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Introduction

This is the coursework for the module Application development in which we have to designed a Student Information system. The feature mention in the coursework for the system are login, enrolling student, generating weekly enrolment report, bulk data import in csv etc which were the basic functionality to be added first in the system. The daily report data generated should be sorted by both first name and registration date of the student enrolled. Moreover, the system also consists of generating the chart of weekly enrolment report.

Current Scenario

Most of the education institute use old system for tracking the record of enrolment such as file-based record system in paper which increases the redundancy in data recording. On the other hand, the digital record tracking system used by the institute also are lacking the functionality in the system.

Proposed System

The proposed system that is going to be developed will help to solve those issues. The use can easily navigate the system as the graphical user interface will be design with flexibility. A security to the system will be added to safe the data from another user. The sorting features will be added for the easily navigating the data.

User Manual

The details instruction for the system is given below with screen shots:

The initial screen will be for the security purpose to bypass the system. The username and password are admin.

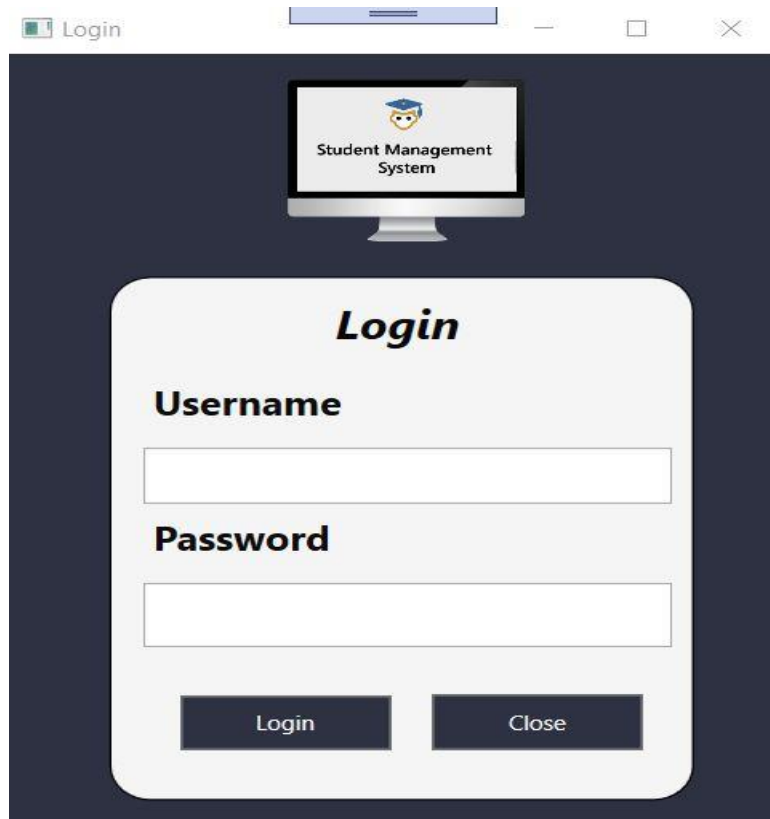
The image shows a web browser window titled "Login". Inside the window, there is a dark blue background. At the top center, there is a small graphic of a computer monitor displaying a logo with a graduation cap and the text "Student Management System". Below this, there is a white rounded rectangle containing the word "Login" in a large, bold, italicized font. Underneath "Login", there are two labels: "Username" and "Password", each followed by a white text input field. At the bottom of the white rectangle, there are two dark blue buttons: "Login" and "Close".

Figure 1: Login Screen

After the login process the main screen program of the system opens.

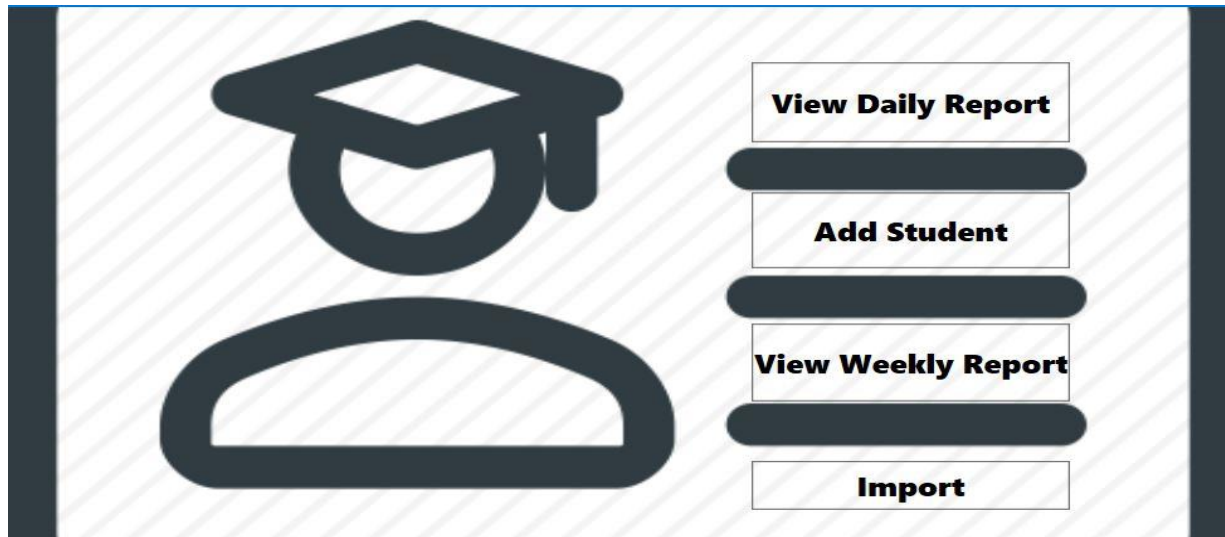


Figure 2: Main Screen

The main page has four features integrated in it. They are view daily report, Add Student, View Weekly Report and import.

To Enrol a new student the user has to click Add student which will redirect to the enrolling screen.

