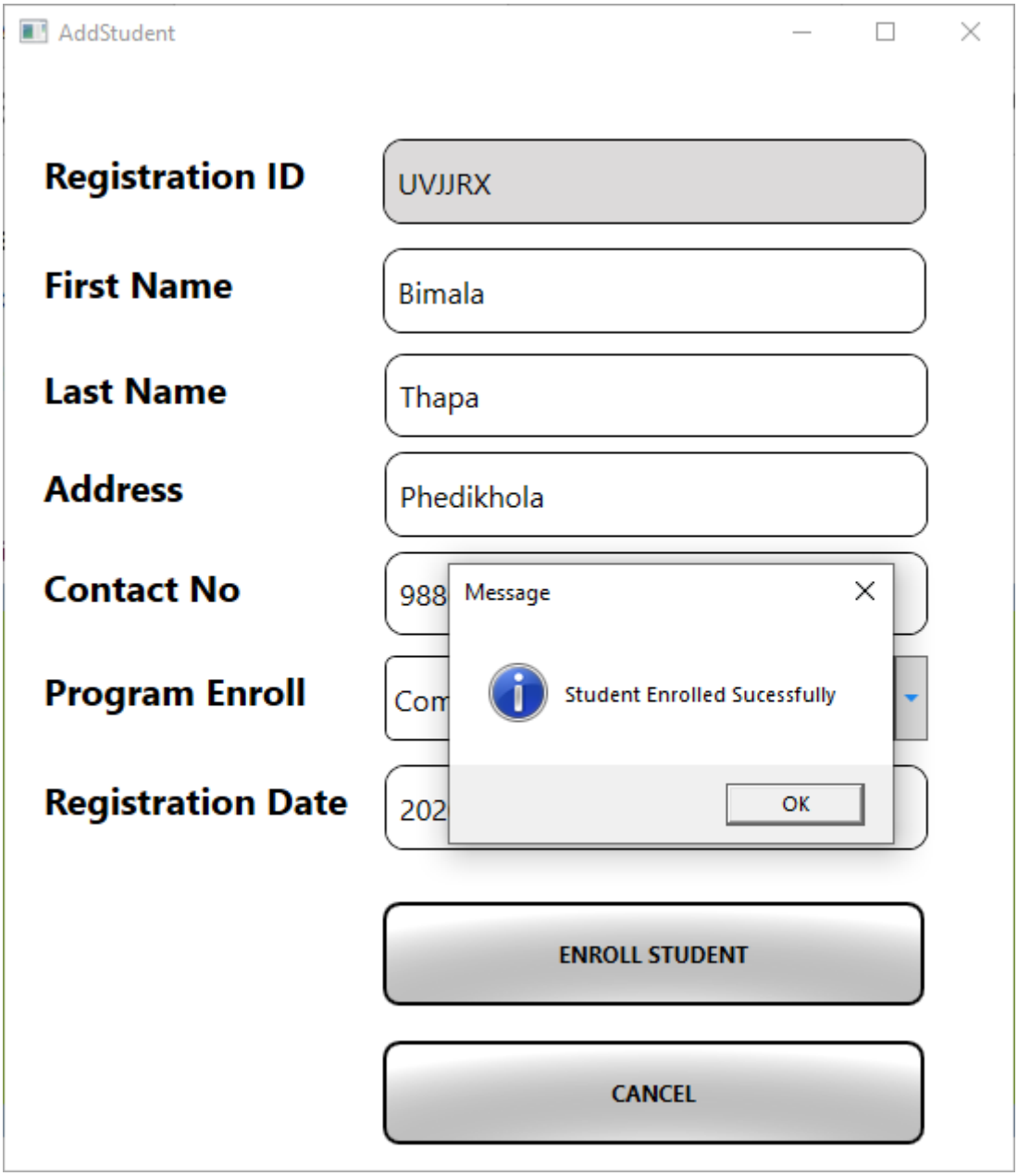


Figure 19: Students Enrolled Successfully

Also, tab index works when going from one text field to another.

Cancel will redirect back to the main window.

Test Case 4:

Table 17: Test Case 4

Objective	Checking if the students which are added is added is inserted to the XML or not.

Action	- Go to the project base directory from the file explorer to check if the both the XML Schema and XML file are generated or not upon the registration. - Check to see if the XML Schema is valid as per defined. - Check the XML file for the student's details added after registration.
Expected Result	- The program should work correctly by inserting the students details to the XML file as per the schema defined. - The values should reside in the proper field.
Actual Result	The student details are added successfully to the XML file as per the defined schema.
Conclusion	Test is successful executed.

Evidences:

StudentCWSchema.xml

bin > Debug > StudentCWSchema.xml

```
<?xml version="1.0" standalone="yes"?>
<xs:schema id="NewDataSet" xmlns="" xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:msdata="urn:schemas-microsoft-com:xml-msdata">
  <xs:element name="NewDataSet" msdata:IsDataSet="true" msdata:UseCurrentLocale="true">
    <xs:complexType>
      <xs:choice minOccurs="0" maxOccurs="unbounded">
        <xs:element name="Student">
          <xs:complexType>
            <xs:sequence>
              <xs:element name="ID" msdata:AutoIncrement="true" msdata:AutoIncrementSeed="1" type="xs:int" minOccurs="0" />
              <xs:element name="RegID" type="xs:string" minOccurs="0" />
              <xs:element name="FirstName" type="xs:string" minOccurs="0" />
              <xs:element name="LastName" type="xs:string" minOccurs="0" />
              <xs:element name="Address" type="xs:string" minOccurs="0" />
              <xs:element name="ContactNo" type="xs:string" minOccurs="0" />
              <xs:element name="CourseEnroll" type="xs:string" minOccurs="0" />
              <xs:element name="RegistrationDate" type="xs:dateTime" minOccurs="0" />
            </xs:sequence>
          </xs:complexType>
        </xs:element>
      </xs:choice>
    </xs:complexType>
  </xs:element>
</xs:schema>
```

Figure 20: Generated XML Schema

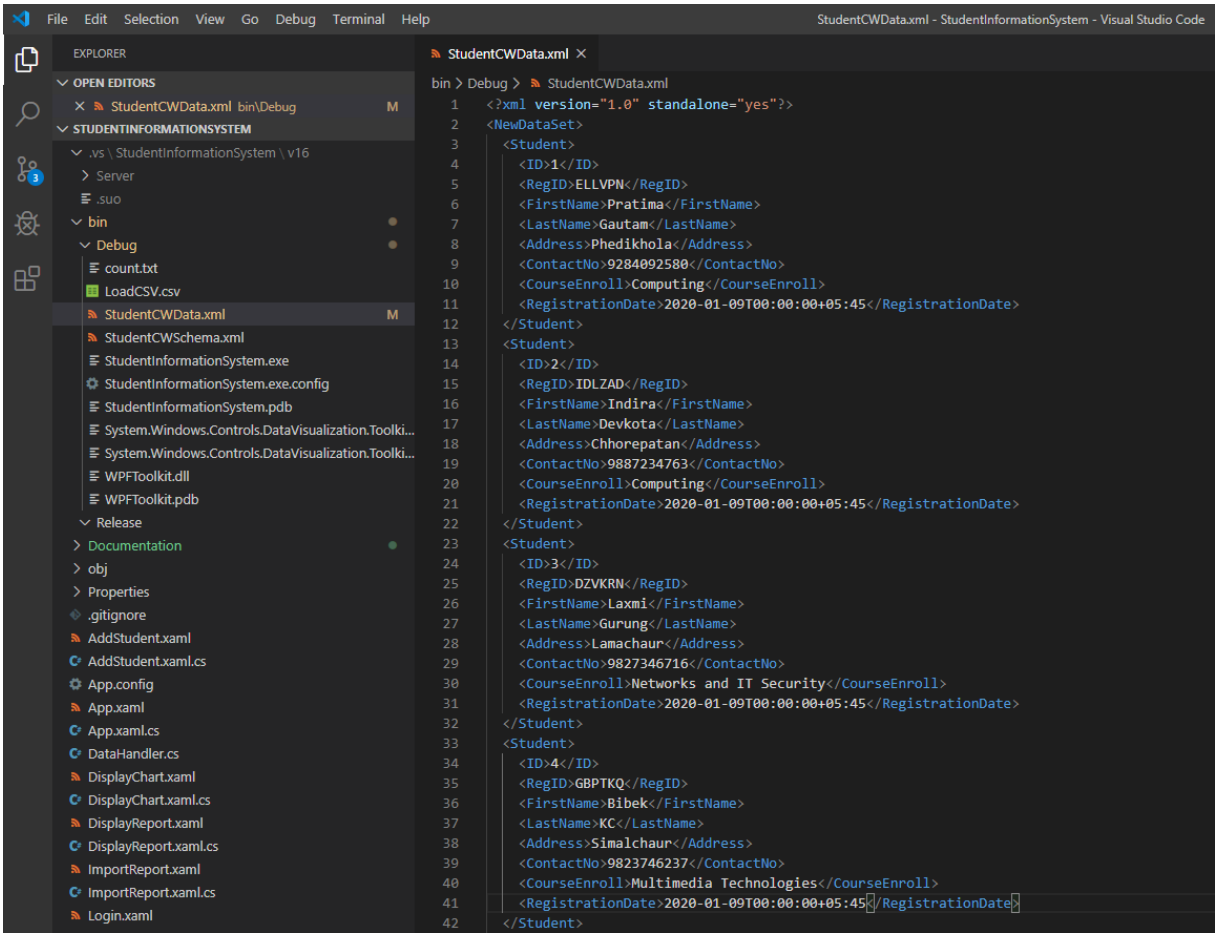


Figure 21: XML File Generated that matches with the given schema

Test Case 5:

