School of Computing & Digital Media

Application Development

Coursework 1

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Abstract

Student management systems have been implemented in schools, campus and other academic institutions since the inception of software systems in public. It is a way to completely replace the paperback based traditional management system and provide new insights to discover and take action on some traits of management that has never been discovered before. The management system software that is being discussed in this report helps the institutions to achieve a certain level of accuracy and professionalism. The data that flows in any institutions where this software can be implemented provides a lot of information about the concerning factors that may be really beneficial for them. This software is a minimum viable product to demonstrate what can be achieved using c-sharp in desktop software development.

Table of Contents

Table of Figure

Table of Table

1. Introduction

The first coursework of the module “Application Development” aims at providing a Desktop Application to maintain record of student and their details. This coursework also aims to have used WPF in C-sharp to develop the system. According to the given specifications we need to develop a system to manually add or import student record and show report in various form. The system is named as ‘Student Management System’.

1.1 Current Scenario

Right now, every academic institution like schools, campuses and learning institutes are making a good use of their student management system to record the information of their students. There are a lot of benefits of the such practices as such system helps in eliminating human errors and minimize the data losses. By analyzing the student’s data, they can make good predictions about their future and plan accordingly.

1.2 Proposed System

It’s The student management system software that is going to be developed as a deliverable of this project helps achieve following functional requirements:

- Add new student data into the system with their information like name, course, registration date etc.
- Import student data from previously collected sources like in formats like csv into the system.
- Edit and delete the student data.
- Collectively view the student’s data with the ability to sort with respect to name, registration number, registration date and email.
- View the weekly report showing the total number of students enrolled in each course in the recent week.
- View the total students in each course in the form of bar chart.

2. User manual

2.1 Login

User need to input correct username and password to login.

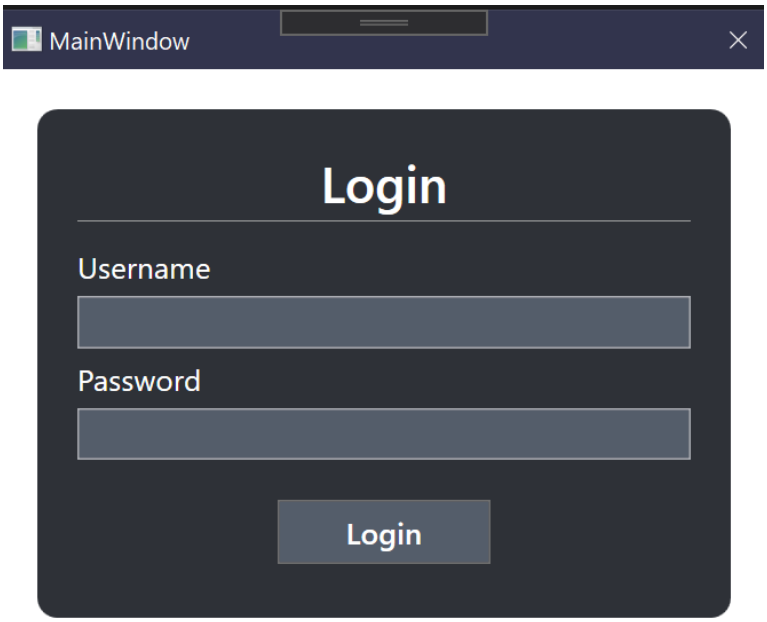


Figure 1: Login

2.2 Home

After Successful login this home window shows up.

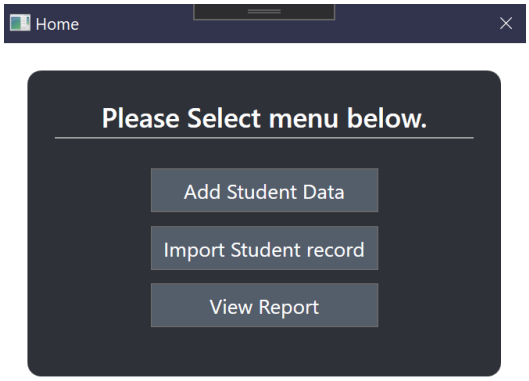


Figure 2:Home

2.2.1 Add Student data

After Clicking in add student data button this window shows up, user need to fill up all the information in text field, if any field is blank info can't be added. After filling all information, the user data is save in a XML file.