Registration No :

Address :

First Name :

Contact :

Last Name :

Registration Date :

Course Enroll :

Enroll Student

Clear All

Back To Home Page

Currenty Added File

ID	RegistrationNumber	FirstName	LastName	Address	ContactNo	CourseEnroll	RegistrationDate
1	19030	Ishwor	Magar	Kathmandu	9851220847	Advanced Database	2020-01-06T00:00:00+05:45
2	19031	Ujjal	Parajuli	Kathmandu	9851220847	Application Development	2020-01-06T00:00:00+05:45
3	19034	Bishal	Parajuli	Pokhara	9851220847	Advanced database	2020-01-01T00:00:00+05:45
4	78294	Bishnu	poudel	Leknath	0987654	Advanced Database	2020-02-01T00:00:00+05:45
5	6532873	Ishwor	Gurung	India	98765	Application Development	2020-03-06T00:00:00+05:45
6	1345	Kapil	Sharma	783904	0984829	Advanced Database	2020-01-28T00:00:00+05:45
7	12343546	vdnft	67848739	india	132839	Artificial Intelligence	2020-01-28T00:00:00+05:45
8	9878	Hari	chetttri	Kahu-khola	657890	Artificial Intelligence	2020-01-28T00:00:00+05:45
9	3456	ishwor	magar	sarangkot	987654	Advanced Database	2020-02-07T00:00:00+05:45

Figure 3: Enrol student Screen

As the user visits the Add student section there will be the form fill-up section for the enrolment.

While enrolling if the field were leave blank then the erro message will popup as a warning to enter the value.

The screenshot shows a web form for student enrollment. The form fields are: Registration No (235), Address (empty), First Name (Ishwor), Contact (986), Last Name (empty), Registration Date (1/13/2020), and Course Enroll (Artificial Intellig). Below the form are three buttons: 'Enroll Student', 'Clear All', and 'Back To Home Page'. A 'Warning' popup is displayed in the center, stating 'Fields should not be empty' with an 'OK' button. Below the form, there is a table titled 'Current File' showing a list of students.

ID	RegistrationNumber	FirstName	LastName	Address	Contact	RegistrationDate
1	19030	Ishwor	Magar	Kathmandu	9851220847	2020-01-06T00:00:00+05:45
2	19031	Ujjal	Parajuli	Kathmandu	9851220847	2020-01-06T00:00:00+05:45

Figure 4: Validity Checking for empty textbox

After the valid entry of data the student will be enrol.

The screenshot shows a web application interface for student registration. The form includes fields for Registration No (12434), Address (Lakeside), First Name (Min), Contact (9876554678), Last Name (Tamang), Registration Date (1/29/2020), and Course Enroll (Advanced Data). Below the form are three buttons: 'Enroll Student', 'Clear All', and 'Back To Home Page'. Below the buttons is a section titled 'Currently Added File' containing a table with 8 columns: ID, RegistrationNumber, FirstName, LastName, Address, ContactNo, CourseEnroll, and RegistrationDate. The table lists 11 entries of currently added files.

ID	RegistrationNumber	FirstName	LastName	Address	ContactNo	CourseEnroll	RegistrationDate
4	78294	Bishnu	poudel	Leknath	0987654	Advanced Database	2020-02-01T00:00:00+05:45
5	6532873	Ishwor	Gurung	India	98765	Application Development	2020-03-06T00:00:00+05:45
6	1345	Kapil	Sharma	783904	0984829	Advanced Database	2020-01-28T00:00:00+05:45
7	12343546	vdnft	67848739	india	132839	Artificial Intelligence	2020-01-28T00:00:00+05:45
8	9878	Hari	chettri	Kahu-khola	657890	Artificial Intelligence	2020-01-28T00:00:00+05:45
9	3456	ishwor	magar	sarangkot	987654	Advanced Database	2020-02-07T00:00:00+05:45
10	12345645	Arjun	Thapa	Lakeside	987654	Advanced Database	2020-01-30T00:00:00+05:45
11	67884	Sunita	Magar	Lakeside	98765	Advanced Database	2020-01-22T00:00:00+05:45

Figure 5: Data Adding before

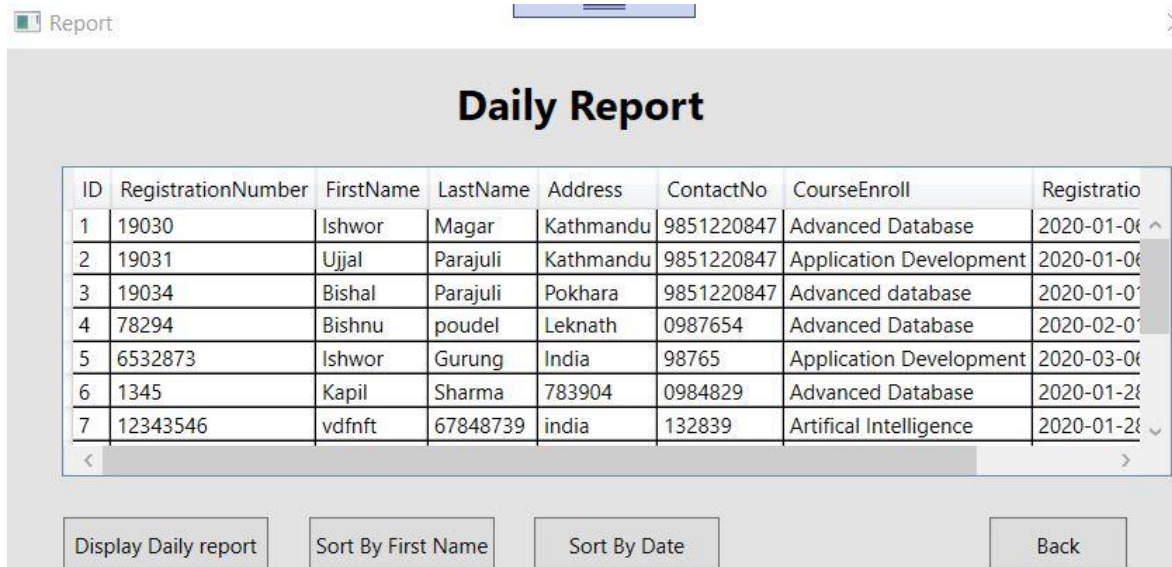
This datagrid will display the currently enrol data after successful enrol.