Table 18: Test Case 5

Objective	Checking if the students report can be displayed by reading the XML file
Action	- Go to the main window after successfully logging in to the system and tap on “DISPLAY REPORT” - Check if all the values are retrieved from the XML file or not.
Expected Result	- The program should work correctly by inserting the students details to the XML file as per the schema defined.

	- The values should reside in the proper field.
Actual Result	The student details are added successfully to the XML file as per the defined schema.
Conclusion	Test is successful executed.

Evidences / Screenshots:

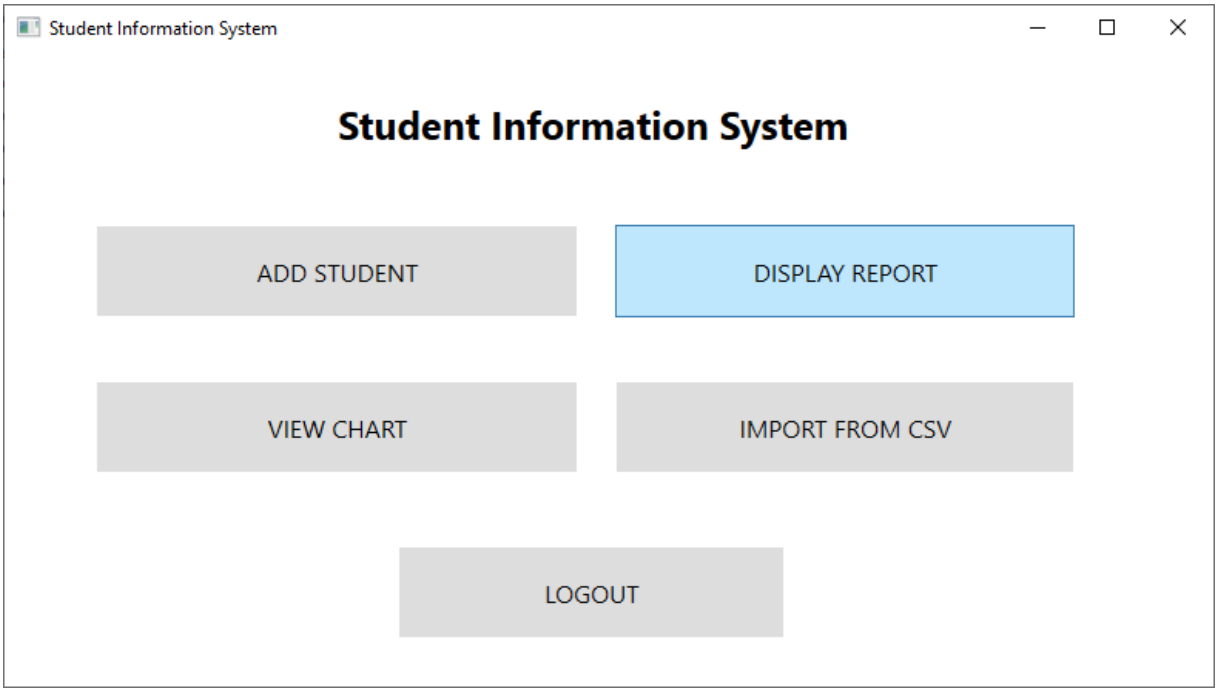


Figure 22:Clicking DISPLAY REPORT in main window

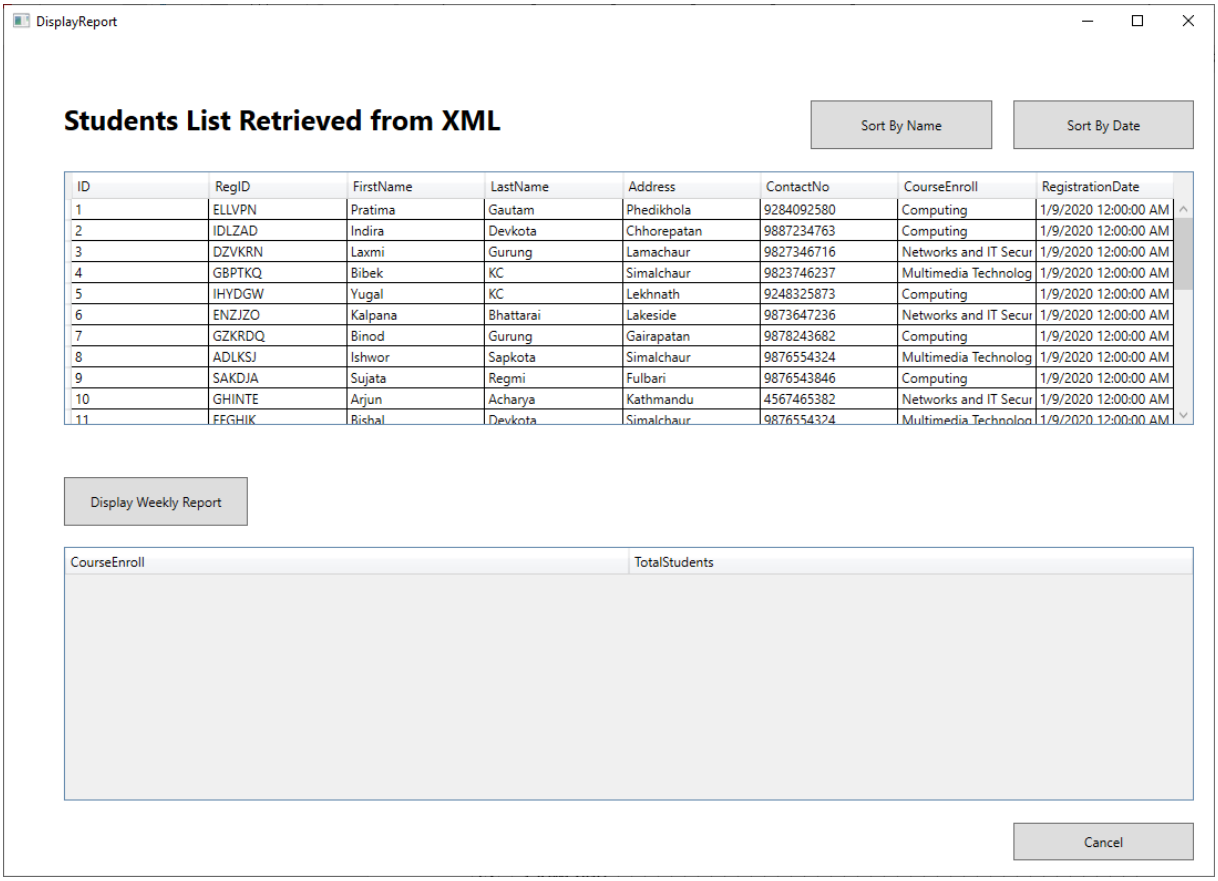


Figure 23: Values are retrieved to the Grid from XML as in XML

Test Case 6:

Table 19: Test Case 6

Objective	Importing file from the CSV and Displaying to the Grid.
Action	- Go to the main window after successfully logging in to the system and tap on “IMPORT FROM CSV” - Check on the IMPORT Button to browse the file location. - Choose the CSV file that is created for import. - Check if the data loads in the grid.
Expected Result	- The program should work correctly by inserting the students details to the XML file as per the schema defined from the CSV file - The values should reside in the proper field.

Actual Result	The student details are added successfully from the CSV file to the data grid shown.
Conclusion	Test is successful executed.