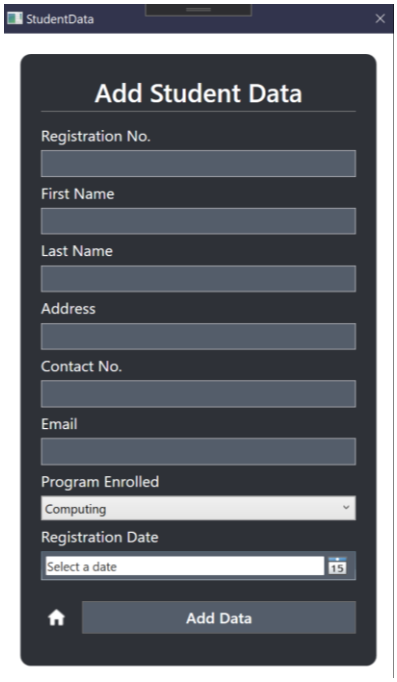


Figure 3: Add Student Data

2.2.2 Import Student record

After clicking ‘Import Student Record’ button. This window shows up. Using this window user can import data of student which was previously saved in csv file. All the data saved in CSV will successfully imported to table. Where we can see a button ‘Save Record’. After clicking that button imported data will save in same xml file, which we previously created above in Add Student window. If XML file was not created it creates new one.

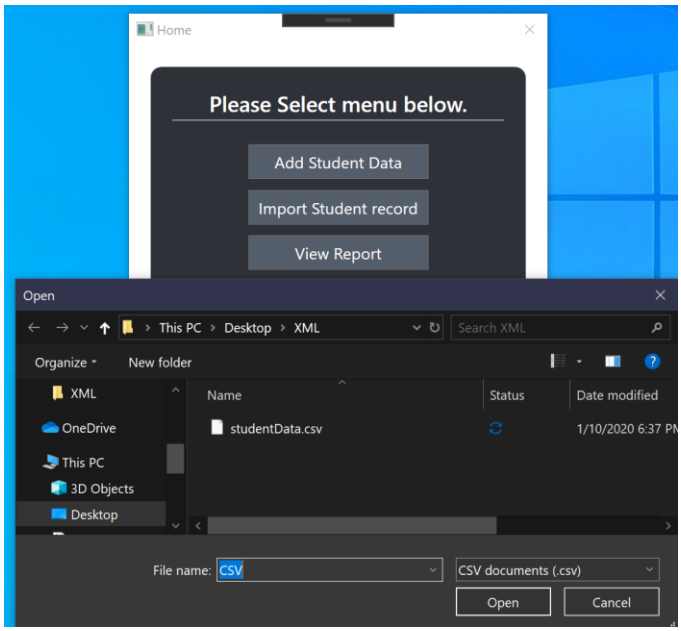


Figure 4: Import CSV

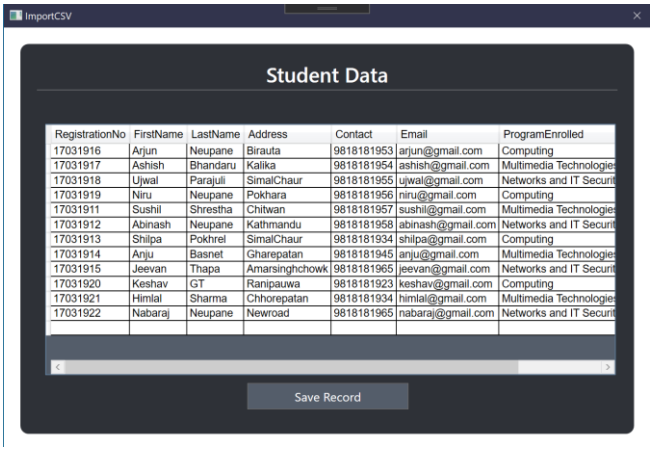


Figure 5: Imported Data

2.2.3 View Report

After Clicking View Report button in Home this window shows up.