The screenshot shows a web application interface with a table titled 'Currently Added File'. The table has 8 columns: ID, RegistrationNumber, FirstName, LastName, Address, ContactNo, CourseEnroll, and RegistrationDate. The table lists 12 entries of currently added files, including the new entry from Figure 5.

ID	RegistrationNumber	FirstName	LastName	Address	ContactNo	CourseEnroll	RegistrationDate
5	6532873	Ishwor	Gurung	India	98765	Application Development	2020-03-06T00:00:00+05:45
6	1345	Kapil	Sharma	783904	0984829	Advanced Database	2020-01-28T00:00:00+05:45
7	12343546	vdnft	67848739	india	132839	Artificial Intelligence	2020-01-28T00:00:00+05:45
8	9878	Hari	chettri	Kahu-khola	657890	Artificial Intelligence	2020-01-28T00:00:00+05:45
9	3456	ishwor	magar	sarangkot	987654	Advanced Database	2020-02-07T00:00:00+05:45
10	12345645	Arjun	Thapa	Lakeside	987654	Advanced Database	2020-01-30T00:00:00+05:45
11	67884	Sunita	Magar	Lakeside	98765	Advanced Database	2020-01-22T00:00:00+05:45
12	12434	Min	Tamang	Lakeside	9876554678	Advanced Database	2020-01-29T00:00:00+05:45

Figure 6: Data Added After

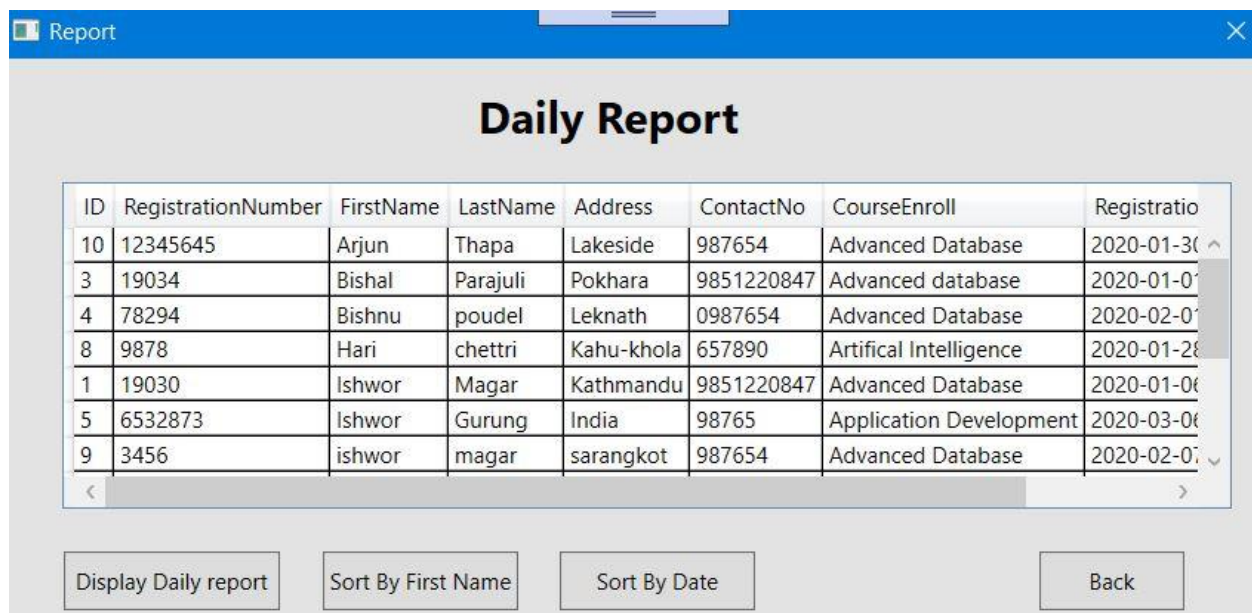
From the homepage the user can go to daily report window to generate daily report. For generating the report the which will be displayed in unsorted form.



ID	RegistrationNumber	FirstName	LastName	Address	ContactNo	CourseEnroll	Registratio
1	19030	Ishwor	Magar	Kathmandu	9851220847	Advanced Database	2020-01-06
2	19031	Ujjal	Parajuli	Kathmandu	9851220847	Application Development	2020-01-06
3	19034	Bishal	Parajuli	Pokhara	9851220847	Advanced database	2020-01-06
4	78294	Bishnu	poudel	Leknath	0987654	Advanced Database	2020-02-06
5	6532873	Ishwor	Gurung	India	98765	Application Development	2020-03-06
6	1345	Kapil	Sharma	783904	0984829	Advanced Database	2020-01-28
7	12343546	vdfnft	67848739	india	132839	Artificial Intelligence	2020-01-28

