**Source Code**

**Program.cs**

using System;

using System.Collections.Generic;

using System.Linq;

using System.Text;

using System.Threading.Tasks;

using System.Xml.Linq;

namespace OopBasedDataCorrectness

{

internal class Program

{

static void Main(string[] args)

{

Console.WriteLine("Enter student information:");

Student student1 = GetStudentFromUserInput();

Data.Instance.AddStudent(student1);

Console.WriteLine("\nEnter teacher information:");

Teacher teacher1 = GetTeacherFromUserInput();

Data.Instance.AddTeacher(teacher1);

Console.WriteLine("\nEnter subject information:");

Subject subject1 = GetSubjectFromUserInput();

Data.Instance.AddSubject(subject1);

Console.WriteLine("\nEnter the class and section to display students:");

string classAndSectionInput = Console.ReadLine();

List<Student> studentsInClass = Data.Instance.GetStudentsByClassAndSection(classAndSectionInput);

Console.WriteLine("\nStudents in class " + classAndSectionInput + ":");

foreach (var student in studentsInClass)

{

Console.WriteLine($"{student.Name}");

}

Console.WriteLine("\nEnter the teacher name to display subjects:");

string teacherNameInput = Console.ReadLine();

List<Subject> subjectsTaughtByTeacher = Data.Instance.GetSubjectsTaughtByTeacher(teacherNameInput);

Console.WriteLine("\nSubjects taught by " + teacherNameInput + ":");

foreach (var subject in subjectsTaughtByTeacher)

{

Console.WriteLine($"{subject.Name} - {subject.SubjectCode}");

}

Console.ReadKey();

}

static Student GetStudentFromUserInput()

{

Console.Write("Name: ");

string name = Console.ReadLine();

Console.Write("Class and Section: ");

string classAndSection = Console.ReadLine();

return new Student { Name = name, ClassAndSection = classAndSection };

}

static Teacher GetTeacherFromUserInput()

{

Console.Write("Name: ");

string name = Console.ReadLine();

Console.Write("Class and Section: ");

string classAndSection = Console.ReadLine();

return new Teacher { Name = name, ClassAndSection = classAndSection };

}

static Subject GetSubjectFromUserInput()

{

Console.Write("Name: ");

string name = Console.ReadLine();

Console.Write("Subject Code: ");

string subjectCode = Console.ReadLine();

Console.Write("Teacher Name: ");

string teacherName = Console.ReadLine();

return new Subject { Name = name, SubjectCode = subjectCode, Teacher = new Teacher { Name = teacherName } };

}

}

}

**Data.cs**

using System;

using System.Collections.Generic;

using System.Linq;

using System.Text;

using System.Threading.Tasks;

using System.Xml.Linq;

namespace OopBasedDataCorrectness

{

internal class Data

{

private static Data \_instance;

private List<Student> \_students;

private List<Teacher> \_teachers;

private List<Subject> \_subjects;

private Data()

{

\_students = new List<Student>();

\_teachers = new List<Teacher>();

\_subjects = new List<Subject>();

}

public static Data Instance

{

get

{

if (\_instance == null)

{

\_instance = new Data();

}

return \_instance;

}

}

public void AddStudent(Student student)

{

\_students.Add(student);

}

public void AddTeacher(Teacher teacher)

{

\_teachers.Add(teacher);

}

public void AddSubject(Subject subject)

{

\_subjects.Add(subject);

}

public List<Student> GetStudentsByClassAndSection(string classAndSection)

{

return \_students.Where(s => s.ClassAndSection == classAndSection).ToList();

}

public List<Subject> GetSubjectsTaughtByTeacher(string teacherName)

{

return \_subjects.Where(s => s.Teacher != null && s.Teacher.Name == teacherName).ToList();

}

}

}

**Teacher.cs**

using System;

using System.Collections.Generic;

using System.Linq;

using System.Text;

using System.Threading.Tasks;

using System.Xml.Linq;

namespace OopBasedDataCorrectness

{

internal class Teacher

{

public string Name { get; set; }

public string ClassAndSection { get; set; }

public List<Subject> SubjectsTaught { get; set; }

public Teacher()

{

SubjectsTaught = new List<Subject>();

}

}

}

**Student.cs**

using System;

using System.Collections.Generic;

using System.Linq;

using System.Text;

using System.Threading.Tasks;

namespace OopBasedDataCorrectness

{

internal class Student

{

public string Name { get; set; }

public string ClassAndSection { get; set; }

}

}

**Subject.cs**

using System;

using System.Collections.Generic;

using System.Linq;

using System.Text;

using System.Threading.Tasks;

namespace OopBasedDataCorrectness

{

internal class Subject

{

public string Name { get; set; }

public string SubjectCode { get; set; }

public Teacher Teacher { get; set; }

}

}