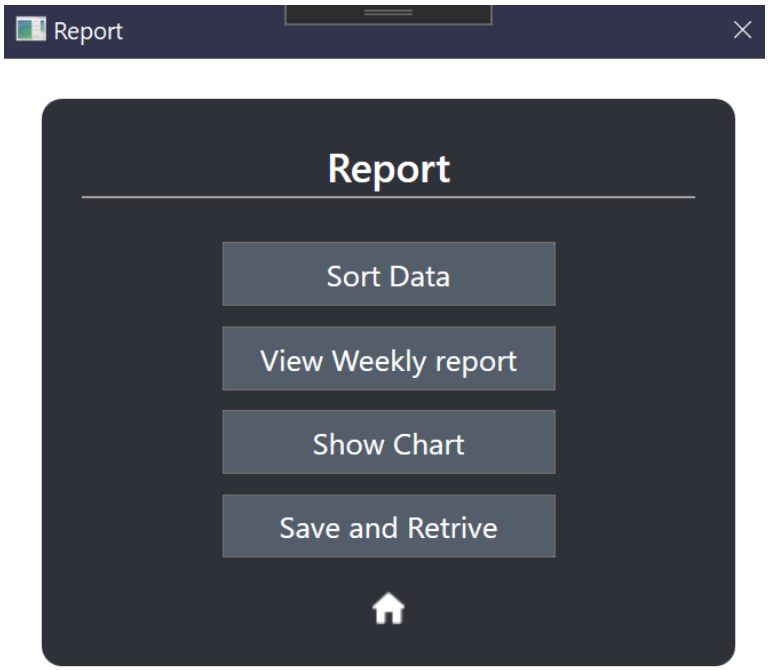
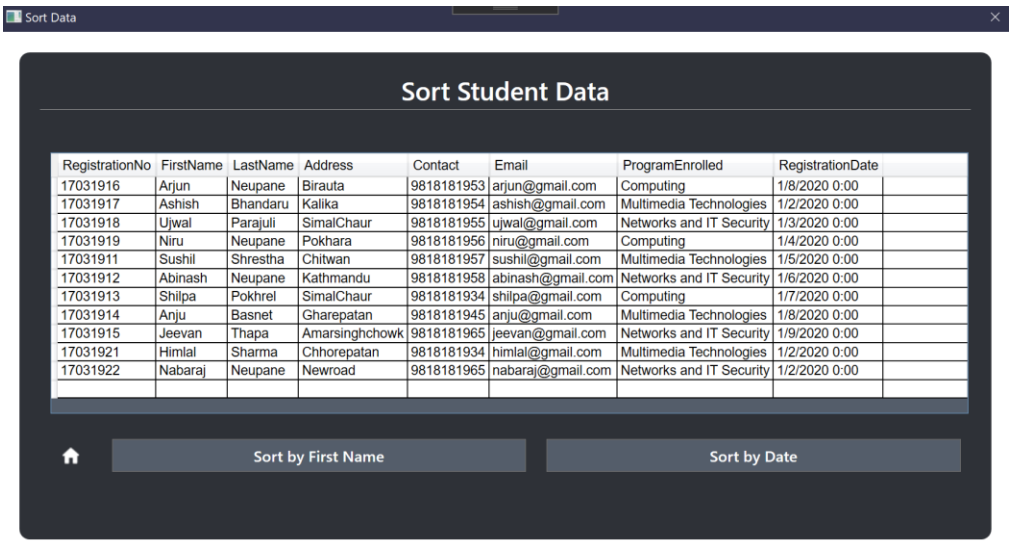


Figure 6: Report Home Page

a. Sort Data

In this section we can sort the data we saved in xml previously by first name and registration date in ascending order.



