

```
using System;

using System.Collections.Generic;

using System.Linq;

using System.Text;

using System.Threading.Tasks;


//namespace schoolproject
//{


// Singleton Pattern
public class SchoolDataStorage
{
    private static SchoolDataStorage instance;

    public List<Student> Students { get; set; }
    public List<Teacher> Teachers { get; set; }
    public List<Subject> Subjects { get; set; }


    private SchoolDataStorage()
    {
        Students = new List<Student>();
        Teachers = new List<Teacher>();
        Subjects = new List<Subject>();
    }


    public static SchoolDataStorage Instance
    {
        get
        {
            if (instance == null)
            {
```

```
        instance = new SchoolDataStorage();
    }
    return instance;
}
}
```

// Subject class

```
public class Subject
{
    public string Name { get; set; }
    public string SubjectCode { get; set; }
    public Teacher Teacher { get; set; }
}
```

// Teacher class

```
public class Teacher
{
    public string Name { get; set; }
    public string ClassAndSection { get; set; }
}
```

// Student class

```
public class Student
{
    public string Name { get; set; }
    public string ClassAndSection { get; set; }
}
```

// Repository Pattern

```
public class SchoolRepository
```

```
{  
    private SchoolDataStorage dataStorage;  
  
    public SchoolRepository()  
    {  
        dataStorage = SchoolDataStorage.Instance;  
    }  
  
    public void AddStudent(Student student)  
    {  
        dataStorage.Students.Add(student);  
    }  
  
    public void AddTeacher(Teacher teacher)  
    {  
        dataStorage.Teachers.Add(teacher);  
    }  
  
    public void AddSubject(Subject subject)  
    {  
        dataStorage.Subjects.Add(subject);  
    }  
  
    public List<Student> GetStudentsInClass(string classAndSection)  
    {  
        return dataStorage.Students.FindAll(student => student.ClassAndSection == classAndSection);  
    }  
  
    public List<Subject> GetSubjectsTaughtByTeacher(string teacherName)  
    {  
        return dataStorage.Subjects.FindAll(subject => subject.Teacher.Name == teacherName);  
    }  
}
```

```
}  
}
```

```
class Program
```

```
{
```

```
    static void Main()
```

```
    {
```

```
        SchoolRepository repository = new SchoolRepository();
```

```
        // Adding dummy data
```

```
        repository.AddStudent(new Student { Name = "Vikram", ClassAndSection = "ClassA" });
```

```
        repository.AddStudent(new Student { Name = "Vikas", ClassAndSection = "ClassA" });
```

```
        repository.AddStudent(new Student { Name = "John", ClassAndSection = "ClassA" });
```

```
        repository.AddStudent(new Student { Name = "Krishna", ClassAndSection = "ClassA" });
```

```
        repository.AddStudent(new Student { Name = "Alfi", ClassAndSection = "ClassA" });
```

```
        repository.AddStudent(new Student { Name = "Vaishalini", ClassAndSection = "ClassA" });
```

```
        repository.AddStudent(new Student { Name = "Harshi", ClassAndSection = "ClassB" });
```

```
        repository.AddStudent(new Student { Name = "St.John", ClassAndSection = "ClassB" });
```

```
        repository.AddStudent(new Student { Name = "Sharan", ClassAndSection = "ClassB" });
```

```
        repository.AddStudent(new Student { Name = "Mohith", ClassAndSection = "ClassB" });
```

```
        repository.AddTeacher(new Teacher { Name = "Teacher1", ClassAndSection = "ClassA" });
```

```
        // repository.AddTeacher(new Teacher { Name = "Teacher2", ClassAndSection = "ClassB" });
```

```
        repository.AddSubject(new Subject
```

```
        {
```

```
            Name = "Science",
```

```
            SubjectCode = "MATH101",
```

```
            Teacher = new Teacher { Name = "Teacher1", ClassAndSection = "ClassA" }
```

```
});
```

```
// Displaying lists
```

```
Console.WriteLine("Students in ClassA:");
```

```
foreach (var student in repository.GetStudentsInClass("ClassA"))
```

```
{
```

```
    Console.WriteLine(student.Name);
```

```
}
```

```
Console.WriteLine("\nSubjects taught by Teacher1:");
```

```
foreach (var subject in repository.GetSubjectsTaughtByTeacher("Teacher1"))
```

```
{
```

```
    Console.WriteLine(subject.Name);
```

```
}
```

```
//d
```

```
repository.AddSubject(new Subject
```

```
{
```

```
    Name = "Computer Science",
```

```
    SubjectCode = "Cs102",
```

```
    Teacher = new Teacher { Name = "Teacher2", ClassAndSection = "ClassB" }
```

```
});
```

```
Console.WriteLine("");
```

```
// d
```

```
Console.WriteLine("Students in ClassB:");
```

```
foreach (var student in repository.GetStudentsInClass("ClassB"))
```

```
{  
    Console.WriteLine(student.Name);  
}  
  
Console.WriteLine("\nSubjects taught by Teacher2:");  
foreach (var subject in repository.GetSubjectsTaughtByTeacher("Teacher2"))  
{  
    Console.WriteLine(subject.Name);  
}  
}  
}
```