Figure 7: Displaying daily report data

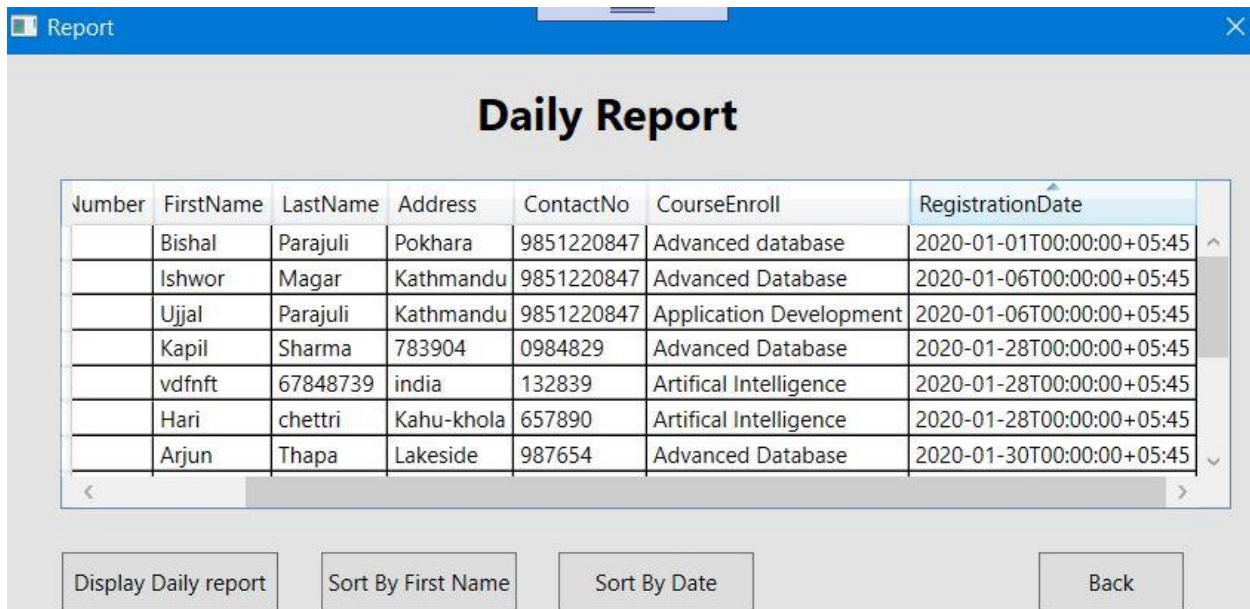
By clicking the sort by first name the report will be shown in ascending order by the first name column.



ID	RegistrationNumber	FirstName	LastName	Address	ContactNo	CourseEnroll	Registratio
10	12345645	Arjun	Thapa	Lakeside	987654	Advanced Database	2020-01-30
3	19034	Bishal	Parajuli	Pokhara	9851220847	Advanced database	2020-01-06
4	78294	Bishnu	poudel	Leknath	0987654	Advanced Database	2020-02-06
8	9878	Hari	chettri	Kahu-khola	657890	Artificial Intelligence	2020-01-28
1	19030	Ishwor	Magar	Kathmandu	9851220847	Advanced Database	2020-01-06
5	6532873	Ishwor	Gurung	India	98765	Application Development	2020-03-06
9	3456	ishwor	magar	sarangkot	987654	Advanced Database	2020-02-06

Figure 8: Sorting Data by firstname

By clicking the sort by date the report will be sorted according to the registration date.



Jumber	FirstName	LastName	Address	ContactNo	CourseEnroll	RegistrationDate
	Bishal	Parajuli	Pokhara	9851220847	Advanced database	2020-01-01T00:00:00+05:45
	Ishwor	Magar	Kathmandu	9851220847	Advanced Database	2020-01-06T00:00:00+05:45
	Ujjal	Parajuli	Kathmandu	9851220847	Application Development	2020-01-06T00:00:00+05:45
	Kapil	Sharma	783904	0984829	Advanced Database	2020-01-28T00:00:00+05:45
	vdfnft	67848739	india	132839	Artificial Intelligence	2020-01-28T00:00:00+05:45
	Hari	chettri	Kahu-khola	657890	Artificial Intelligence	2020-01-28T00:00:00+05:45
	Arjun	Thapa	Lakeside	987654	Advanced Database	2020-01-30T00:00:00+05:45

Buttons: Display Daily report, Sort By First Name, Sort By Date, Back

Figure 9: Sorting data by Registration date

When the user clicks import from the main screen the import window will be open.

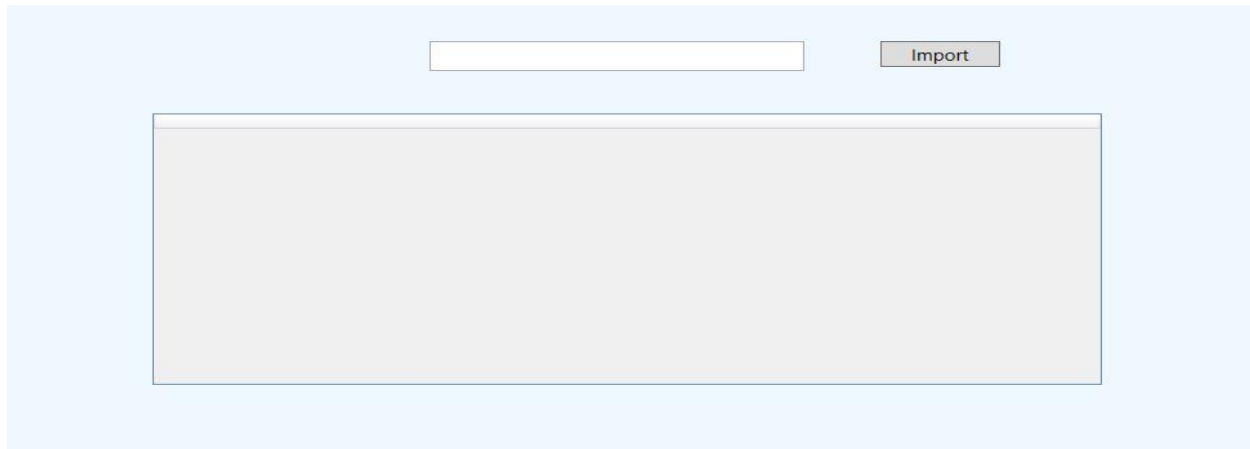


Figure 10: Import Screen

After clicking the import button the dialog box will appear where we can select the csv file and press ok.