RegistrationNo	FirstName	LastName	Address	Contact	Email	ProgramEnrolled	RegistrationDate
17031916	Arjun	Neupane	Birauta	9818181953	arjun@gmail.com	Computing	1/8/2020 0:00
17031917	Ashish	Bhandaru	Kalika	9818181954	ashish@gmail.com	Multimedia Technologies	1/2/2020 0:00
17031918	Ujwal	Parajuli	SimalChaur	9818181955	ujwal@gmail.com	Networks and IT Security	1/3/2020 0:00
17031919	Niru	Neupane	Pokhara	9818181956	niru@gmail.com	Computing	1/4/2020 0:00
17031911	Sushil	Shrestha	Chitwan	9818181957	sushil@gmail.com	Multimedia Technologies	1/5/2020 0:00
17031912	Abinash	Neupane	Kathmandu	9818181958	abinash@gmail.com	Networks and IT Security	1/6/2020 0:00
17031913	Shilpa	Pokhrel	SimalChaur	9818181934	shilpa@gmail.com	Computing	1/7/2020 0:00
17031914	Anju	Basnet	Gharepatan	9818181945	anju@gmail.com	Multimedia Technologies	1/8/2020 0:00
17031915	Jeevan	Thapa	Amarsinghchowk	9818181965	jeevan@gmail.com	Networks and IT Security	1/9/2020 0:00
17031921	Himlal	Sharma	Chhorepatan	9818181934	himlal@gmail.com	Multimedia Technologies	1/2/2020 0:00
17031922	Nabaraj	Neupane	Newroad	9818181965	nabaraj@gmail.com	Networks and IT Security	1/2/2020 0:00

Figure 7:Sort Student Data

b. Weekly report

In this section we can see weekly report of student enrollment in different program.

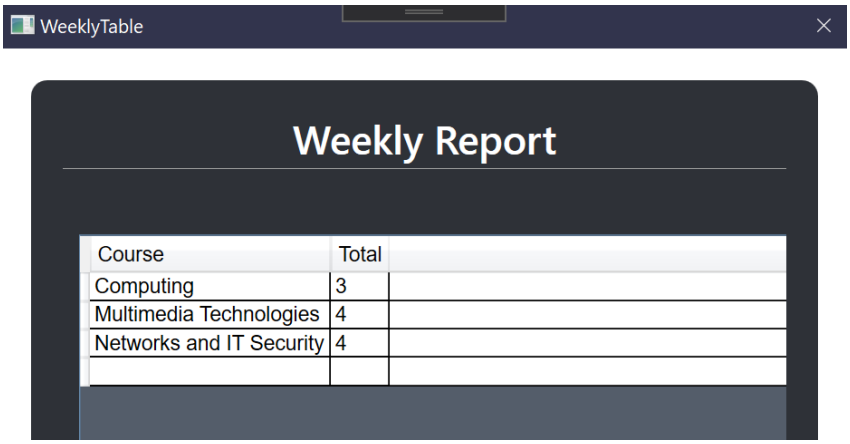


Figure 8: Weekly report

c. View Chart

In this section we can see bar graph of student who enrolled in last 7 days.