Evidences / Screenshots:

Step 1: After being navigated from the main window to the 'Import Report Window' click on the button "IMPORT FILE"

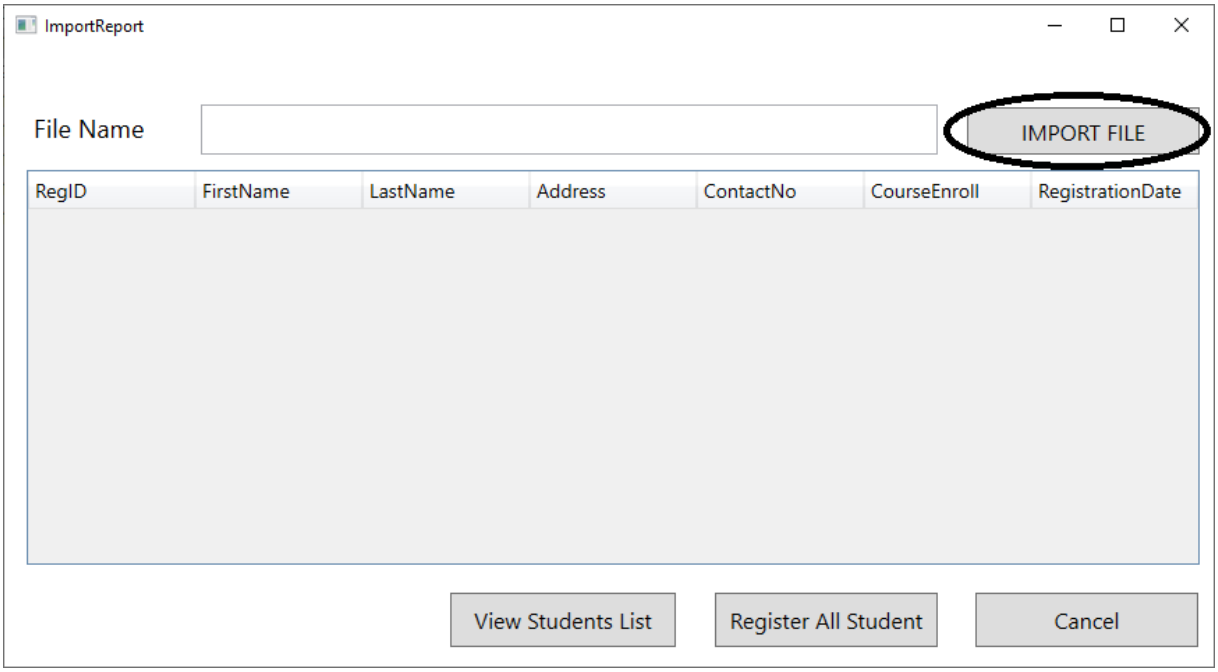


Figure 24: Import Report Window

Step 2: A file dialog will open in the user's base directory, where we navigate to the CSV file to upload from our local device.

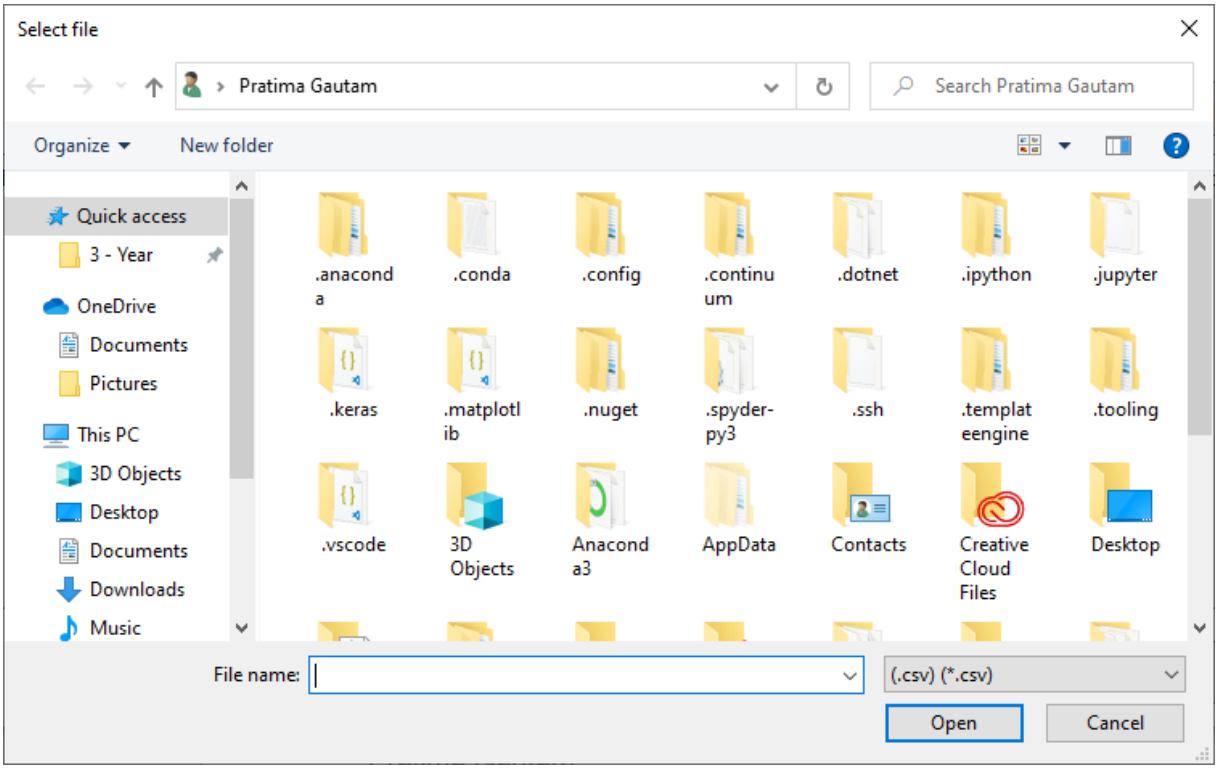


Figure 25: User's Directory

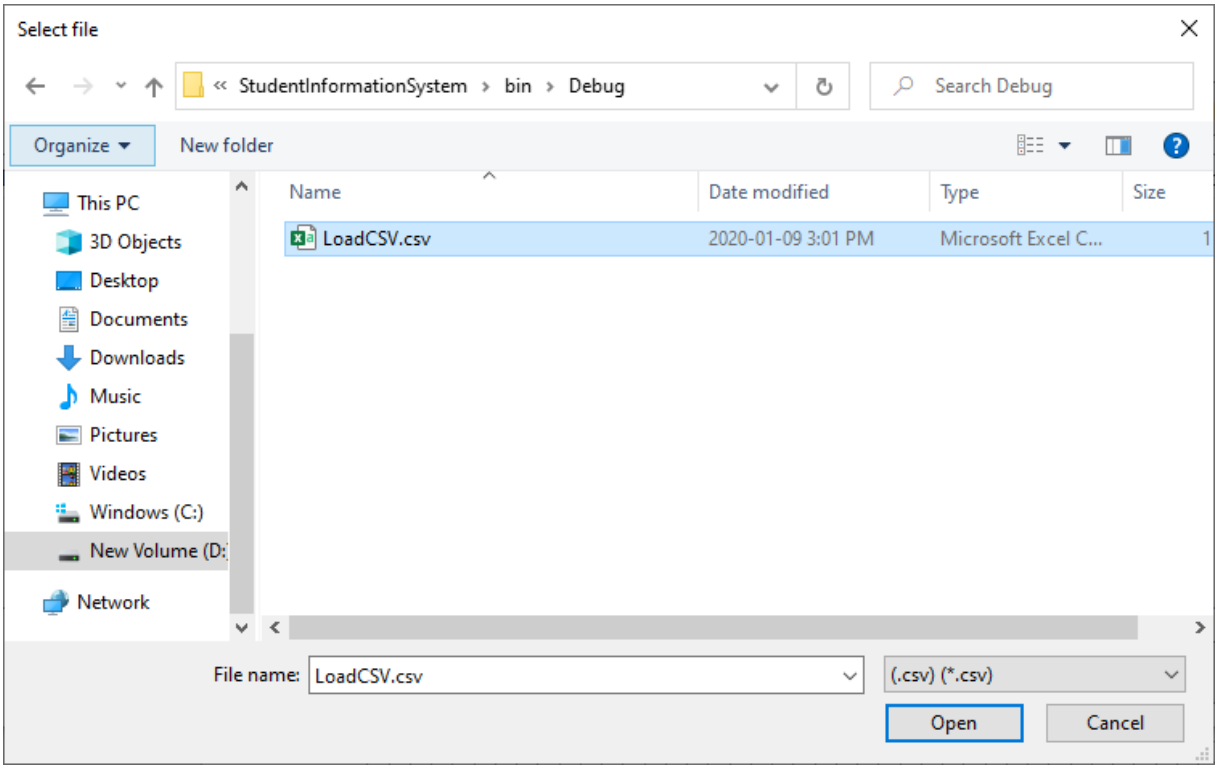
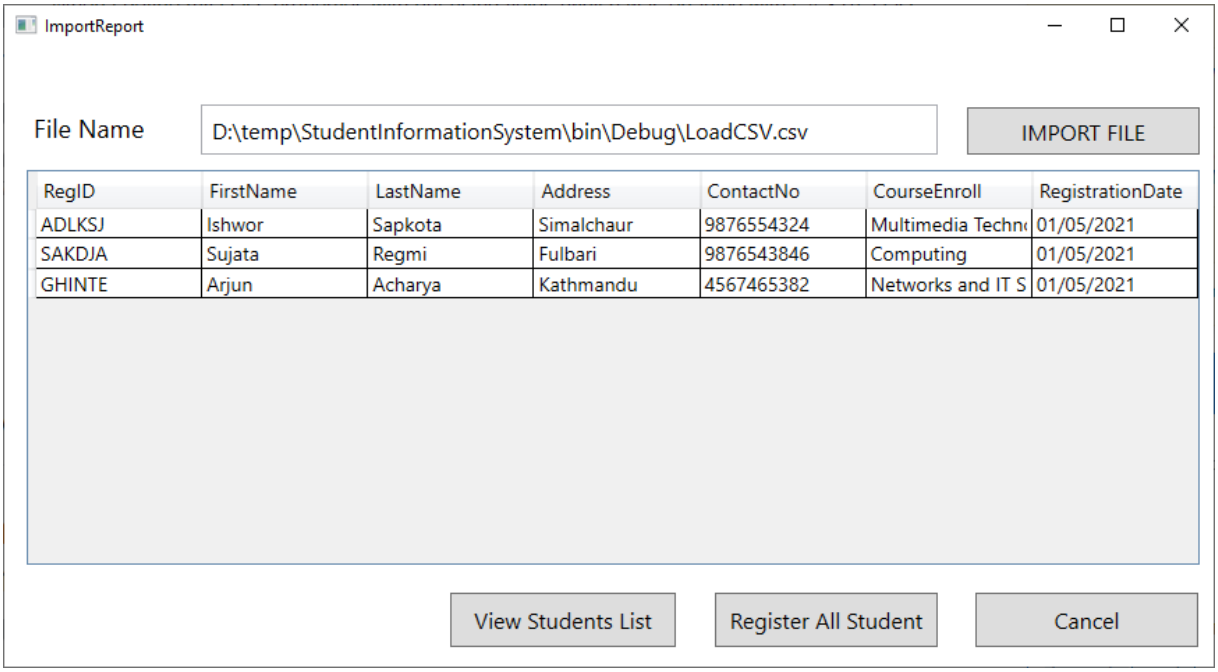


