Informatics College Pokhara

Application Development
CS6004NP
Coursework 1

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Application Development

Abstract

This report describes about the Student Information System that was developed in WPF (.NET Framework). It is a system that is used to keep track of student that were enrolled in the institute. This system will help institutes with old school record keeping to change into a digital format. This will help the work flow to be much faster and the to keep the data safe from physical harm. All the student's details will be saved in the local hard drive and can be accessed freely. All the student's details can also be arranged according to the need in this system. And also, the admin can keep track of number of students enrolled in every course by looking in the Data Table as well as reviewing the Pie chart.

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Introduction

The system developed in this coursework is a Student Information System developed in Visual Studio 2019 using C#. It is a desktop application which can be used by any schools or institutes to keep track of their enrolled students. In this application we can add the details of newly enrolled students which can be saved in a ".xml" file. Likewise, the file can be then imported to show the student details according to the registration date or name. In addition to that, the final details of all the students can also be seen in a grid form. Number of students that are enrolled in a specific Program till this date can also be seen in a data grid or a chart. Likewise, bulk data in CSV form can also be imported and appended into the main file of student data.

Current Scenario

There are many schools and institutions in Nepal which till this date use an old fashion way of keeping their data in a written format. While keeping data in written format data can be easily lost or physically damaged. Retrieving data is also a very time-consuming process and arranging all the collected data in certain format is very difficult task. Furthermore, keeping track of collected data is hard. The storage of the physical files is also a problem.

Proposed System

To solve the above problems the same thing can be done in a digital format. The collection of data can be done in a computer and saved in the system or cloud storage for safety. Retrieving data and calculating many aspects of the data can also be done by a simple click of a button. The work will be extremely fast as well as the data can be safe from any physical harm. Keeping track of data and finding a specific data can be done very easily. The data can also be kept in cloud platform for safety from theft and it also takes very less storage space.

User Manual

To help the users to learn to use this program, detailed steps are shown below with screenshots of the process.

1. When User first runs the program, this window will be shown. This is the Login window where correct username and password should be entered to go to next screen.

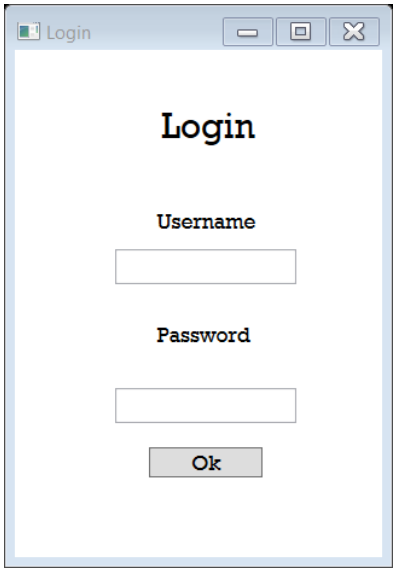


Figure 1: Login Form

2. Current username and password for the program is “admin.”

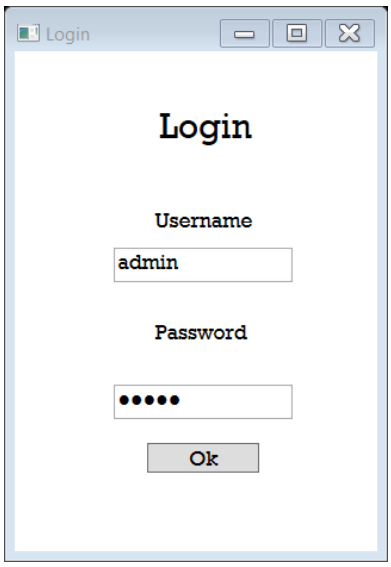


Figure 2: Login Form filled

3. If wrong username or password is entered then login will not be successful and the window given below will appear.

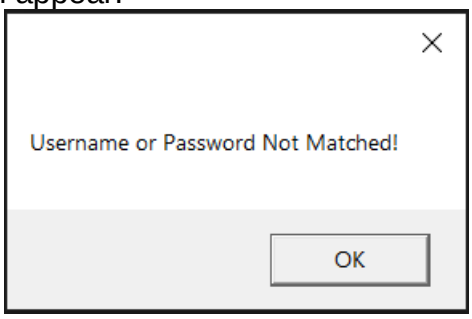


Figure 3: Username/Password not matched.

4. After the login is successful the “Add Student Details” window will open which is the window where new student’s data can be added.

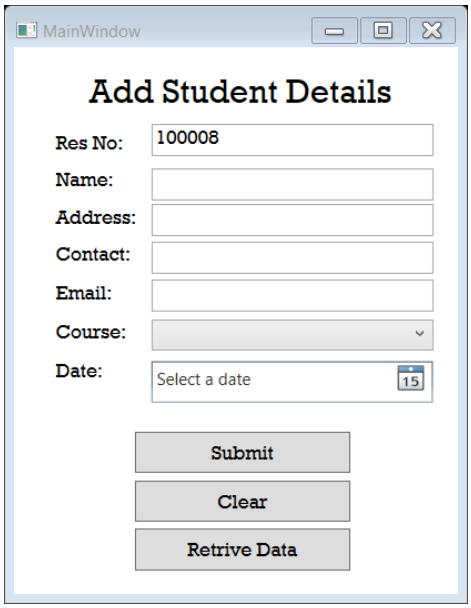


Figure 4: Add Students Details Form

5. Data should be filled in this window if we want to add new student.
    - Res No: This is the registration number of new students which is automatically generated.
    - Name: Full Name of student.
    - Address: Address of student.
    - Contact: Phone number of the student.
    - Email: Email address of student.
    - Course: The available courses are shown in drop down menu and the required course should be selected.
    - Date: The date of registration should be selected.

6. If any of the text box are empty or not filled with correct data then a message box will appear as warning and data will not be saved.