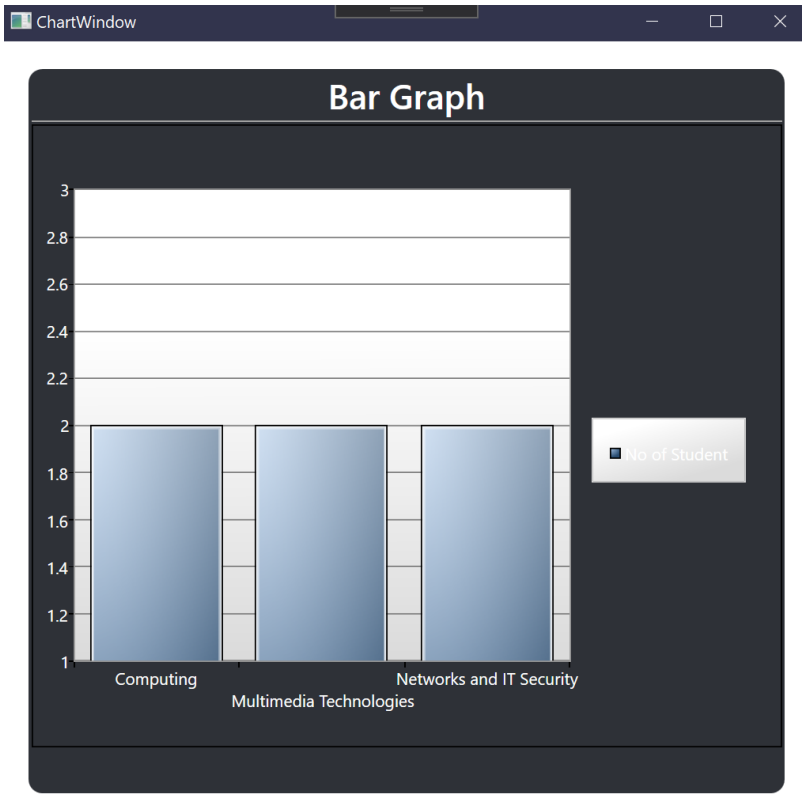


Figure 9: Chart

d. Save and Retrieve XML information

In this section we can open xml file, edit and save xml file.

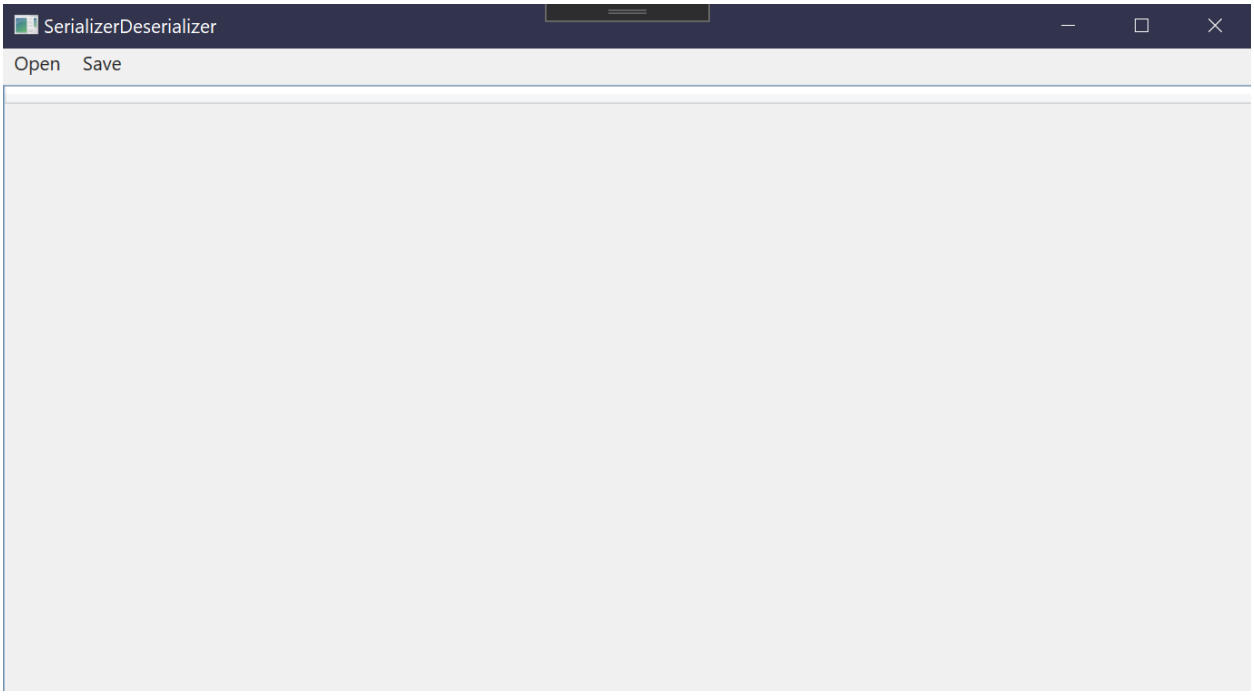


Figure 10: Save and Retrieve Data

3 Journal

I have done a lot of research on the need of student management system software in academic institutions before diving into the development phase. By doing quite a bit of research we are assured that such system is actually feasible and quite beneficial for the concerning parties. Here are the articles that I referred:

3.1 Why schools need student management system?

The education system has constantly been evolving, hence to keep up with new channels of education we need to evolve our system to store information by automating the traditional ways and bringing more structure to the curriculum.

To manage enormous amount of data, it becomes important to include a managing tool to your School. A Student Management System is solution to all the requirements a school work on. Various features like admission, attendance, fee collection library, examination, timetable, student performance report etc. are available in a Student Management System (Campus, 2020).