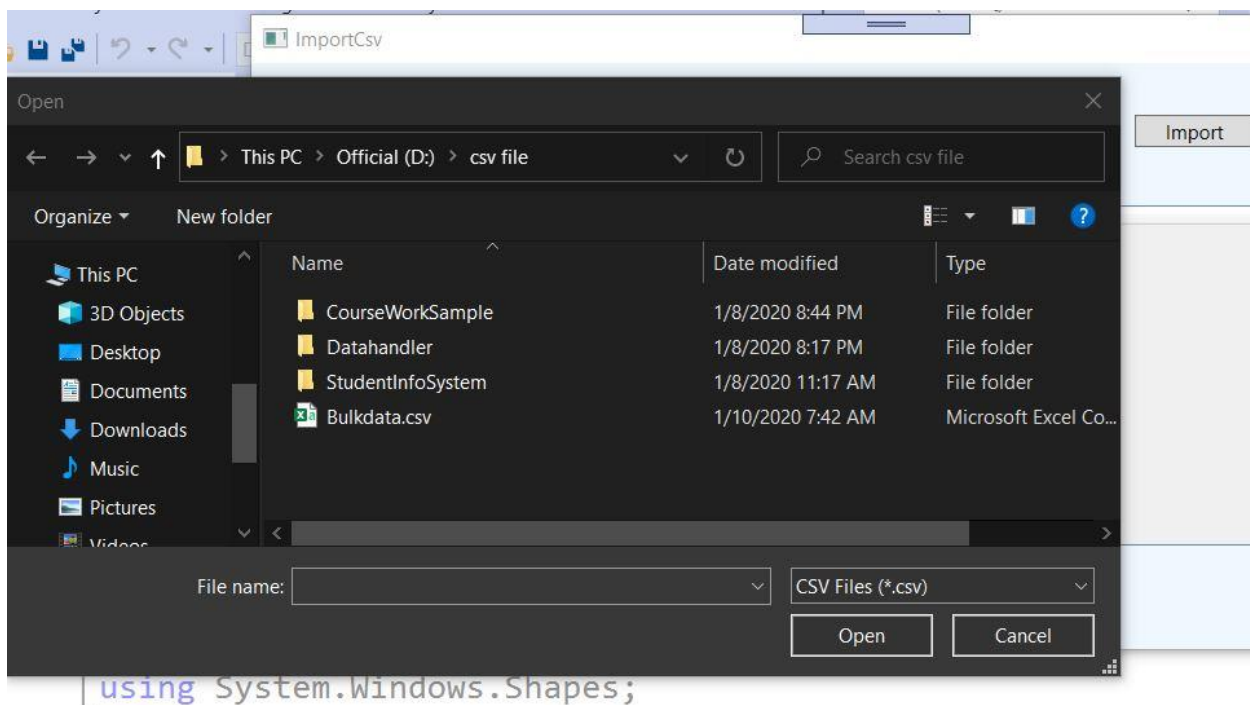


Figure 11: Opening Csv File for Import

Figure 12 shows a screenshot of Microsoft Excel with a CSV file imported. The worksheet displays the following data:

ID	RegistrationNumber	FirstName	LastName	Address	ContactNo	CourseEnroll	RegistrationDate
98	98763	Rajendra	Adhikari	Digopatan	98765467	Advanced Database	6/28/2019
99	678968	Shirish	Babu	Matepani	98765456	Artificial Intelligence	7/21/2019

Figure 12: Displaying Csv File in excel

Figure 13 shows a screenshot of an application window titled 'ImportCsv'. The window contains a text input field, an 'Import' button, and a 'Back' button. Below these controls is a table displaying the imported CSV data:

RegistrationNumber	FirstName	LastName	Address	ContactNo	CourseEnroll	Regist
1345	Kapil	Sharma	783904	0984829	Advanced Database	2020-C
12343546	vdfnft	67848739	india	132839	Artificial Intelligence	2020-C
9878	Hari	chettri	Kahu-khola	657890	Artificial Intelligence	2020-C
3456	ishwor	magar	sarangkot	987654	Advanced Database	2020-C
12345645	Arjun	Thapa	Lakeside	987654	Advanced Database	2020-C
98763	Rajendra	Adhikari	Digopatan	98765467	Advanced Database	6/28/2
678968	Shirish	Babu	Matepani	98765456	Artificial Intelligence	7/21/2

Figure 13: Importing csv and displaying

The user can go to weekly report window by clicking weekly report and the screen will be loaded. In the window their user can have access to these features which are display weekly report, display Chart.



Figure 14: Weekly report screen

To generate the weekly report the user can simply click the display weekly button which will display the report.

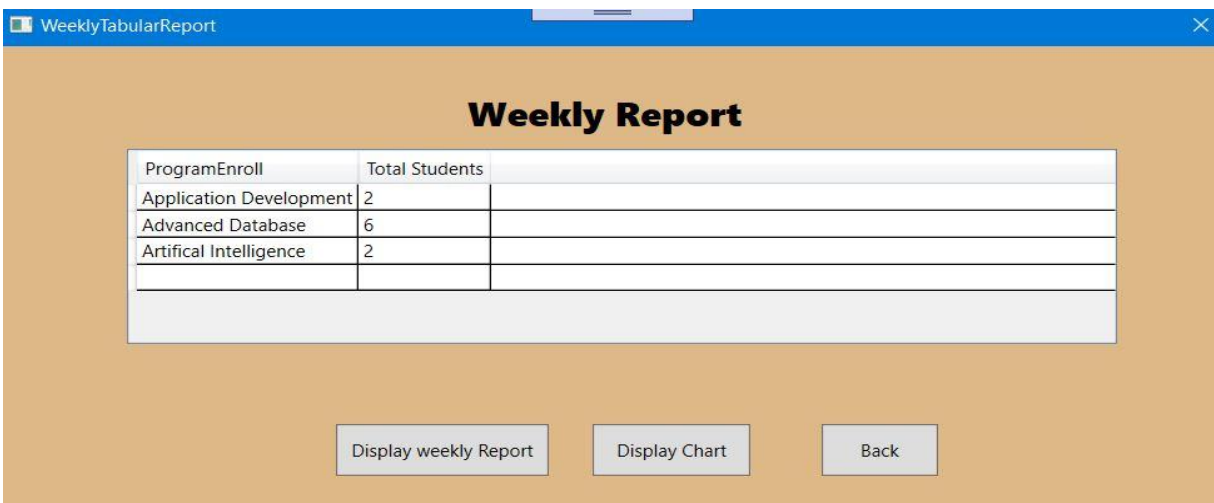


Figure 15: Displaying Weekly report in tabular form

After generating the weekly report, the user can display the chart of the report by simply clicking the display chart button.