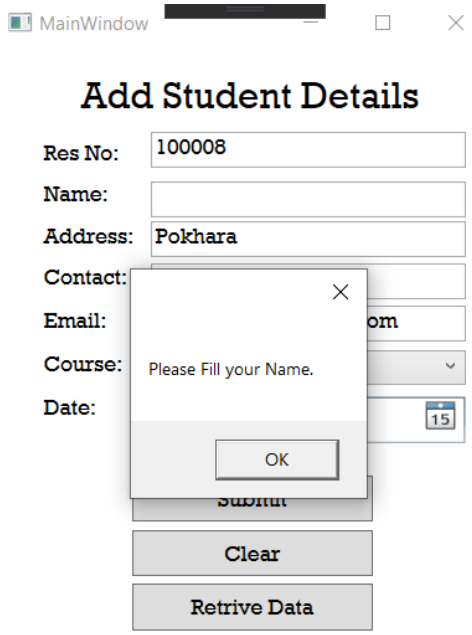


Figure 5: Name field validation

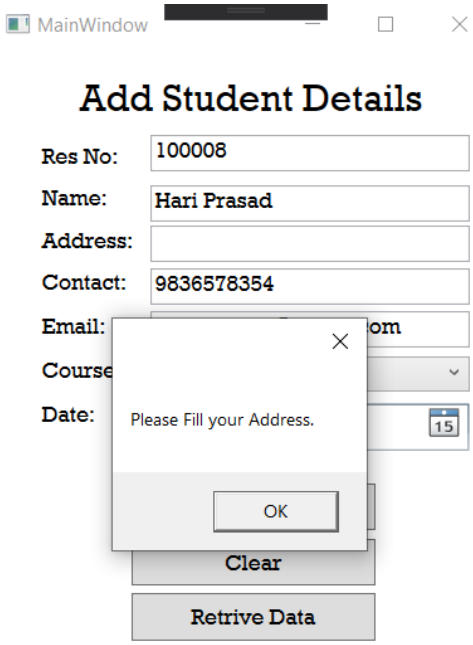


Figure 6: Address field validation

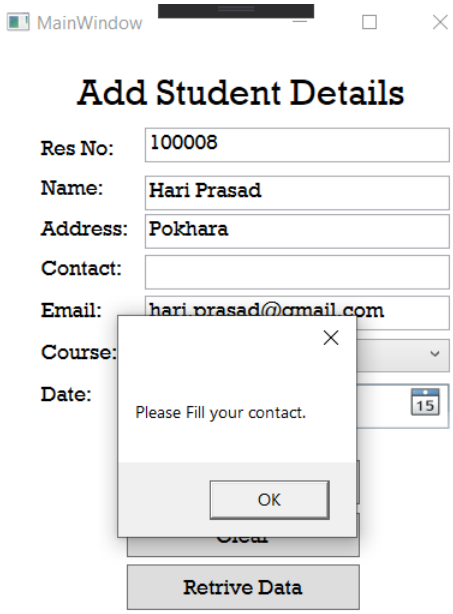


Figure 7:Contact field validation

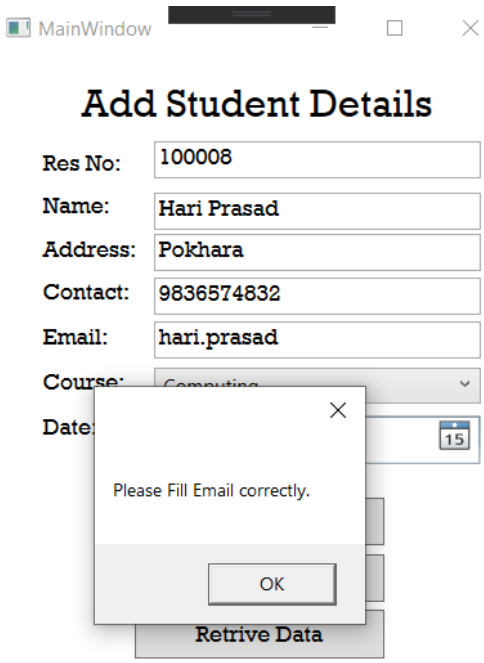


Figure 8: Email field validation

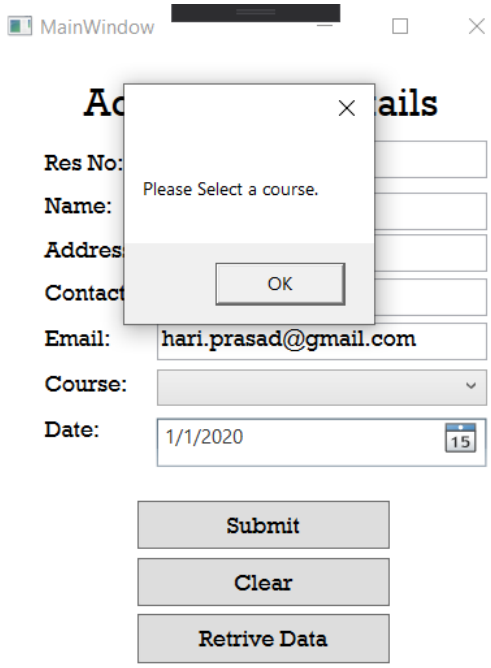


Figure 9: Course not selected validation

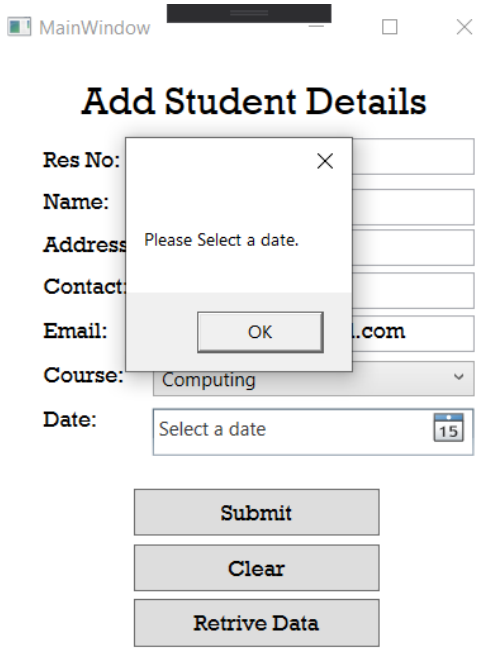


Figure 10: Date not selected validation

7. Fill all the text fields with correct data.

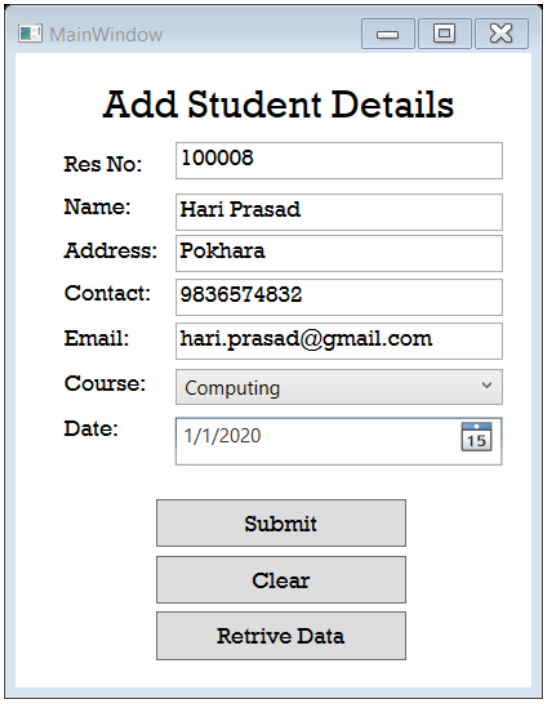


Figure 11: Add Student Details Form filled

8. After the data is filled click the “Submit” button and the data will be saved showing this window.

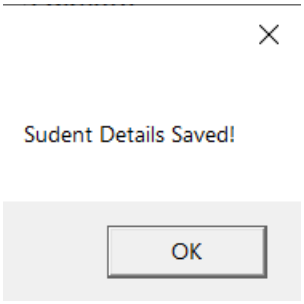


Figure 12: Details Saved message

9. Clicking the “Student Details” button in the “Add Student Details” window will open the window which is given below. This window has the DataGrid which shows the details of all the students currently enrolled.

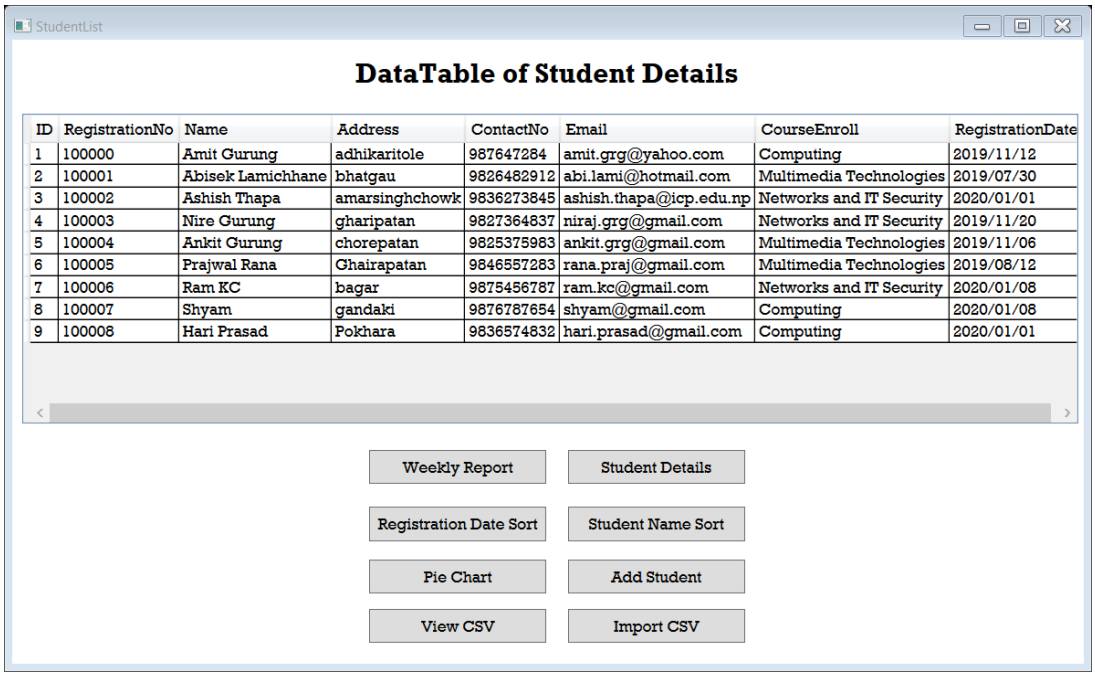


Figure 13: Data Table of Student Details

10. Pressing “Registration Date Sort” button will arrange the values in the DataGrid with ascending order with respect to the Registration Date.