3.2 Top 7 benefits of Student Management System

The first significant advantage of a student management system is that as a school you are able to keep proper track of data related to students. This includes areas such as fees being paid by students, examination records of the students, transport facilities being provided by the school and availed by the students, and usage of libraries and other school facilities by the students. As a school, you can access this data and more, by using a unique identification number of the student. In fact, apart from management people, students can also use these systems in order to keep track of their dues as well as class schedules (Fedena, 2020).

3.3 What's The Purpose of Student Management?

The main objective at the end of the day for any school is the dissemination of information in an environment that encourages accountability, relevance and retention of the information gathered. Such are the main objectives of a school administrator, who, as a student manager, is charged with allowing this opportunity and environment to occur on behalf of the students (Mastros, 2020).

3.4 The necessity of student management system in School education in today's world

The world is on the verge of continuous evolution and so are we. The education systems all over the world are getting better along with getting complex. These systems are growing in size as well as scope, therefore it needs defined management for smooth functioning to keep up with new modes of information and new channels of education (S, 2020).

4 System Architecture

4.1 Class Diagram

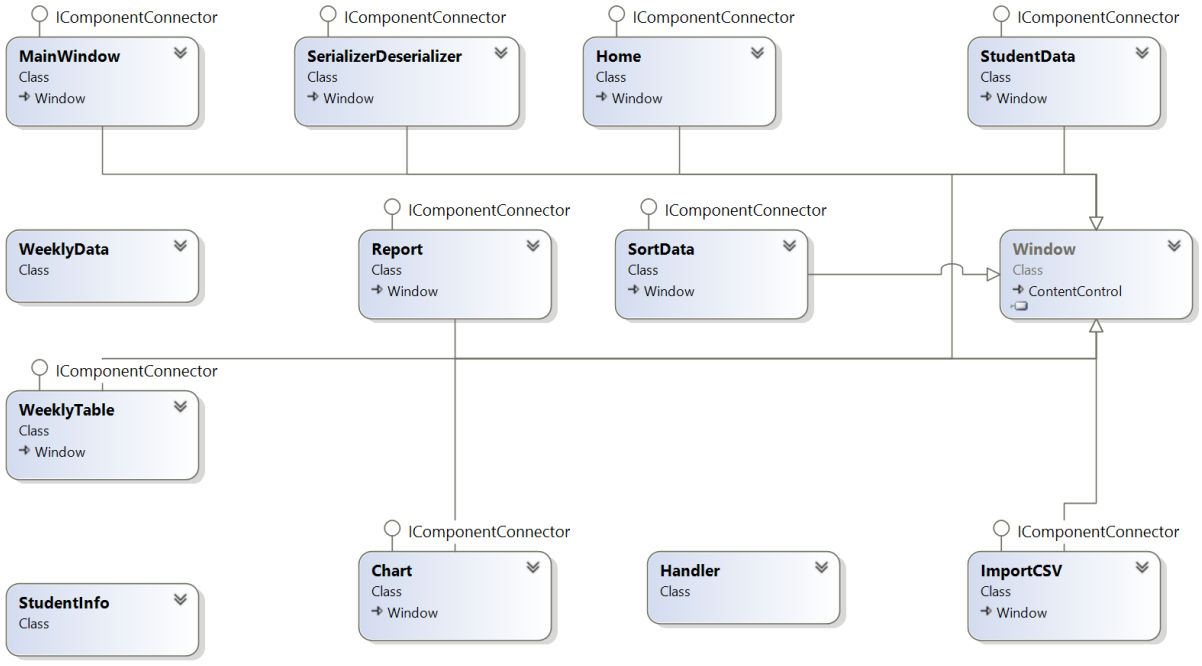


Figure 11: Class Diagram

4.2 Flowchart

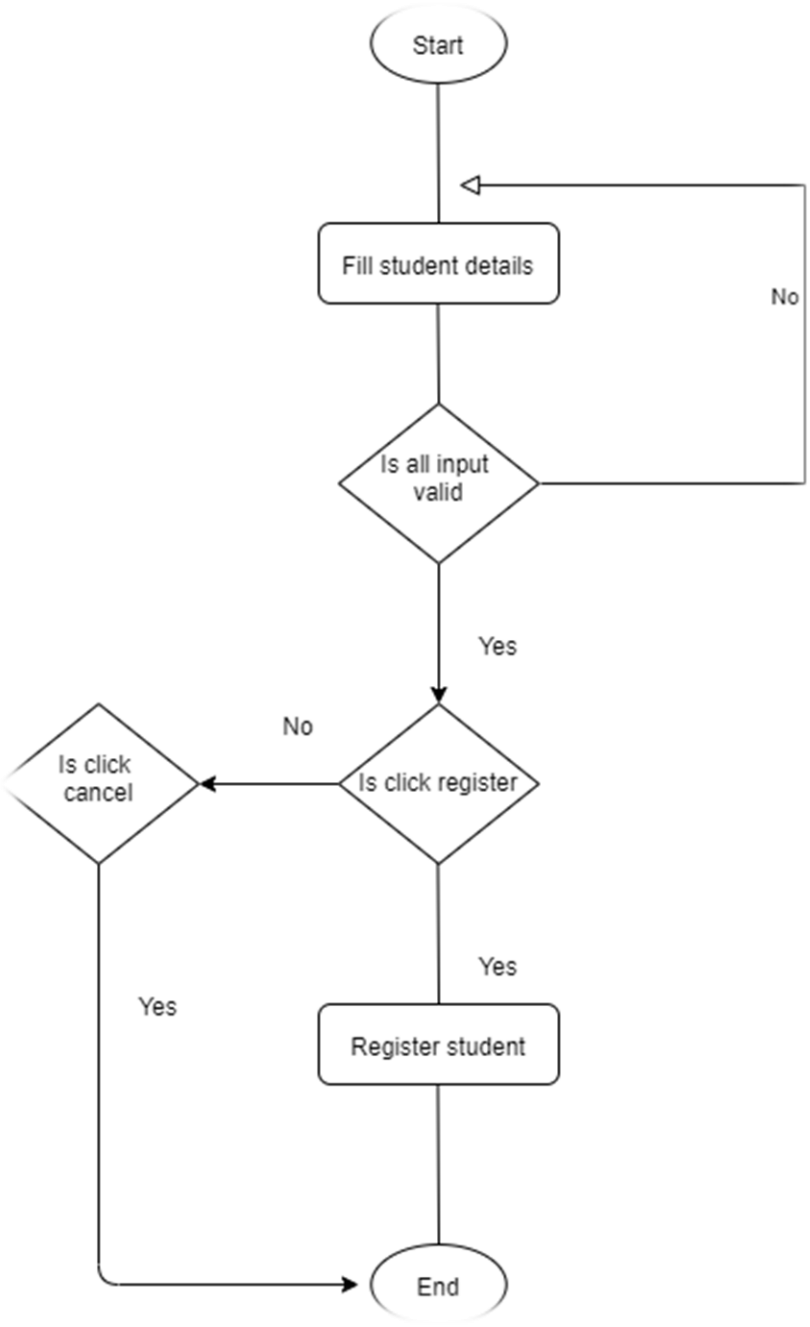


Figure 12:Flowchart

4.3 Algorithm

1. Fill Student details
2. Check if any field is empty
3. Ask again to input in field
4. Save student data

4.4 Method Description

4.4.1 Main window

Table 1: Mainwindow Class

Class Name: MainWindow	
Method/Constructor Name	**Description**
MainWindow	Constructor
btnSubmit	It is 'Login button click listener, it is used to login to system.

4.4.2 Home

Table 2: Home Class

Class Name: Home	
Method/Constructor Name	**Description**
Home	Constructor
stdData_Click	It is 'Add student data' button click listener, it is use to add individual student manually.
ImportData_Click	It is 'Import Student Record button click listener, it is use to import student record from csv file.
viewReport_Click	It is 'View Report' button click listener, it is used to view report of student enrolled.