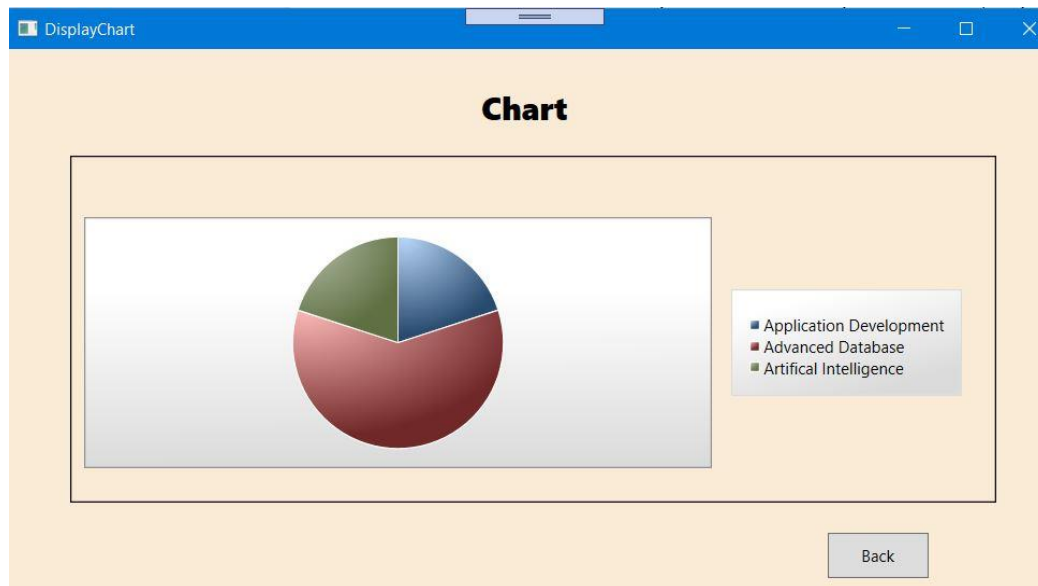


Figure 16: Displaying Chart

System Architecture

Architecture Diagram

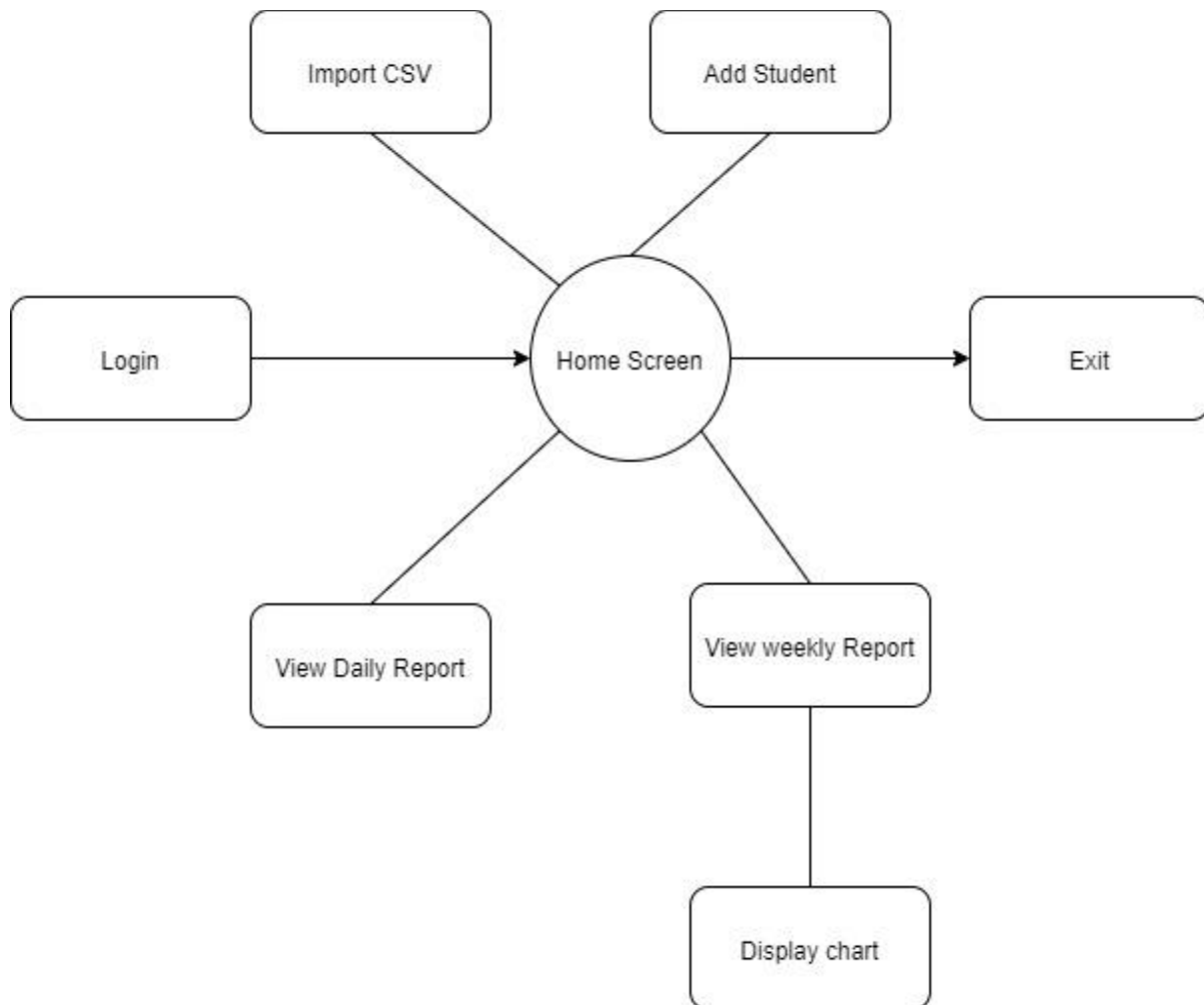


Figure 17: Architecture Diagram

Class Diagram

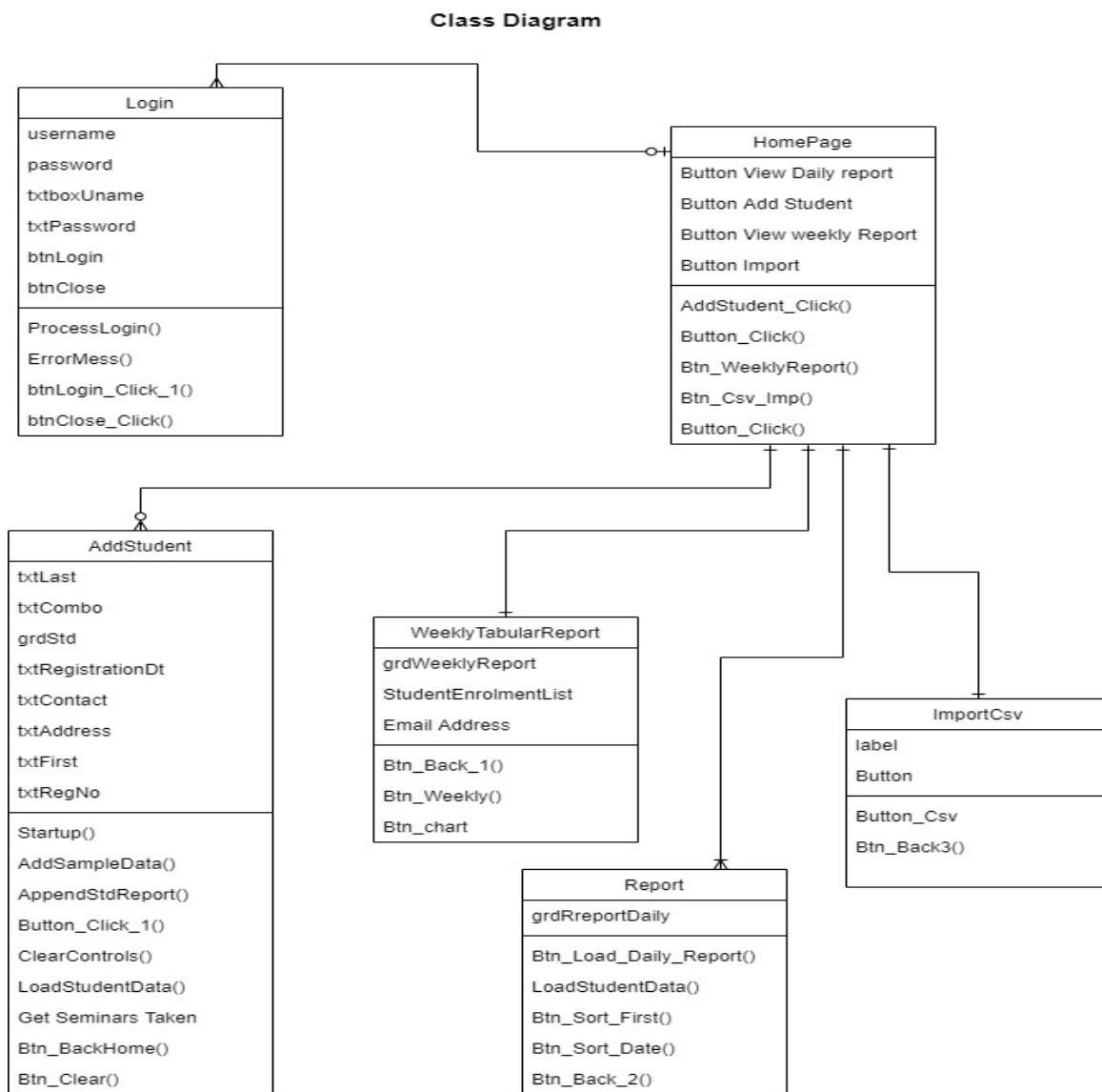


Figure 18: Class diagram

Description of Methods

Login

Methods	Description
ProcessLogin	Contains all the validating process data for login
ErrorMess	It is used for displaying error message during the process login
btnLogin_Click_1	It is used to call process login module

Table 1: Login

Homepage

Methods	Description
AddStudent_Click	It is used for opening new window of AddStudent.
Btn_WeeklyReport	It is used for opening new window of WeeklyTabular Report.
Btn_Csv_Imp	It is used for opening new window of ImportCsv
Btn_Click	Used to open new window of daily report.

Table 2: Home page

AddStudent

Methods	Description
Startup()	It will create the xml file if not found and populate with some sample data during the start up.
AddsampleData	This method has the default dataset value during the initialization.
AppendStdReport	This method will take the value from the respected field from the user dynamically an create a row of student table in dataset.
Btn_Click_1	Used to open new window of daily report.
ClearControls	Contains the value for clear text box.
LoadStudentData	This method will search the xml file in the specific directory and if the file exists then it will read the xml file and populate the data in datagrid.
Btn_BackHome	This method will navigate from current window to homepage.
Btn_Clear	The method will call the ClearControl method.

Table 3: AddStudent

WeeklyTabularReport

Methods	Description
Btn_Back_1	This method will navigate back to the home page.
Btn_Weekly	This method will generate a weekly report of student enrolment from xml data file.
Btn_Chart	This will display a chart by reading the weekly report data..