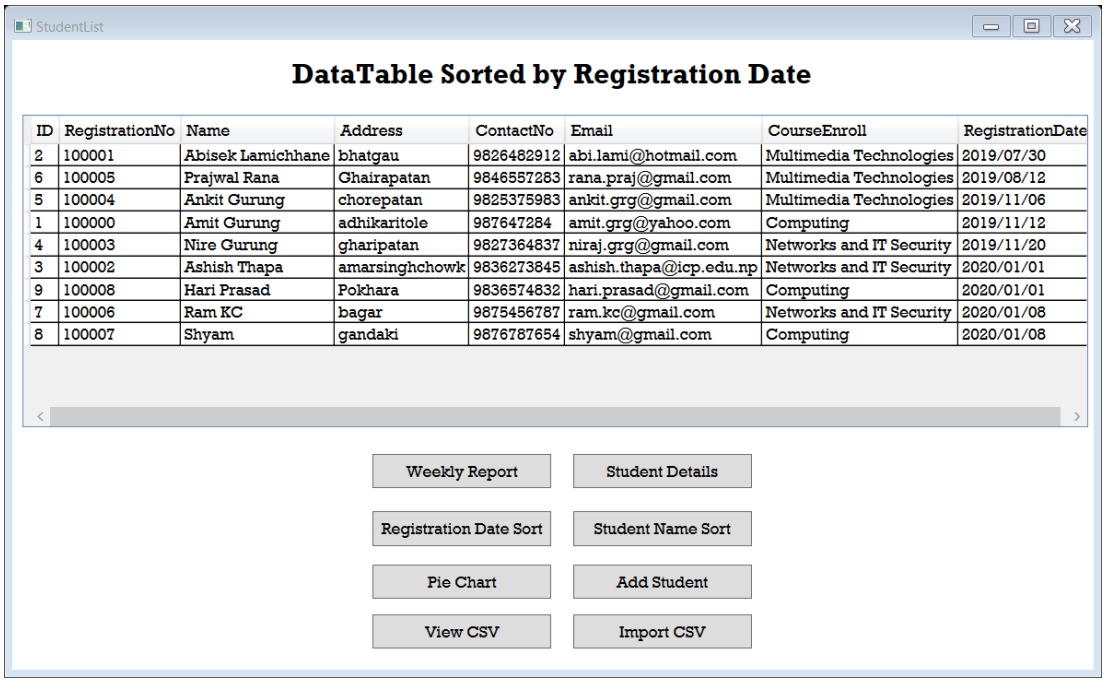


Figure 14: Students Details sorted by Date

11. Pressing “Student Name Sort” button will arrange the values in the DataGrid with ascending order with respect to the Name of students.

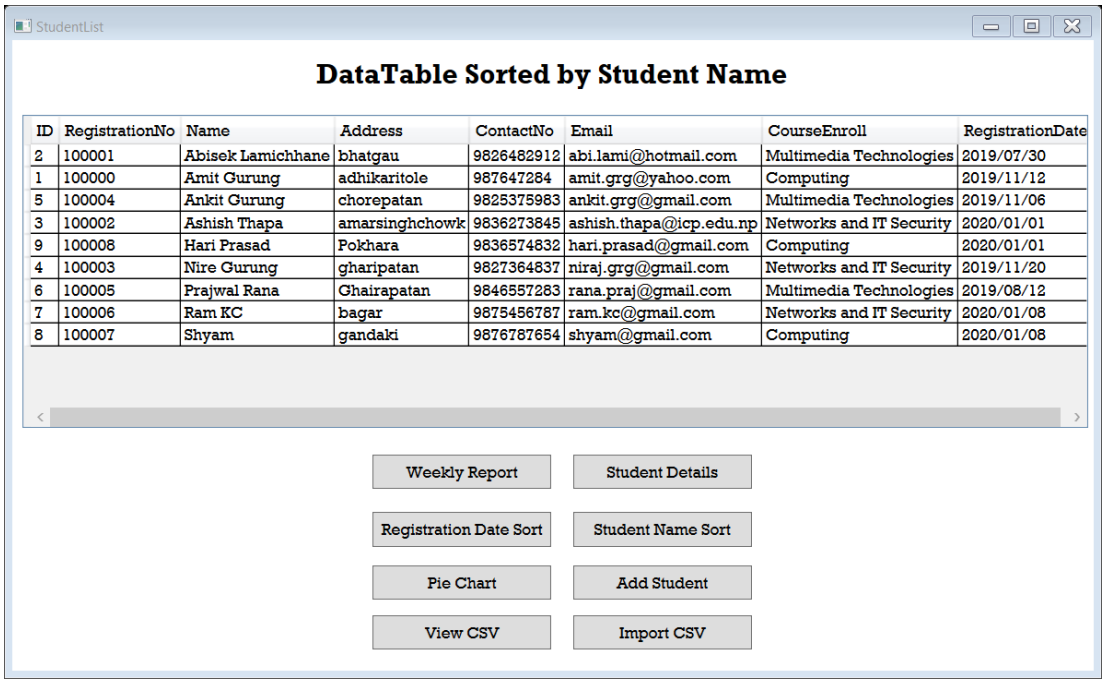


Figure 15: Students Details sorted by Name

12. Pressing “Weekly Report” button will show the Courses and the total number of students currently enrolled in that courses.

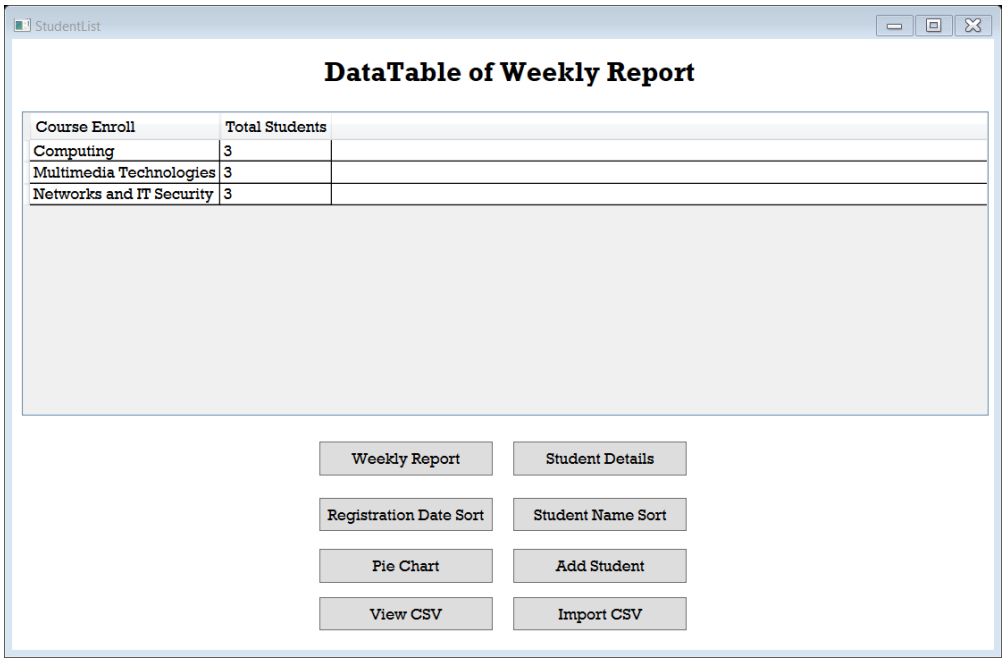


Figure 16: Data Table of Weekly Report

13. “Pie chart” button shows the Pie chart of the Weekly Report. In above figure we can see there are 3 students in all the courses so the pie chart shown below is created.