Figure 26: Navigate to the folder to upload the CSV file

Step 3: The data in the CSV file are loaded to the data grid.



Step 6: All the students' details are registered to the system by clicking on the button "Register All Student"

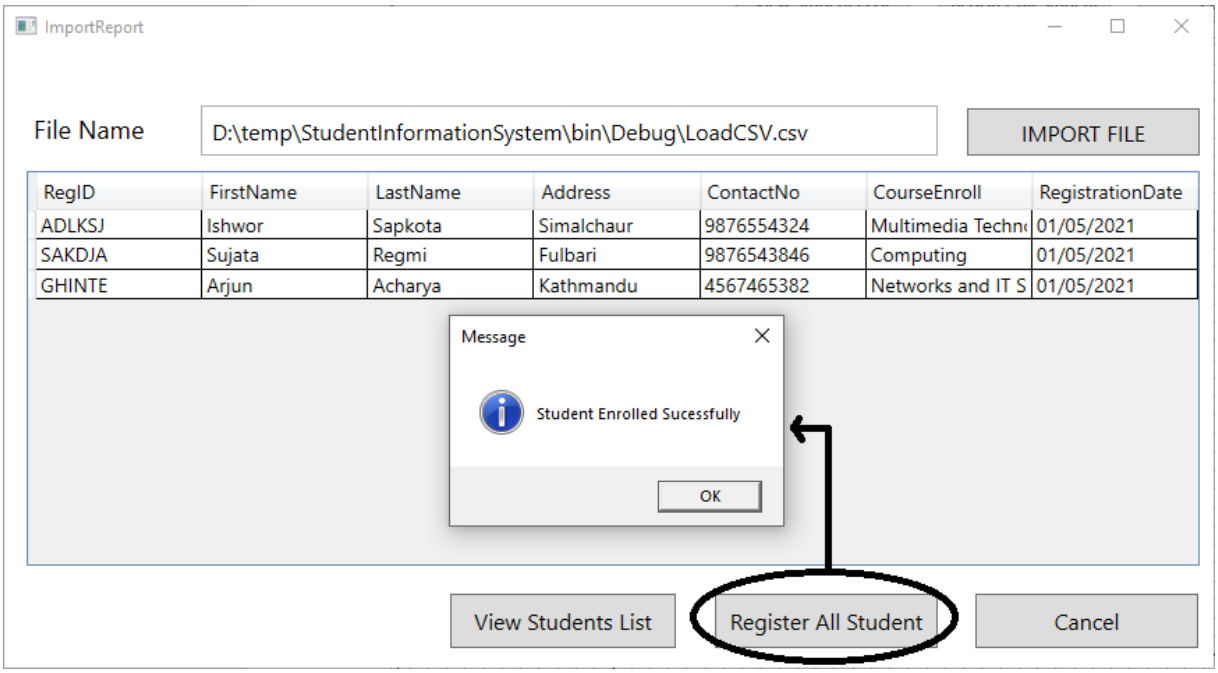


Figure 27: Registering the students loaded from the file to the system

Test Case 7:

Table 20: Test Case 7

Objective	Sorting the data grid generated with the first name and the registration date.
Action	- Go to the main window after successfully logging in to the system and tap on “DISPLAY REPORT” - Check on the “SORT BY NAME” button and check if the columns get sorted with name or not - Check on the “SORT BY DATE” button and check if the columns get sorted with name or not
Expected Result	- The program should work correctly by inserting the students details to the XML file as per the schema defined from the CSV file - The values should reside in the proper field.
Actual Result	The student details are added successfully from the CSV file to the data grid shown.
Conclusion	Test is successful executed.

Evidences:

Step 1: Tap on “Sort by Name” as shown in the figure below:

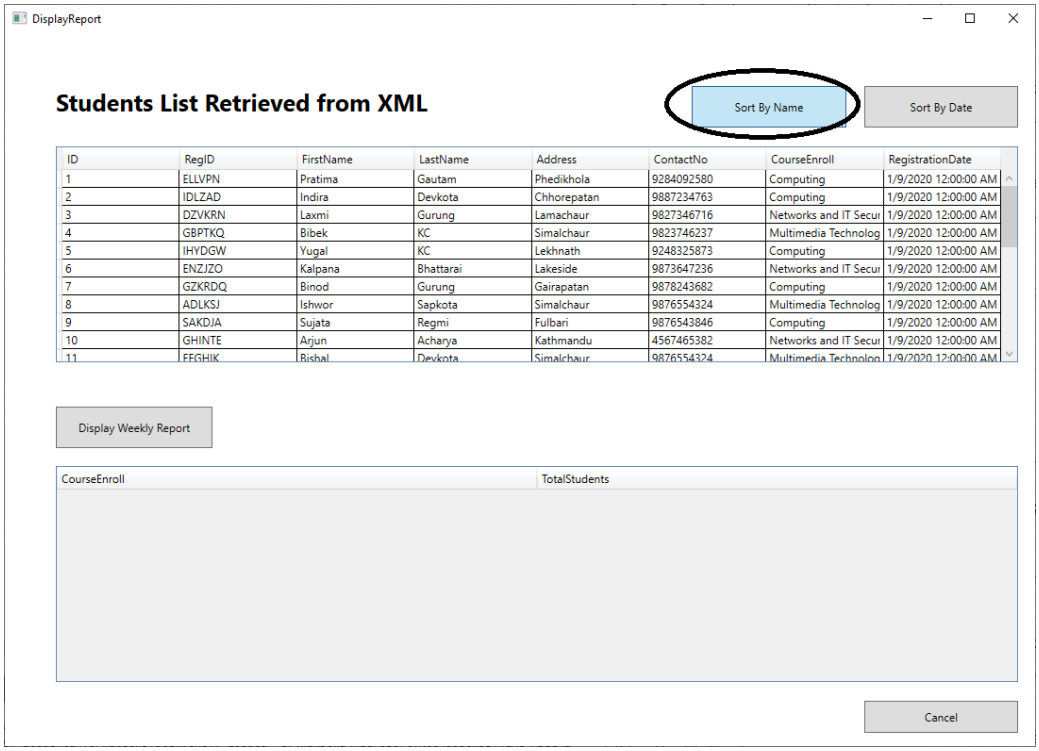


Figure 28: Sort by Name Button

Step 2: Check the values retrieved after sorting in the column.