Table 4: WeeklyTabularReport

Report

Methods	Description
Btn_Load_Daily_Report	This will retrieve the save xml data in the datagrid.
LoadStudentData	This method contain the functionality to read data and setting data to the datagrid..
Btn_Sort_First	This will sort the data in datagrid by the first name value
Btn_Sort_Date	This will sort the data in datagrid by the registration date of student enrol.

Table 5: Report

ImportCsv

Methods	Description
Btn_Csv	This method will help to import csv by selecting the csv file
Btn_Back3	This method will help to navigate back to the homepage.

Table 6: ImportCsv

Algorithm Description and Flow Chart

Student enrol Flowcharts

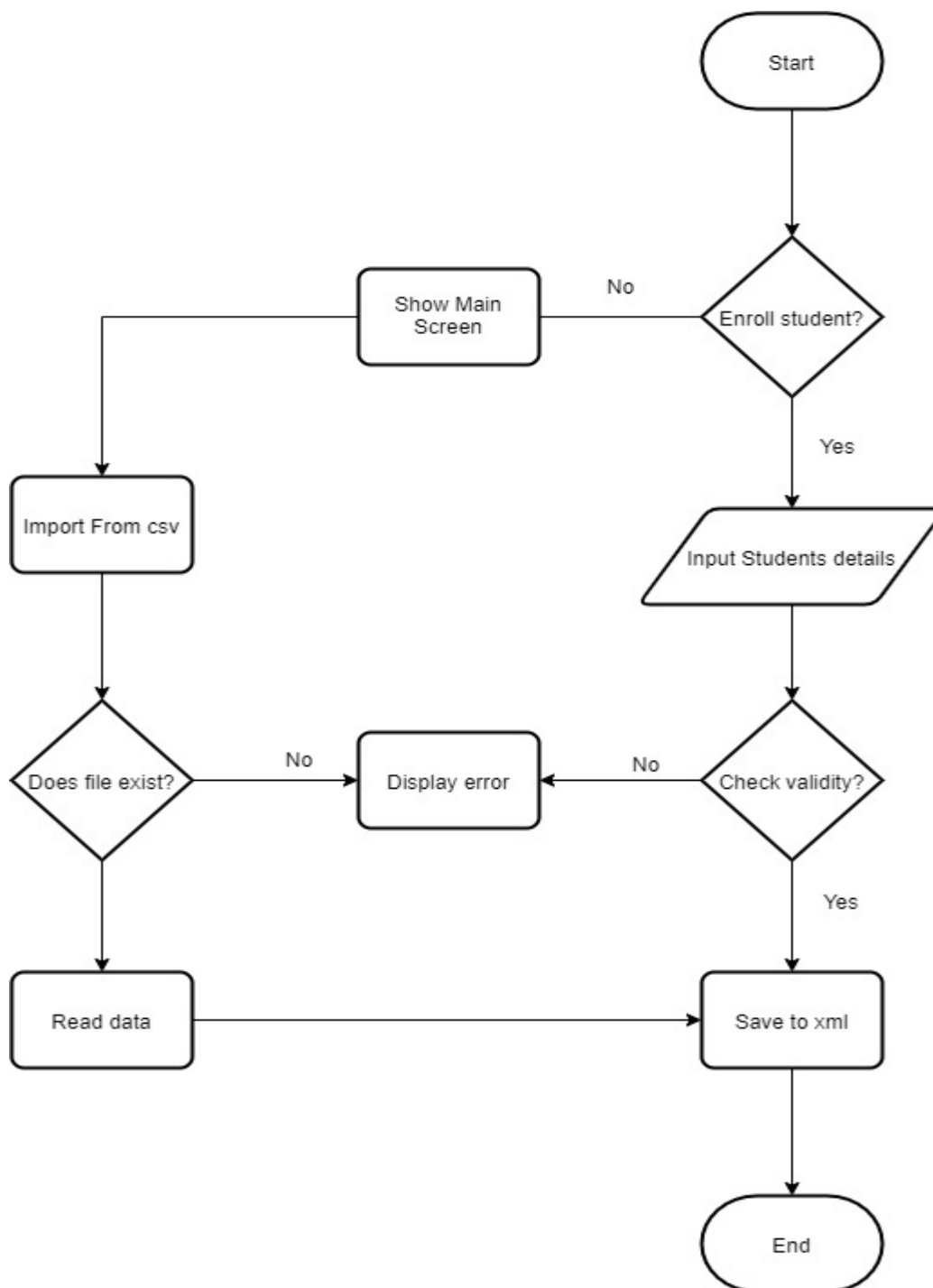


Figure 19: Student Enrol Flowchart

Description of Flowchart Algorithm**Student Enrol**Steps:

1. Start
2. Check if want to enrol or import from main screen.
3. If want to enrol add student details for Open student window and input students' details data or import the file.
4. Check validity for the input data.
5. If data is valid check save data to xml or display error message.
6. End.

Learning Reflection

The project developed is a fully digitized Student Information System. For the development of the project visual studio 2019 with WPF is used. WPF is the upgraded version of windows form for making desktop application. This framework was whole new different subjects for me in which I have researched more about using this framework for completing the project. During the project various things related to the project about creating a chart and then displaying it to the user was also challenging task.

The sorting algorithm in the data grid was a new term during this project. Moreover, the main task of the coursework was to import data and save that data in xml was a challenging task which I have successfully completed and gain the knowledge how the xml data is handled in the C# programming. The user interface of the system is made user friend where the user can easily navigate through the system. The exception handling is main for every program. The more knowledge about the exception handling and validating was also gained.

After all the overall evaluation of learning outcome was good during the project. This has help me for the further enhancement in programming.

Conclusion

The coursework of the module CS6004NP Application Development was to build up Student information system in windows presenter foundation. It was helps to sharpen the knowledge in C# programming and its real time world scenario. By building this desktop application the experience we get was a good one. Moreover, the knowledge about the git uses in the real time scenario was experienced. Describing about the project the project was successfully completed as per the criteria set by the project. More about the object-oriented programming in C# was learned.