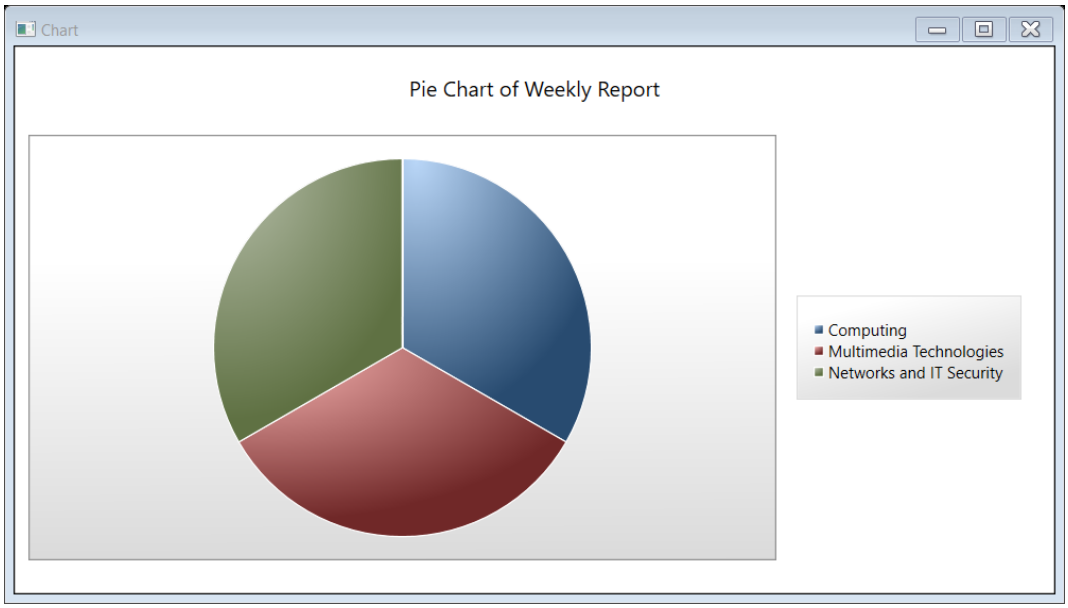


Figure 17: Pie chart of Weekly Report

14. Pressing “View CSV” button will open a browse window where we should select the “.csv” file that we want to view into the DataGrid inside our project.

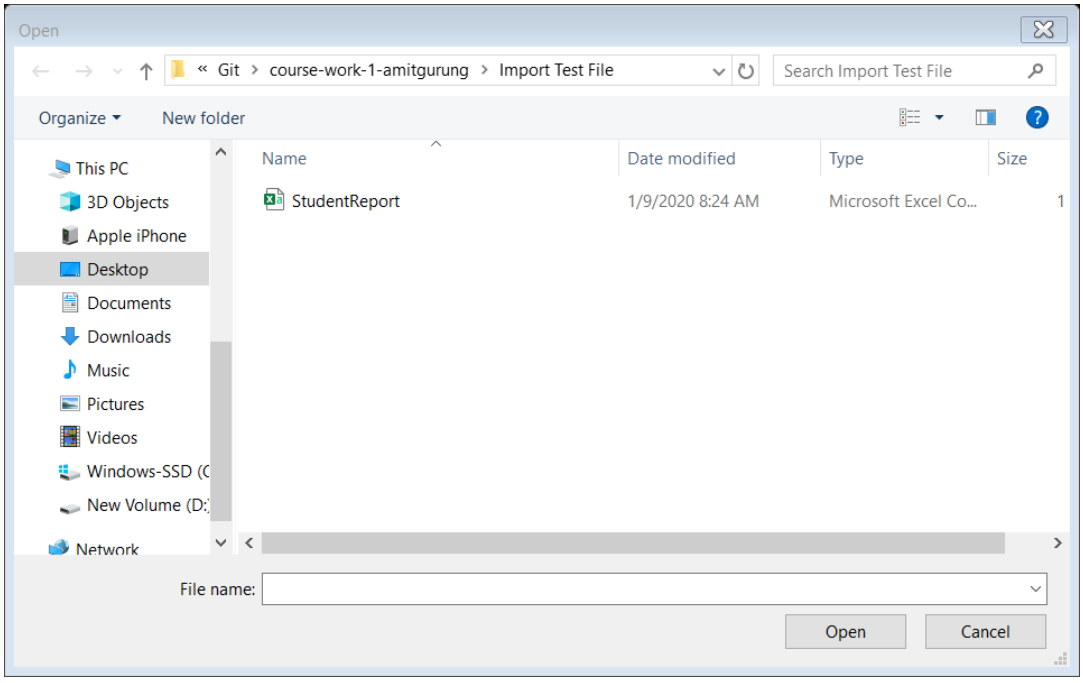


Figure 18: View CSV browse window.

15. Opening the ".csv" file will view the values in the csv file in our DataGrid.

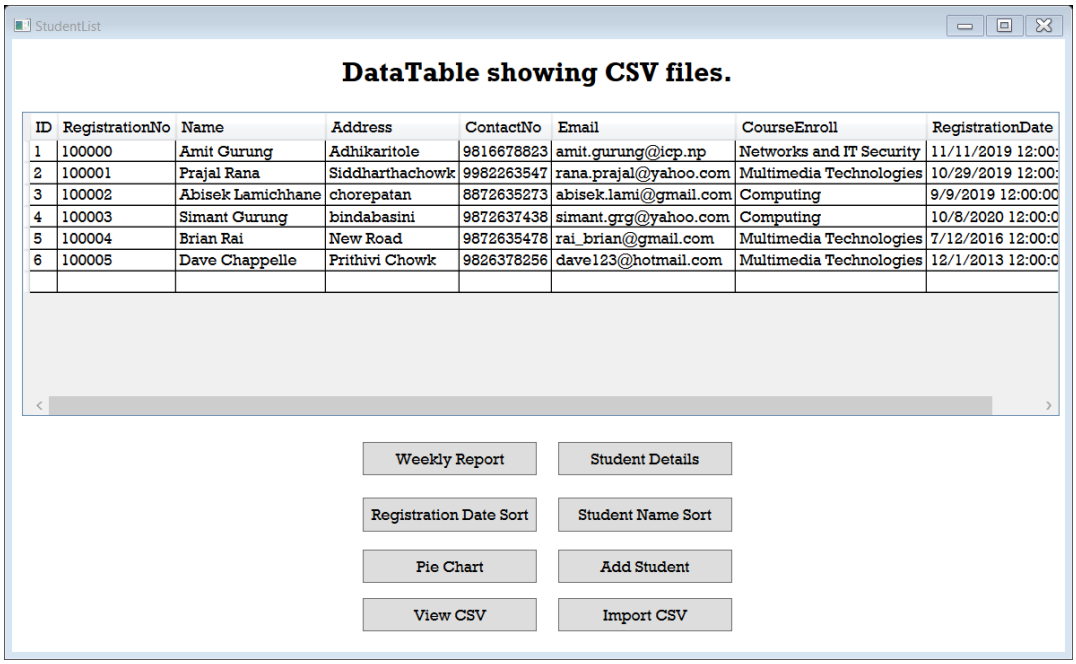


Figure 19: Data Table showing CSV data

16. If we press the "Import CSV" button then the same browse window will open and the chosen ".csv" file's data will be added to the current data. You can see the old data with the added data of CSV file in the picture below.

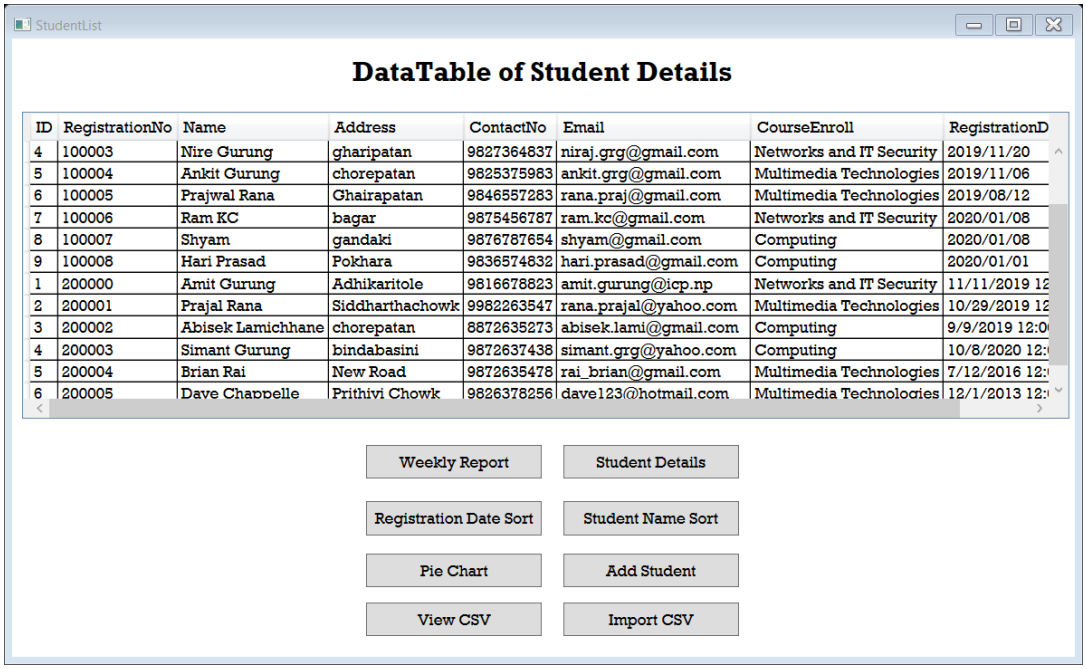


Figure 20: Import CSV file

17. To see the original student details table, press the "Student Details" button.
18. To go back to adding new students' details press the "Add Student" button.