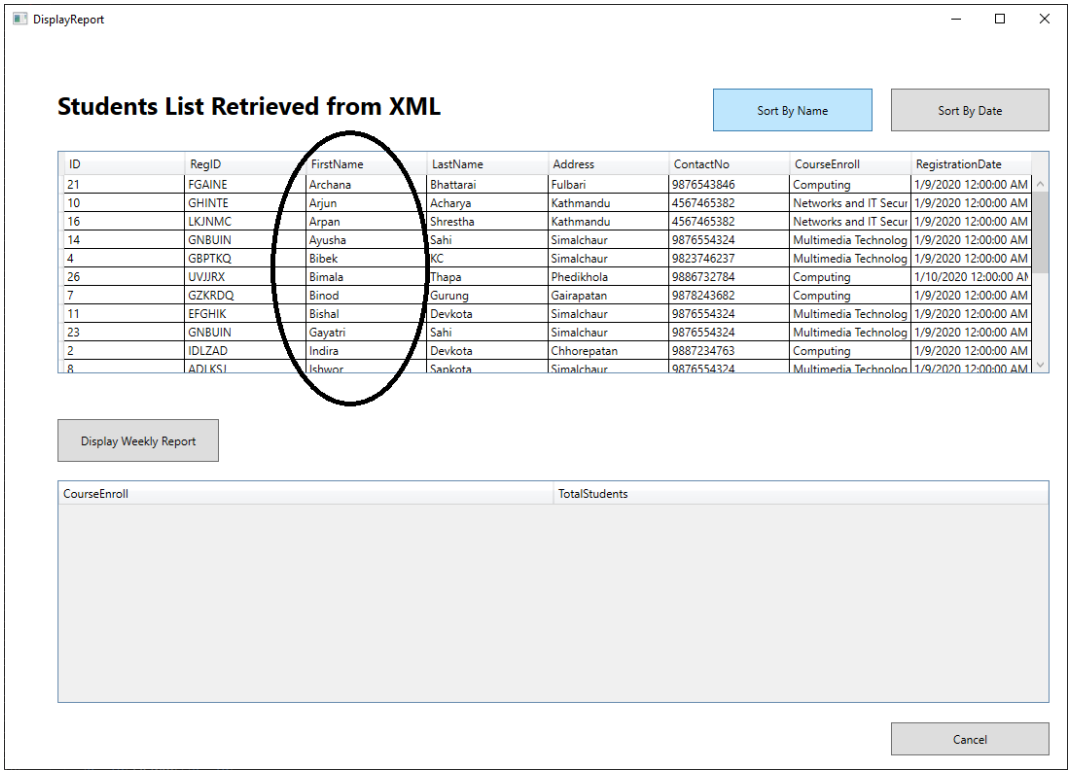


Figure 29: Sorted Column with name on ascending order

Step 3: Tap on “Sort by Date” as shown in the figure below:

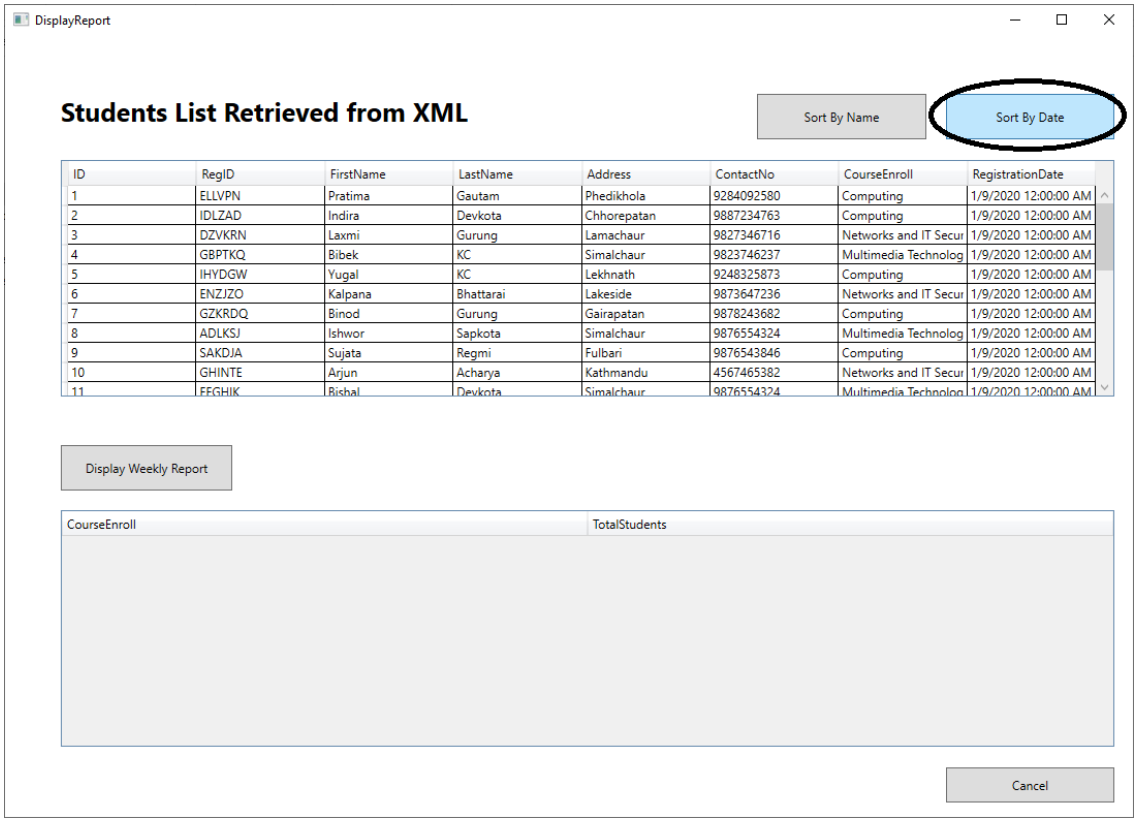


Figure 30: Sort by Date

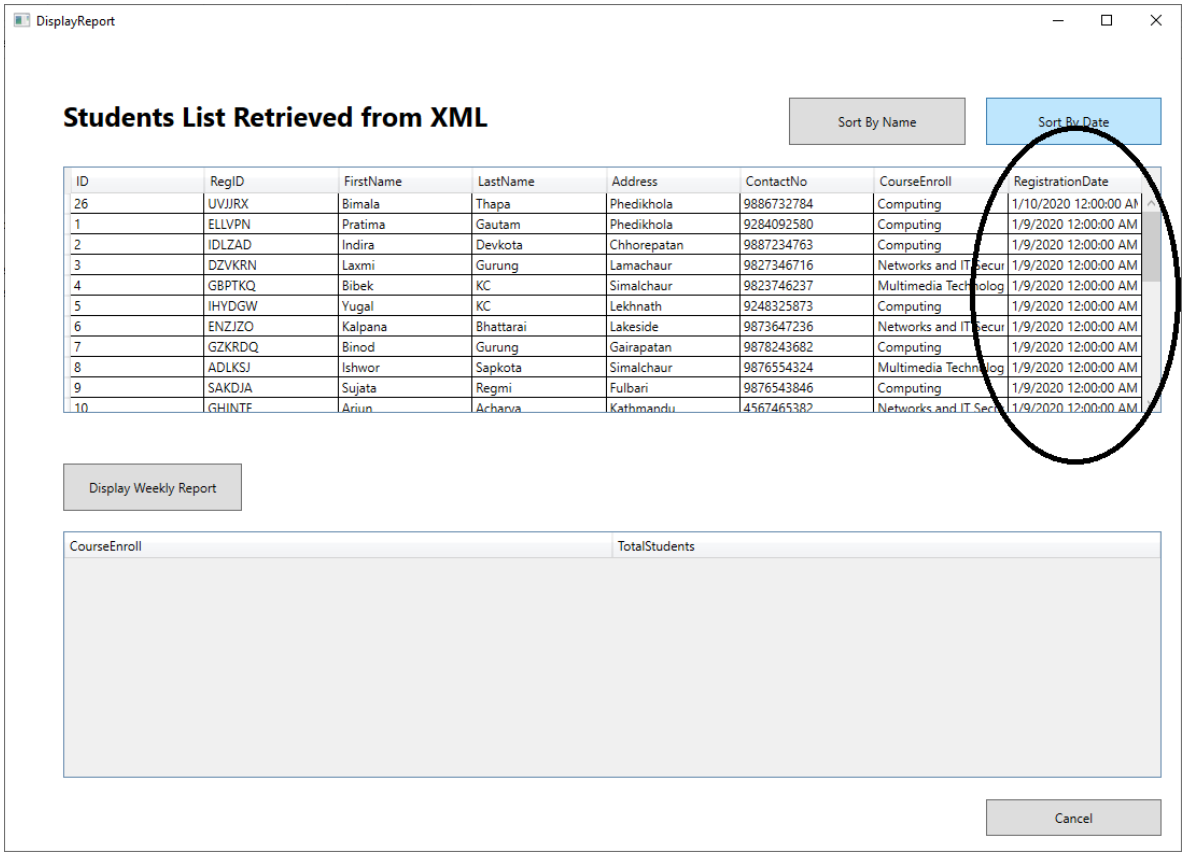


Figure 31: Sorted Column with registration date on descending order

Test Case 8:

Table 21: Test Case 8

Objective	Display weekly tabular report showing total number of students enrolled so far in each program offered by the institution.
Action	- Go to the main window after successfully logging in to the system and tap on “DISPLAY REPORT” - Check on the “Display Weekly Report” button and check if the tabular report with the total number of students enrolled to a program is shown or not.
Expected Result	- Total number of students enrolled so far in each program offered by the institution should be shown in the tabular format.