4.4.3 Add Student Data

Table 3: Add Student Data Class

Class Name: StudentData	
Method/Constructor Name	**Description**
StudentData	Constructor
AddSampleDataforStd	It is use to fetch student data from text field.
addStudent_Click	It is use to add student data in xml file.
clearText	It is use to clear text.
ValidateInputs	It is use to validate input.

4.4.4 Import Data from CSV file

Table 4: Import CSV Class

Class Name: ImportCSV	
Method/Constructor Name	**Description**
ImportCSV	Constructor
ReadAll	It is use to read csv file.
saveRecord	It is use to save record.
AddSampleDataforStd	It is use to fetch student data from text field.

4.4.5 Report

Table 5: Report class

Class Name: Report	
Method/Constructor Name	**Description**
Report	Constructor
btnHome_Click	It is use to navigate to home.
saveAndRetrive_Click	It is use to navigate to save and retrieve window.
showChart_Click	It is use to navigate to chart window.

sortData_Click	It is use to navigate to sort data window.
weeklyTable_Click	It is use to navigate to weekly table window.

4.4.6 Sort Data

Table 6: Sort Data Class

Class Name: SortData	
Method/Constructor Name	**Description**
SortData	Constructor
studentData_SelectionChanged	It is use to read selection change in student Data.
readData	It is use to read data.
btnHome_Click	It is use to navigate to home.
btnSortName_Click	It is use to sort data by first name.
btnSortDate_Click	It is use to sort data by date.

4.4.7 Chart

Table 7: Chart Class

Class Name: Chart	
Method/Constructor Name	**Description**
Chart	Constructor
loadColumnChartData	It is use to load chart.
loadData	It is use to load data from xml file.

4.4.8 Weekly Table

Table 8: Weekly Table Class

Class Name: WeeklyTable	
Method/Constructor Name	**Description**
WeeklyTable	Constructor
readData	It is use to read data from xml file.

4.4.9 Student Info

Table 9: Student Info Class

Class Name: StudentInfo	
Method/Constructor Name	**Description**
ConvertToObject	It is use to convert object.
StudentInfo	Constructor
ToString	It is used to convert to string.

4.4.10 Handler

Table 10: Handler Class

Class Name: Handler	
Method/Constructor Name	**Description**
CreateDataSet	It is use to create data set.
CreateStudentTable	It is use to create student table.

4.4.11 SerializerDeserializer

Table 11: SerializerDeserializer Class

Class Name: SerializerDeserializer	
Method/Constructor Name	**Description**
DataGrid_SelectionChanged	It is use to read selection change in data grid.
MenuItem_Click	It is use to read menu item clicked or not.
SerializerDeserializer	Constructor

5 Sorting Algorithm

Bubble Sort Algorithm

Bubble Sort is a simple algorithm which is used to sort a given set of n elements provided in form of an array with n number of elements. Bubble Sort compares all the element one by one and sort them based on their values.

If the given array has to be sorted in ascending order, then bubble sort will start by comparing the first element of the array with the second element, if the first element is greater than the second element, it will swap both the elements, and then move on to compare the second and the third element, and so on.

If we have total n elements, then we need to repeat this process for n-1 times.

It is known as bubble sort, because with every complete iteration the largest element in the given array, bubbles up towards the last place or the highest index, just like a water bubble rises up to the water surface.

Sorting takes place by stepping through all the elements one-by-one and comparing it with the adjacent element and swapping them if required (StudyTonight, 2020).

6 Reflection

The student management system has made a good use of certain computing techniques and tricks to make the life of concerning users easier. It helps to accumulate some crucial data with an ease. The sorting algorithms discussed before have been used to sort the student data with any of traits we want to sort with. If same thing would have been done by the human operator, then it would take them a day or two. But the task of two day's work has been made possible within a second with those algorithms.

7 Conclusion

This system which is capable of storing student's data to some extent is beneficial to track the relation of students and the courses they have taken. The system can work in both local and distributed user with multiple user in the system. The level of transparency of data can be fine-tuned based on the role of the user. Moreover, it is crucial to explore data that can be hidden from plain sight such as the registration expiration date and other things.

In conclusion the system is really helpful for general academic institutions like school campuses and learning centers.

I would like to thank my module leader Ishwor Sir for helping me out to complete this project successfully.

References

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