Journals Articles

1. Implementation on Curriculum Management System based on .NET
   (Ma, 2016)
   This article gives us the information about creating a course management system in .NET Framework. Managing courses are a important part of a school. This article creates a system in which courses can be added, deleted, updated and viewed. The current system that is to be developed in this course work is of similar aspects. This article helps us understand the inner workings of the system.

2. WEB BASED SCHOOL ADMINISTRATION SYSTEM
   (Amingad, et al., 2017)
   This article gives us a detailed description on how the writer has created a school administration system. This system manages the records of the students and faculties more easily. The data is kept up-to-date which makes the retrieval of data easily. The core functions of this project and our coursework matches, due to which reviewing this article helped me a lot while developing my software.

3. Centralized School Management System for Government Schools in Ethiopia using Distributed Database
   (Amare, et al., 2018)
   This is an article which gives us the information about the School Management System that was developed to digitize the government schools in Ethiopia. This program reduces the work for the workers in schools to manage data and also manage the whole school. It is for both schools and the parents of the students. Communication between them can be done easily through this software. The process of making a digitized system for school is similar objectives that we have. This article helps us understand the problems we ma face and how to solve them.

System Architecture

Architecture Diagram

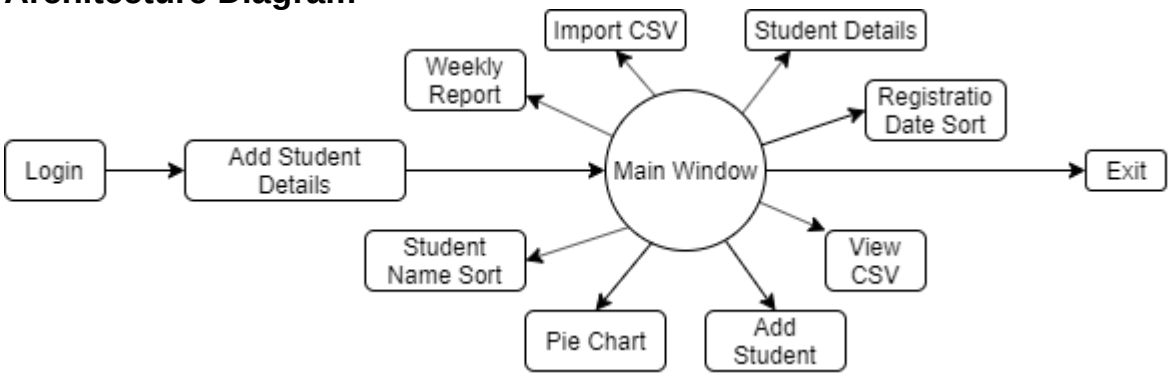


Figure 21: Architecture Diagram

Class Diagram

This is the class diagram of the developed Student Information System. The diagram was developed in Visual Studio 2019.

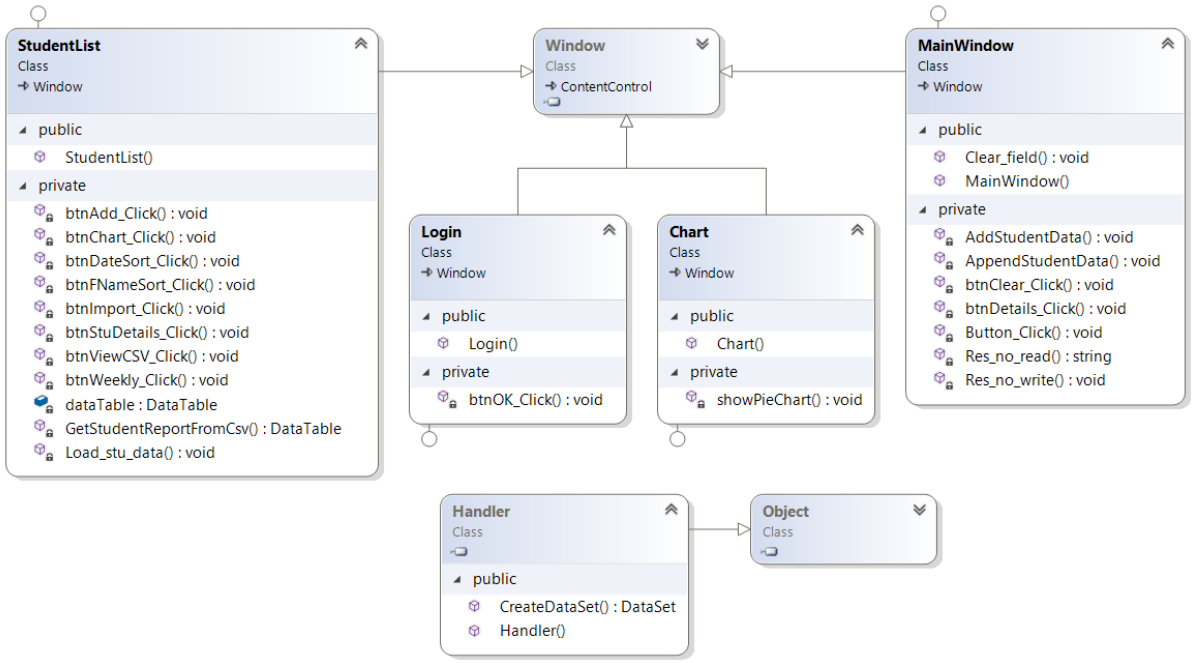


Figure 22: Class Diagram

Individual Class Diagram

1. Login

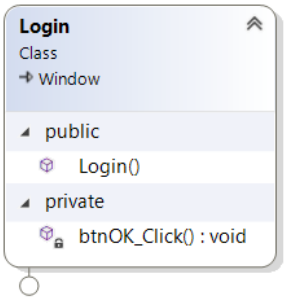
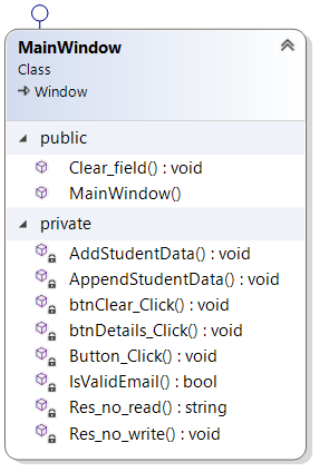
Methods	Description	Figure
Login()	Constructer method.	
btnOK_Click()	Button click method which validates the username and password and logs in the program.	

Table 1: Login Individual Class Diagram

2. MainWindow

Methods	Description	Figure
MainWindow()	Constructor method.	
AddStudentData()	Add individual student data.	
AppendStudentData()	Add all student data in a file.	
Clear_Field()	Clear the text fields.	
btnCear_Click()	Button click calls the Clear_Field() method.	
btnDetails_Click()	Opens StudentList class.	
Button_Click()	Validates the data entered in form and Calls AddStudentData() and AppendStudentData() class if all the data are correct.	
IsValidEmail()	This method checks if the email address entered is in correct format	

Res_no_write()	Stores the current resistration number in a file.	
Res_no_read()	Reads the resgistration count stored file.	