Actual Result	Tabular format with the total number of students enrolled to each program is shown.
Conclusion	Test is successful executed.

Evidences:

Step 1: Click on “Display Weekly Report” Button

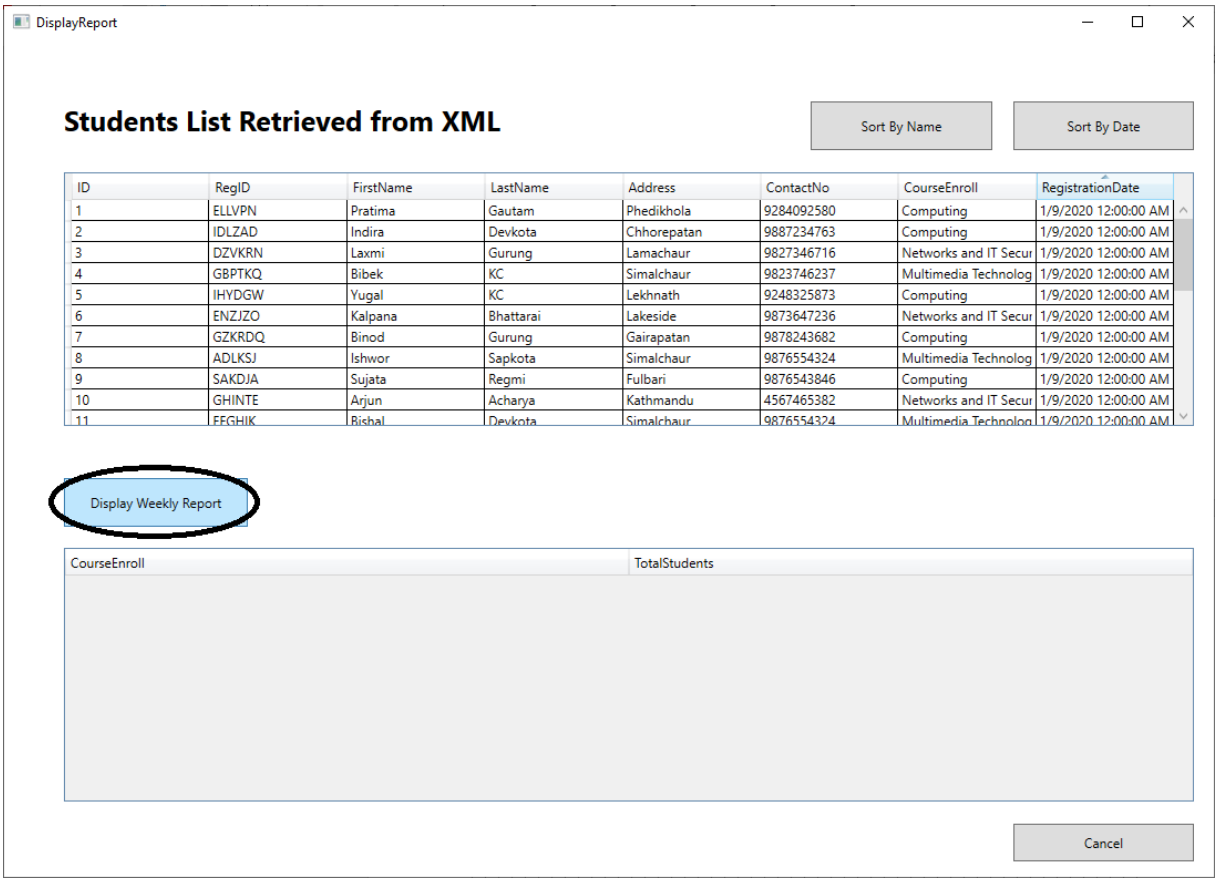


Figure 32: Display Weekly Report Button

Step 2: Check the grid for tabular report

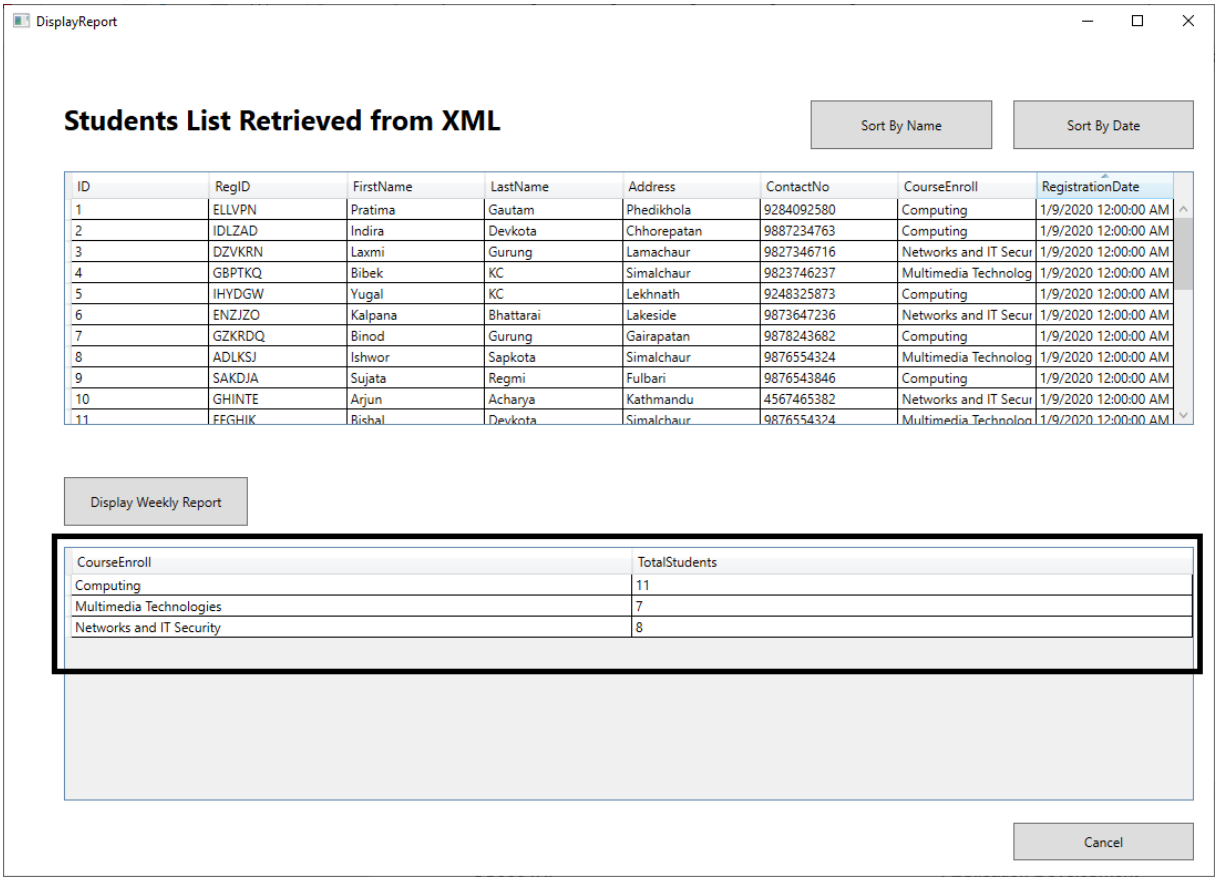


Figure 33: Weekly Tabular Report

Test Case 9:

Table 22: Test Case 9

Objective	To display chart showing total number of students on each program (computing, multimedia, networking etc)
Action	- Go to the main window after successfully logging in to the system and tap on “VIEW CHART”
Expected Result	- The pie chart with the total number of students enrolled to a program is expected to be shown.
Actual Result	Pie chart with the total number of students enrolled to each program is shown.
Conclusion	Test is successful executed.