Table 2: MainWindow Individual Class Diagram

3. StudentList

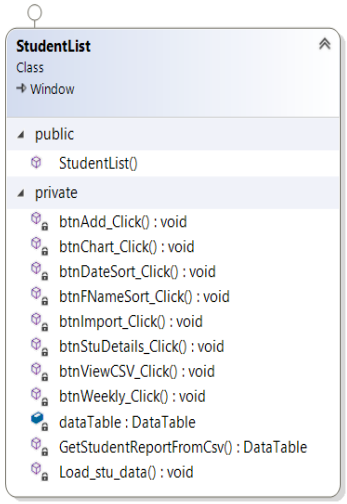
Methods	Description	Figure
StudentList()	Constructor of the class.	
btnAdd_Click()	Opens “MainWindow”.	
btnDateSort_Click()	Sorts the student data in ascending order according to registration date and shows in datagrid.	
btnFNameSort_Click()	Sorts the student data in ascending order according to name and shows in datagrid.	
btnStuDetails_Click()	Shows all the student’s details in data grid.	
btnViewCSV_Click()	Open CSV file and view the data inside it.	
btnWeekly_Click()	Shows the number of students enrolled in each course.	
btnChart_Click()	Opens “Chart”.	
Load_Stu_data()	Shows student details in grid.	

Table 3: StudentList Individual Class Diagram

4. Chart

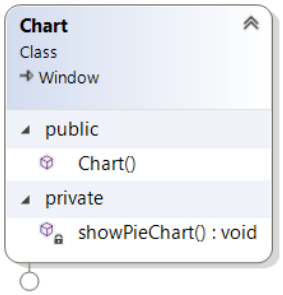
Methods	Description	Figure
Chart()	Constructor of class.	
showPieChart()	Shows pie chart of the students enrolled in each course.	

Table 4: Chart Individual Class Diagram

5. Handler

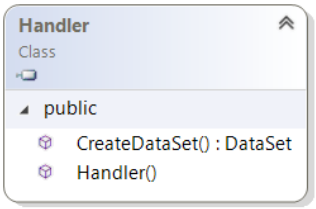
Methods	Description	Figure
Handler()	Constructor of the class.	
CreateDataSet()	Calls the method that creates dataset for individual student details and student report.	

Table 5: Handler Individual Class Diagram

Flowcharts for Reports

- Enrol Students

  This the flowchart of the class MainWindow in which new students fill the form enrol in a course and the details entered are also saved in the system.

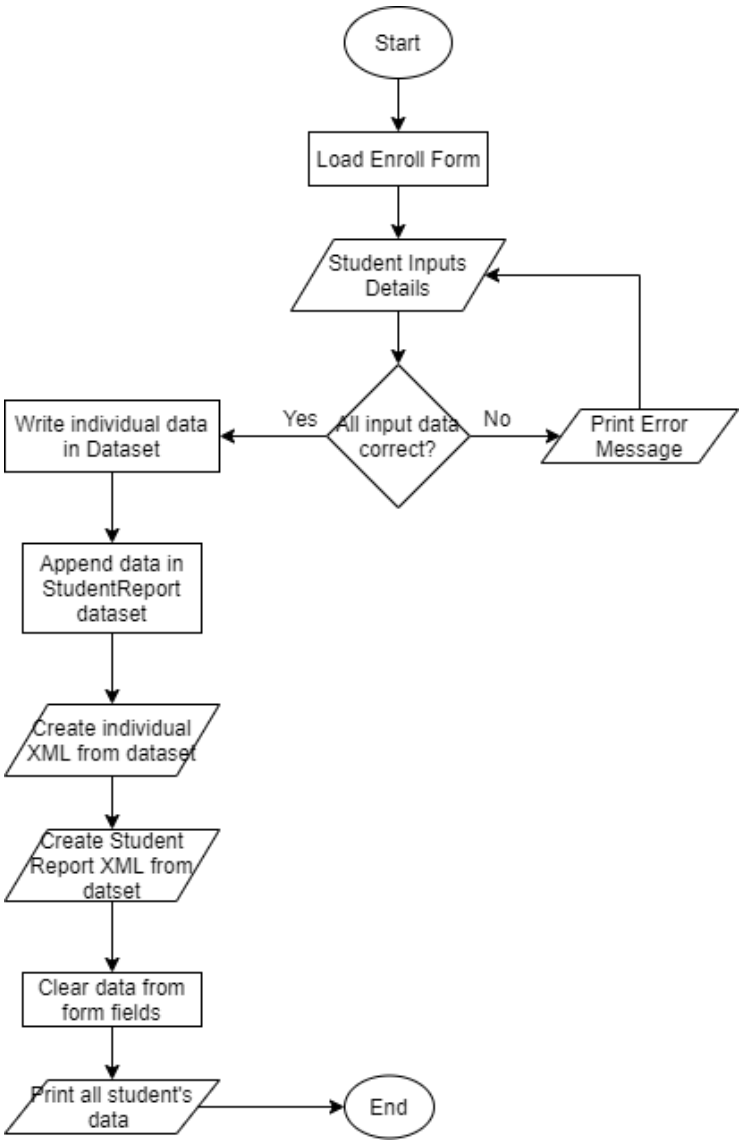


Figure 23: Flowchart of Enrol Students

- Import CSV data

  This flowchart is of the method that reads the CSV file form the system and adds that data in the main student details file.

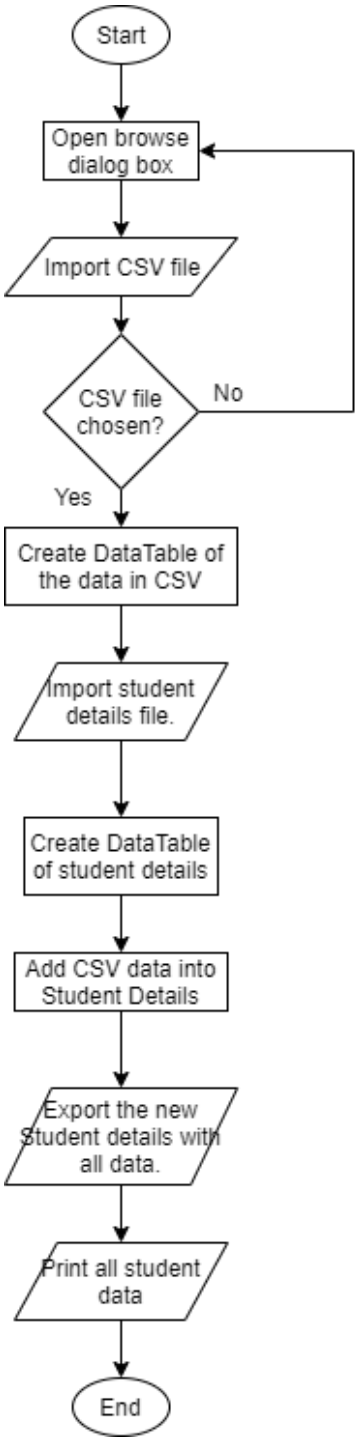


Figure 24: Import CSV flowchart

Algorithms

We sort the data of our Student Details once according to the Registration Date and once according to the Name of the Student. In C# we used the default sorting method to sort our data. The algorithm that is used in the default sort method is Quick Sort Algorithm.

Quick Sort Algorithm

This is an algorithm that uses divide and conquer method to sort the data in an array. The algorithm first takes a pivot point usually the last element. The main array is then partitioned in to sub array where left subarray will contain all the data smaller than the pivot and right subarray will contain all the data greater than pivot. Then the left subarray and right subarray are sorted recursively until final array has all the data sorted (InterviewBit, n.d.).

Let us take an example.
Input = {4 1 9 7 3 6}
Output = {1 3 4 6 7 9}

Step 1: The last element “6” is taken as pivot point and the whole array is portioned around 6.
Output: {4 1 3 6 9 7}

Step 2: Now sort the left subarray (4 1 3). Which is sorted by taking “3” as pivot and the sub array is portioned around it.
Output: {1 3 4 6 9 7}

Step 3: Since the right-side sub array (1 3 4) is now sorted now left side sub array (9 7) is sorted taken “7” as pivot.
Output: {1 3 4 6 7 9}

Step 4: At last all the sub arrays are also sorted so the final output is given.
Final Output: {1 3 4 6 7 9}

Reflection

The system in this coursework was developed using C# language in Visual Studio 2019. WPF (.Net Framework) was used to develop this project. Visual studio is a great program to use to make WPF forms because it provides us with drag and drop functionality while adding the UI elements in the forms. Giving the forms many designing elements and editing them to our own preference was easy as we can do them in the UI rather than writing codes. We can also run our project and see the project from the user's viewpoint and also debug the errors and problems in the program. Many plugins and tools are also available for visual studio on the internet which can be downloaded and used to add functionality like creating charts and creating class diagram in visual studio itself. These things made it easy for us in development process.

C# is an object-oriented language that runs in .NET Framework which was created by Microsoft. This language was used while coding in Visual Studio (w3Schools, n.d.). It is one of the most popular programming languages in the world which is also simple and easy to use. Its coding mechanism is closer to that of other popular languages like C++ and JAVA. Since we learned Java in previous years it was relatively easy to learn to program in this language. Coding in C# in Visual Studio is really easy because visual studio helps us by suggesting the codes to be written as well as auto tabs the codes as well as auto ends the brackets. This made coding in C# very easy to learn and helped us significantly while developing this system.

Conclusion

In the end, the developed application “Student Information System” is a good application that can be used in any institutions to keep track of their enrolled students. The app relatively user friendly and is quite functional. Developing this application for this coursework helped us to learn many aspects of creating WPF applications and helped us learn deeply about C#. This coursework helped us created a foundation in creating desktop applications. It was hard to learn at first. Creating a fully functional user-friendly system in WPF was new for us. The inner workings of the system were difficult to construct at first. But with the help of Module leader and research journals little by little the system came into fruition. And after many hours of coding and debugging the coursework was completed in time and was a success from which many new ideas were learned.

References

Amare, et al., 2018. Centralized School Management System for Government Schools in Ethiopia using Distributed Database. *International Journal of Engineering Trends and Technology(IJETT) ,* 60(2), pp. 97-101.

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w3Schools, n.d. *w3schools.com.* [Online] Available at: https://www.w3schools.com/cs/cs_intro.asp [Accessed 10 01 2020].

Appendix

Login.xaml.cs

```
using System.Windows;


namespace ApplicationDevelopment
{
    public partial class Login : Window
    {
        public Login()
        {
            InitializeComponent();
        }

        private void btnOK_Click(object sender, RoutedEventArgs e)
        {
            if(txtUsername.Text == "admin" && txtPassword.Password == "admin")
            {
                MainWindow mainWindow = new MainWindow();
                mainWindow.Show();
                Close();
            }
            else
            {
                MessageBox.Show("Username or Password Not Matched!");

            }
        }
    }
}
```

MainWindow.xaml.cs

```
using DataHandler;
using System.Windows;
using System.Data;
using System.IO;

namespace ApplicationDevelopment
{

    public partial class MainWindow : Window
    {
        public MainWindow()
        {
            InitializeComponent();

            txtResNo.Text = Res_no_read();

        }

        private void AddStudentData(DataSet dataSet)
        {
            var dr_Std = dataSet.Tables["Student"].NewRow();
            dr_Std["Name"] = txtName.Text;
            dr_Std["Address"] = txtAddr.Text;
            dr_Std["ContactNo"] = txtContact.Text;
            dr_Std["Email"] = txtEmail.Text;
```

```
            dr_Std["CourseEnroll"] = comboProgram.Text;
            dr_Std["RegistrationDate"] =
Date_Pick.SelectedDate.Value.ToString("yyyy/MM/dd");
            dataSet.Tables["Student"].Rows.Add(dr_Std);

        }

        private void AppendStudentData(DataSet dataSet)
        {
            if (File.Exists("Student Report/StudentReport.xml"))
            {
                dataSet.Tables["StudentReport"].ReadXml("Student
Report/StudentReport.xml");

                var dr_Std = dataSet.Tables["StudentReport"].NewRow();
                dr_Std["RegistrationNo"] = txtResNo.Text;
                dr_Std["Name"] = txtName.Text;
                dr_Std["Address"] = txtAddr.Text;
                dr_Std["ContactNo"] = txtContact.Text;
                dr_Std["Email"] = txtEmail.Text;
                dr_Std["CourseEnroll"] = comboProgram.Text;
                dr_Std["RegistrationDate"] =
Date_Pick.SelectedDate.Value.ToString("yyyy/MM/dd");
                dataSet.Tables["StudentReport"].Rows.Add(dr_Std);

                dataSet.Tables["StudentReport"].WriteXml("Student
Report/StudentReport.xml");
            }
            else
            {
                dataSet.Tables["StudentReport"].WriteXml("Student
Report/StudentReport.xml");
                AppendStudentData(dataSet);
            }
        }
        private void Button_Click(object sender, RoutedEventArgs e)
        {

            if (txtName.Text == "")
            {
                MessageBox.Show("Please Fill your Name.");
            }
            else if (txtAddr.Text == "")
            {
                MessageBox.Show("Please Fill your Address.");
            }
            else if (txtContact.Text == "")
            {
                MessageBox.Show("Please Fill your contact.");
            }
            else if (IsValidEmail(txtEmail.Text) == false)
            {
                MessageBox.Show("Please Fill Email correctly.");
            }
            else if (Date_Pick.SelectedDate == null)
            {
                MessageBox.Show("Please Select a date.");
            }
            else if (comboProgram.SelectedItem == null)
            {
                MessageBox.Show("Please Select a course.");
            }
```

```
            else
            {

                var handler = new Handler();
                var dataSet = handler.CreateDataSet();
                AddStudentData(dataSet);
                AppendStudentData(dataSet);

                dataSet.Tables["Student"].WriteXml("Individual Data/" + txtName.Text +
"-Data-" + txtResNo.Text + ".xml");
                Res_no_write(txtResNo.Text);
                txtResNo.Text = Res_no_read();

                MessageBox.Show("Sudent Details Saved!");

                Clear_field();
            }

        }

        private void btnClear_Click(object sender, RoutedEventArgs e)
        {
            Clear_field();
        }
        public void Clear_field()
        {
            txtName.Text = "";
            txtAddr.Text = "";
            txtContact.Text = "";
            txtEmail.Text = "";
            comboProgram.Text = "";
            Date_Pick.Text = "";
        }

        private void Res_no_write(string text)
        {
            File.WriteAllText("Res Count/count_res.txt", text);
        }

        private string Res_no_read()
        {
            int i = 100000;
            if (File.Exists("Res Count/count_res.txt"))
            {
                string text = File.ReadAllText("Res Count/count_res.txt");
                i = int.Parse(text.ToString());
                i += 1;
            }
            else
            {
                File.WriteAllText("Res Count/count_res.txt", "100000");
            }

            return i.ToString();
        }

        private void btnDetails_Click(object sender, RoutedEventArgs e)
        {
            StudentList studentList = new StudentList();
            studentList.Show();
            Close();
        }
```

```
        bool IsValidEmail(string email)
        {
            try
            {
                var eAdd = new System.Net.Mail.MailAddress(email);
                return eAdd.Address == email;
            }
            catch
            {
                return false;
            }
        }
    }
}
```