Evidence:

Step 1; Click on “VIEW CHART” in the main window

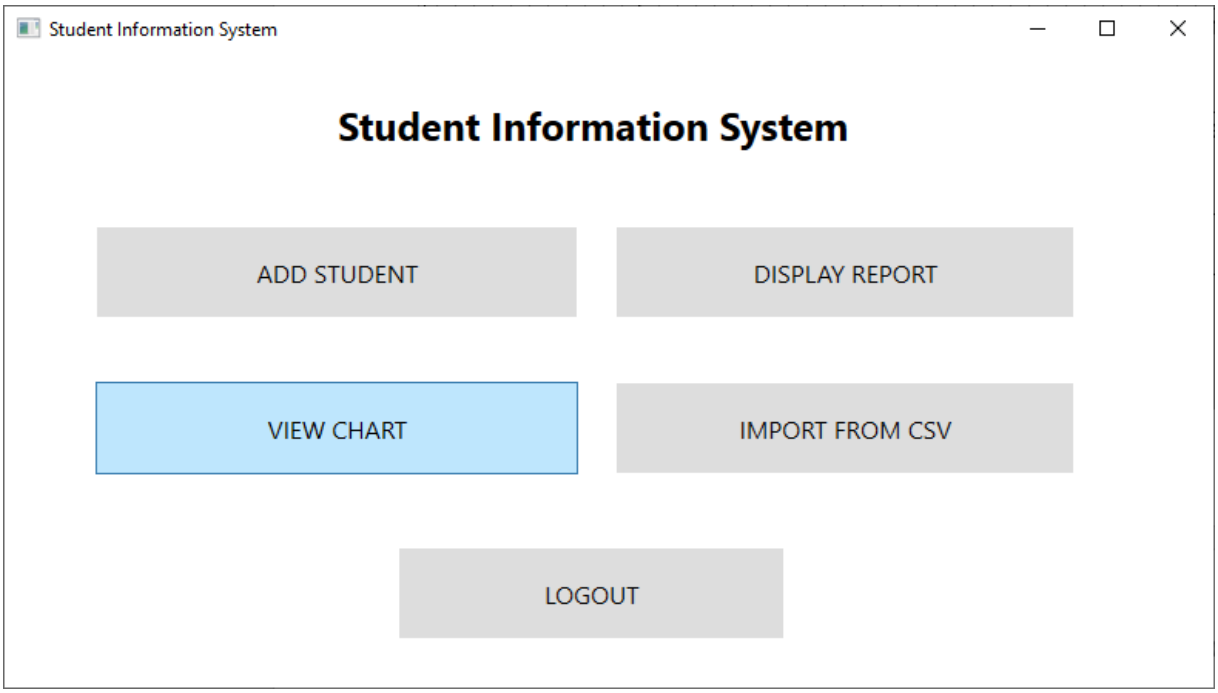


Figure 34: VIEW CHART button in main window

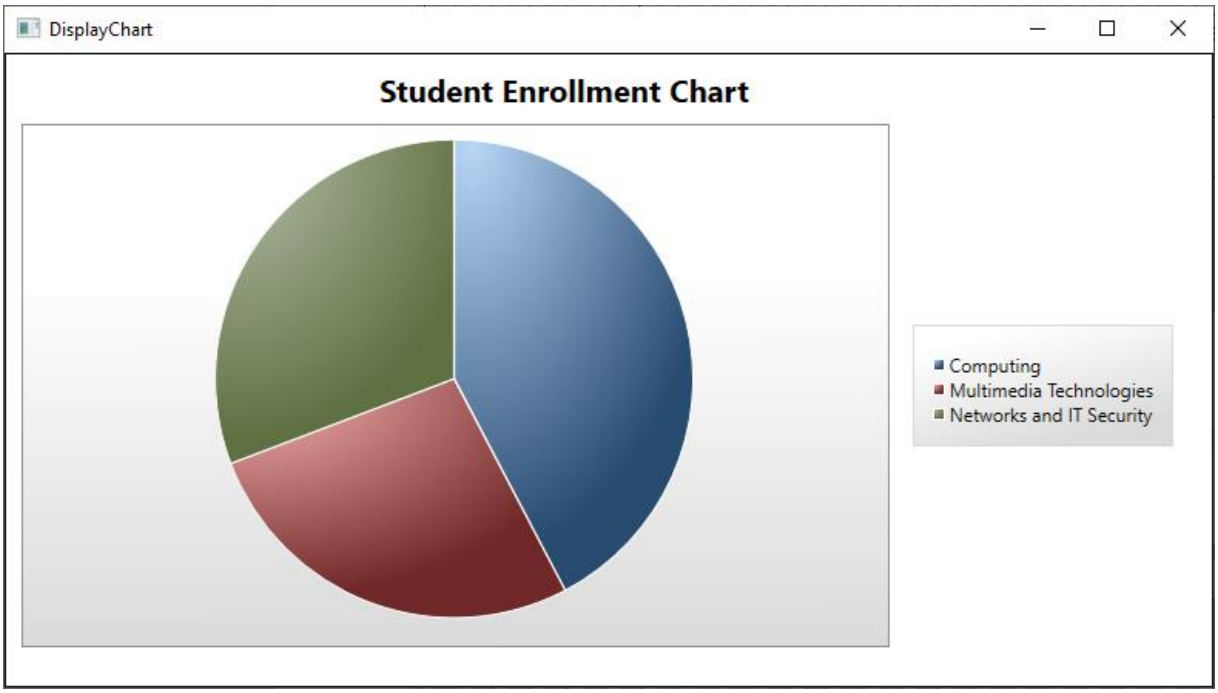


Figure 35: Loaded Pie-Chart

Test Case 10:

Table 23: Test Case 10

Objective	To check if the software exit or not by the logout
Action	- Go to the main window after successfully logging in to the system and tap on “LOGOUT”
Expected Result	- The MessageBox should prompt asking for the user input to exit or not. - On exit, the window should be redirected to the login.
Actual Result	MessageBox prompts user to input whether to exit or not and act as specified.
Conclusion	Test is successful executed.

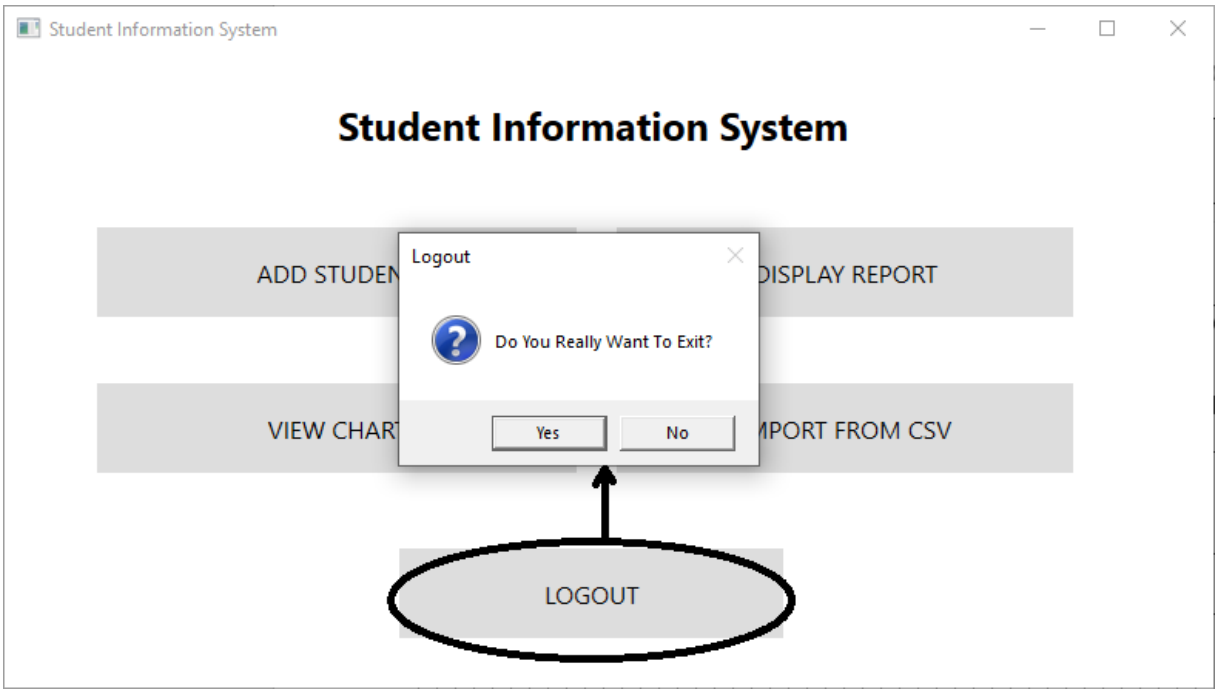


Figure 36: Logout Prompt

Clicking on “Yes” will redirect the user to the LOGIN page.