StudentDetails.xaml.cs

```
using DataHandler;
using System;
using System.Data;
using System.Data.OleDb;
using System.Globalization;
using System.IO;
using System.Windows;


namespace ApplicationDevelopment
{
    public partial class StudentList : Window
    {
        DataTable dataTable;

        public StudentList()
        {
            InitializeComponent();
            Load_stu_data();
        }

        private void Load_stu_data()
        {
            if (File.Exists("Student Report/StudentReport.xml"))
            {
                var dataset = new DataSet();
                dataset.ReadXml("Student Report/StudentReport.xml");

                dataTable = dataset.Tables["StudentReport"];
                stdGrid.DataContext = dataTable.DefaultView;
            }
        }

        private void btnWeekly_Click(object sender, RoutedEventArgs e)
        {
            int total_Com = 0;
            int total_Mul = 0;
            int total_Net = 0;

            DataTable dt = new DataTable("tbl");
            dt.Columns.Add("Course Enroll", typeof(String));
            dt.Columns.Add("Total Students", typeof(int));

            for (int i = 0; i < dataTable.Rows.Count; i++)
```

```
        {
            String col = dataTable.Rows[i]["CourseEnroll"].ToString();
            if (col == "Computing")
            {
                total_Com++;
            }
            else if(col == "Multimedia Technologies")
            {
                total_Mul++;
            }
            else if(col == "Networks and IT Security")
            {
                total_Net++;
            }
        }

        dt.Rows.Add("Computing", total_Com);
        dt.Rows.Add("Multimedia Technologies", total_Mul);
        dt.Rows.Add("Networks and IT Security", total_Net);


        stdGrid.DataContext = dt.DefaultView;
        lblWindowName.Content = "DataTable of Weekly Report";
    }

    private void btnDateSort_Click(object sender, RoutedEventArgs e)
    {
        var dataset = new DataSet();
        dataset.ReadXml("Student Report/StudentReport.xml");

        dataTable = dataset.Tables["StudentReport"];
        dataTable.DefaultView.Sort = "RegistrationDate ASC";
        stdGrid.DataContext = dataTable.DefaultView;
        lblWindowName.Content = "DataTable Sorted by Registration Date";
    }

    private void btnFNameSort_Click(object sender, RoutedEventArgs e)
    {
        var dataset = new DataSet();
        dataset.ReadXml("Student Report/StudentReport.xml");

        dataTable = dataset.Tables["StudentReport"];
        dataTable.DefaultView.Sort = "Name ASC";
        stdGrid.DataContext = dataTable.DefaultView;
        lblWindowName.Content = "DataTable Sorted by Student Name";
    }

    private void btnStuDetails_Click(object sender, RoutedEventArgs e)
    {
        if (File.Exists("Student Report/StudentReport.xml"))
        {
            var dataset = new DataSet();
            dataset.ReadXml("Student Report/StudentReport.xml");

            DataTable tableStd = dataset.Tables["StudentReport"];
            stdGrid.DataContext = tableStd.DefaultView;
            lblWindowName.Content = "DataTable of Student Details";
        }
    }

    private void btnAdd_Click(object sender, RoutedEventArgs e)
    {
```

```
        MainWindow mainWindow = new MainWindow();
        mainWindow.Show();
        Close();
    }

    private void btnViewCSV_Click(object sender, RoutedEventArgs e)
    {
        Microsoft.Win32.OpenFileDialog dlg = new Microsoft.Win32.OpenFileDialog();
        dlg.DefaultExt = ".csv";
        Nullable<bool> result = dlg.ShowDialog();

        if (result == true)
        {
            DataTable tableStd = GetStudentReportFromCsv(dlg.FileName, true);
            stdGrid.DataContext = tableStd.DefaultView;
            lblWindowName.Content = "DataTable showing CSV files.";
        }

    }

    static DataTable GetStudentReportFromCsv(string path, bool isFirstRowHeader)
    {
        string header = isFirstRowHeader ? "Yes" : "No";

        string pathAddress = Path.GetDirectoryName(path);
        string fileName = Path.GetFileName(path);

        string sql = @"SELECT * FROM [" + fileName + "]";

        using (OleDbConnection connection = new OleDbConnection(
                  @"Provider=Microsoft.Jet.OLEDB.4.0;Data Source=" + pathAddress +
                  ";Extended Properties=\"Text;HDR=" + header + "\""))
        using (OleDbCommand command = new OleDbCommand(sql, connection))
        using (OleDbDataAdapter adapter = new OleDbDataAdapter(command))
        {
            DataTable dataTable = new DataTable();
            dataTable.Locale = CultureInfo.CurrentCulture;
            adapter.Fill(dataTable);
            return dataTable;
        }
    }

    private void btnChart_Click(object sender, RoutedEventArgs e)
    {
        Chart chart = new Chart();
        chart.Show();
    }

    private void btnImport_Click(object sender, RoutedEventArgs e)
    {
        Microsoft.Win32.OpenFileDialog dlg = new Microsoft.Win32.OpenFileDialog();
        dlg.DefaultExt = ".csv";
        Nullable<bool> result = dlg.ShowDialog();

        if (result == true)
        {
            DataTable tableStd = GetStudentReportFromCsv(dlg.FileName, true);
            DataTable dtCloned = tableStd.Clone();
            dtCloned.Columns["ContactNo"].DataType = typeof(String);
            dtCloned.Columns["RegistrationDate"].DataType = typeof(String);
            foreach (DataRow row in tableStd.Rows)
            {
```

```
                    dtCloned.ImportRow(row);
                }
                var handler = new Handler();
                var dataSet = handler.CreateDataSet();
                dataSet.Tables["StudentReport"].ReadXml("Student
Report/StudentReport.xml");
                dataSet.Tables["StudentReport"].Merge(dtCloned);
                dataSet.Tables["StudentReport"].WriteXml("Student
Report/StudentReport.xml");

                {
                    var dataset = new DataSet();
                    dataset.ReadXml("Student Report/StudentReport.xml");
                    DataTable table = dataset.Tables["StudentReport"];
                    stdGrid.DataContext = table.DefaultView;
                    lblWindowName.Content = "DataTable of Student Details";
                }
            }
        }
    }
}
```

Chart.xaml.cs

```
using System;
using System.Collections.Generic;
using System.Data;
using System.Windows;
using System.Windows.Controls.DataVisualization.Charting;


namespace ApplicationDevelopment
{

    public partial class Chart : Window
    {
        public Chart()
        {
            InitializeComponent();
            showPieChart();

        }

        private void showPieChart()
        {
            var dataset = new DataSet();
            dataset.ReadXml("Student Report/StudentReport.xml");

            DataTable dataTable = dataset.Tables["StudentReport"];

            int total_Com = 0;
            int total_Mul = 0;
            int total_Net = 0;

            for (int i = 0; i < dataTable.Rows.Count; i++)
            {
                String col = dataTable.Rows[i]["CourseEnroll"].ToString();
                if (col == "Computing")
                {
                    total_Com++;
                }
                else if (col == "Multimedia Technologies")
```

```
                {
                    total_Mul++;
                }
                else if (col == "Networks and IT Security")
                {
                    total_Net++;
                }
            }

            ((PieSeries)pieChart).ItemsSource = new KeyValuePair<string, int>[]{
                                                new
KeyValuePair<string,int>("Computing", total_Com),
                                                new
KeyValuePair<string,int>("Multimedia Technologies", total_Mul),
                                                new KeyValuePair<string,int>("Networks
and IT Security", total_Net) };
        }
    }
}
```

Handler.cs

```
using System.Data;

namespace DataHandler
{
    public class Handler
    {
        public DataSet CreateDataSet()
        {
            var dataSet = new DataSet();
            dataSet.Tables.Add(CreateStudentTable());
            dataSet.Tables.Add(StudentReportTable());

            return dataSet;
        }

        private DataTable CreateStudentTable()
        {
            var dataTable = new DataTable("Student");
            DataColumn dataColumn = new DataColumn("ID", typeof(int));
            dataColumn.AutoIncrement = true;
            dataColumn.AutoIncrementSeed = 1;
            dataColumn.AutoIncrementStep = 1;

            dataTable.Columns.Add(dataColumn);

            dataTable.Columns.Add("RegistrationNo", typeof(int));
            dataTable.Columns.Add("Name", typeof(string));
            dataTable.Columns.Add("Address", typeof(string));
            dataTable.Columns.Add("ContactNo", typeof(string));
            dataTable.Columns.Add("Email", typeof(string));
            dataTable.Columns.Add("CourseEnroll", typeof(string));
            dataTable.Columns.Add("RegistrationDate", typeof(string));
            dataTable.PrimaryKey = new DataColumn[] { dataTable.Columns["ID"] };
            return dataTable;
        }

        private DataTable StudentReportTable()
        {
            var dataTable = new DataTable("StudentReport");
            DataColumn dataColumn = new DataColumn("ID", typeof(int));
```

```
            dataColumn.AutoIncrement = true;
            dataColumn.AutoIncrementSeed = 1;
            dataColumn.AutoIncrementStep = 1;

            dataTable.Columns.Add(dataColumn);

            dataTable.Columns.Add("RegistrationNo", typeof(int));
            dataTable.Columns.Add("Name", typeof(string));
            dataTable.Columns.Add("Address", typeof(string));
            dataTable.Columns.Add("ContactNo", typeof(string));
            dataTable.Columns.Add("Email", typeof(string));
            dataTable.Columns.Add("CourseEnroll", typeof(string));
            dataTable.Columns.Add("RegistrationDate", typeof(string));

            return dataTable;
        }

    }
}
```