4.2 Flowchart

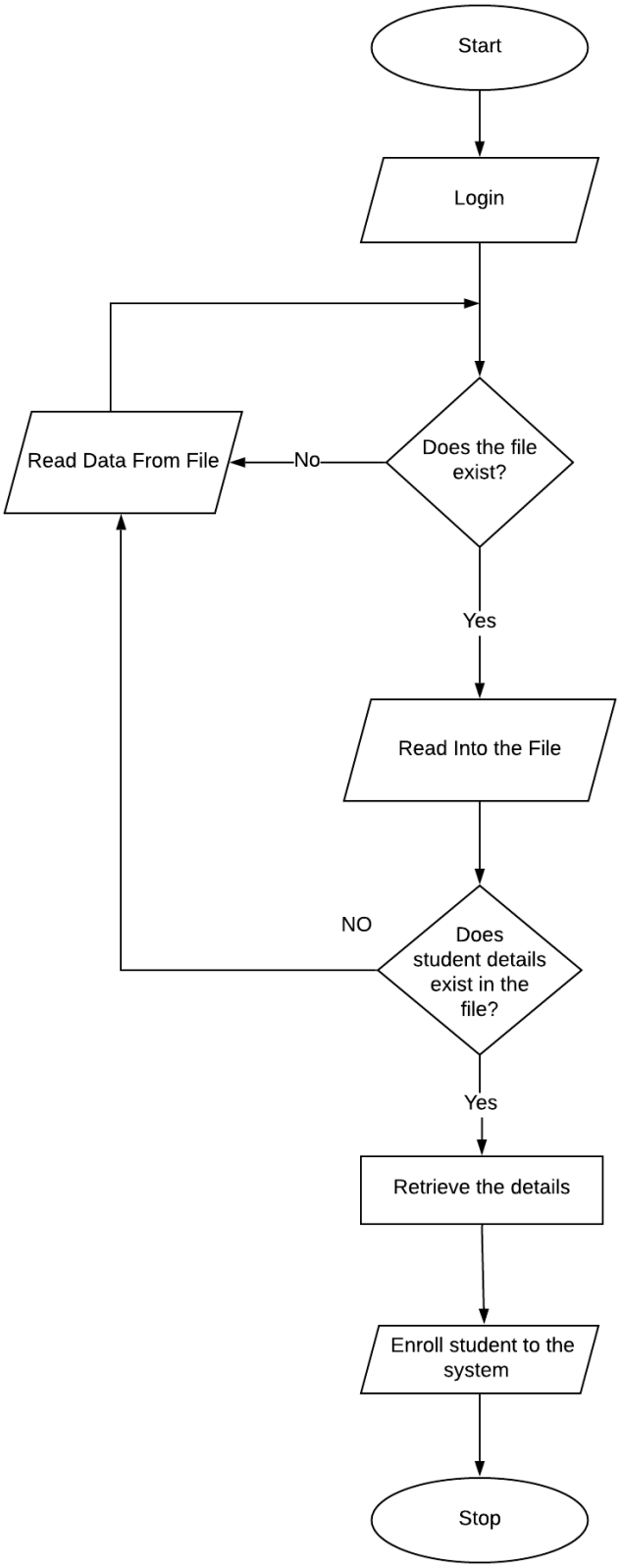


Figure 37: Flowchart

5. Deliverables of the Project

While the final artifact in the project will be an application of “Student Information System” which is fully designed, tested and fitted for desktop application still during the project life span there are many different deliverables that the project have been able to deliver. The initial stage involved in choosing the right framework, libraries and models which will be suitable for the development of our application. The other deliverables of the project during its lifespan with the respective objectives are as follows:

- Review or study the literature on student information system and algorithms for the maintaining student information for the development of desktop-based application.
- Reviewing the existing application developed using the same technology assists in providing the comparative study of different application based on algorithms chosen.
- Gathering the requirement specification for the application - delivers the system requirement specification document
- Actual coding and development of the application delivers the application
- Testing of the application provides the test cases and results. Testing will be done in three different phases, i.e. functionality testing, performance testing, and data security and integrity testing
- Accuracy and speed testing - delivers the project reliability and speed reports
- Testing and evaluating the final product in an actual environment - delivers the report showing how practical is it in the real field
- Step by step guidance document on how to use the system - delivers the user manual for the application.

All these deliverables listed above are included in this documentation report. Though the main objective and deliverables of the project will be concentrated on creating and delivering the application itself other significance/deliverables of the project can be investigated on future adaptation of the application in the different companies.

6. Critical Assessment / Reflection of Coursework

Carrying out the careful planning and research to excel the best out of our abilities and understanding of C# and XAML (Extensible Application Mark-up Language) is not an easy task at all. To be entirely honest, the research phase was really crucial. During this coursework, the most strenuous problem was to study and develop the concept on C# application, XAML schemas and the different layouts and functionality of the program. Moreover, playing around with the Visual Studio was a bit complicated at the first touch. Dropping the best ideas at the first attempt was not possible at all. Several mind-maps and logistic interpretation has been carried out to work on this critical project. However, the zeal to be internally motivated learner rejuvenates my attention and stamina to brain-map over the problem, confront the difficulties and conceptualize the core idea of XAML and C# (Csharp) to accomplish this coursework in the given timeframe. Correspondingly, the plethora of research, vigilant ideas, group discussions, consistency and indulgence to stay afloat and cope with solutions break the barrier to attain the goal concerning the systematic development of the Student Information system for a company. In the same manner, we were given some guidelines as backup to support us in completing the program and be familiar with the C# and XAML by our academic module leader.

More importantly, this project has really helped to conceive and understand a lot about how different ideas like event handling, styles templates, tags notation etc. are related to XAML and C# rules. Thus, it can be concluded that the system modelled during the coursework is fully capable of defining the requirements as needed. In the like manner, writing the C# code with the correct XAML interpretation UI that would interact with the user and render the data as required was an interesting experience in itself because it helps to gulp the central idea of desktop based application and XAML schema. This project gave us a tough time to realize the errors and know what went wrong in the program while executing it and validating them. Moreover, finding the efficient solutions hovering over the websites and stack overflow and using the own logic helps me to have fine understanding of every functions, tags, rules and styling. While the implementation that had been created was at a basic level, but it still shows how powerful C# Windows application and XAML can be with regards to the other

mark-up and programming languages and how dynamic it can be when it comes to designing the desktop-based applications. I found it extremely useful while working on the system I had developed.

Last but not least, the challenges I faced during the project work have increased my confidence on tackling challenges and bring sound reflection over the components of C# WPF application and XAML that I may face during the work life in same field. Managing the time for studies, planning the coursework, and starting to do the work was very challenging. However, the thorough research over the demanded topics without getting tempted to skimp on it has finally turned out to be a pivotal base for the successful completion of the coursework.

Although I believe I have finished our coursework on time, I still have the feeling that I could have done it better and sooner if I would have had all the time that I thought I would need. To wrap this up, the knowledge earned from this will definitely be something that will assist with whatever projects I may find out in the real world. It was my privilege to be able to see inside of a desktop-based application, different schemas, and how all its mechanism works. Besides, all the observant will become fortunate and aware to know flexibility brought by the processed information from this coursework.

7. Conclusion

The C# Window Application programming and XAML design has been devised and incorporated to produce the project of our requirements which is fully capable of defining the functional and data requirements of coursework. During the project work, all the data requirements, functional requirements, and design specifications were closely observed and described in this document. This coursework has resulted in the fruitful end outcome because this coursework created an immense understanding of the C# Windows Presentation Framework XAML as well as develop the knowledge of respective module and the topic. Proper time management and the future proof planning was a vital role and has resulted in successful completion of the assignment. Plethora of research and vigilant ideas of the teachers and group of friends aided to the valid research application and preparation of the coursework in a directed manner.

As per the requirement specified, the development process was performed. The requirement included the details of a company. It has been acknowledged upon the completion of this coursework that C# and XAML is widely used in most of the desktop-based application for saving and transporting data.

Although the application has been developed with the least features instructed in the coursework, the evidence outlined on this project demonstrates that there is a genuine need to explore and develop the system to record student's information. As has been researched, the algorithms that has been implemented will help in obtaining optimal results and the features outlined. However, these results can further be improved by identification of additional features and UI designs. To wrap up, the system will also be developed further to derive associations and possible anomalies for better diagnosis and medical care.

Appendix A

All the deliverables obtained in the development phase are pushed to the GitHub URL https://github.com/Informatics-Pokhara/course-work-1-pratimagtm977, with the documentation too attached on the root folder.