

```
1 using HospitalManagementSystem;
2
3 class Program
4 {
5     static void Main(string[] args)
6     {
7         Manage hospital_manager = new Manage();
8         MedicalStaffFactory staff_factory = new MedicalStaffFactory();
9         Receptionist receptionist = new Receptionist("Alice",
10             "1234567890", new DateTime(1990, 5, 12));
11         SurgicalNurse surgical_nurse = new SurgicalNurse("Nurse Mary",
12             "4567891230", new DateTime(1982, 4, 15), "9 AM - 5 PM", "10
13             years");
14
15         while (true)
16         {
17             Console.WriteLine("\nWelcome to the Hospital Management
18                 System");
19             Console.WriteLine("1 - Add Patient Record");
20             Console.WriteLine("2 - Remove Patient Record");
21             Console.WriteLine("3 - Edit Patient Record");
22             Console.WriteLine("4 - Display All Patient Records");
23             Console.WriteLine("5 - Exit");
24
25             string option = Console.ReadLine();
26
27             switch (option)
28             {
29                 case "1":
30                     Console.Write("Name: ");
31                     string name = Console.ReadLine();
32
33                     Console.Write("Date of Birth (yyyy-mm-dd): ");
34                     DateTime dob = DateTime.Parse(Console.ReadLine());
35
36                     Console.Write("Contact Number: ");
37                     string contact = Console.ReadLine();
38
39                     Console.WriteLine("Please enter your symptoms (comma-
40                         separated): ");
41                     string[] symptoms = Console.ReadLine().Split(',');
42
43                     Patient patient1 = new Patient(name, dob, contact,
44                         symptoms);
45
46                     // Notify observers (Doctor) about the new patient
47                     record
48                     Doctor doctor = new Doctor("Dr. Smith", "9876543210",
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new DateTime(1970, 6, 15), "9 AM - 5 PM", "15 years");
43     patient1.AttachObserver(doctor); // Attach observer to patient
44
45     Console.WriteLine("Your information has been added to the hospital records.");
46
47     Console.WriteLine("Please select a treatment plan: 1 - Mild, 2 - Aggressive");
48     int treatment_plan_choice;
49     while (!int.TryParse(Console.ReadLine(), out treatment_plan_choice) || (treatment_plan_choice != 1 && treatment_plan_choice != 2))
50     {
51         Console.WriteLine("Invalid input. Please choose either 1 (Mild) or 2 (Aggressive): ");
52     }
53
54     TreatmentPlan treatment_plan;
55     MedicalStaff assigned_staff;
56
57     // Strategy and Factory Patterns: Based on the treatment plan, assign the appropriate medical staff
58     if (treatment_plan_choice == 1)
59     {
60         treatment_plan = new MildTreatment();
61         assigned_staff = staff_factory.CreateStaff("PediatricNurse", "Nurse Nina", "7890123456", new DateTime(1985, 3, 21), "9 AM - 5 PM", "10 years");
62         hospital_manager.AddPatientRecord(patient1, treatment_plan.ExecuteTreatment(patient1), assigned_staff.Name);
63     }
64     else
65     {
66         treatment_plan = new AggressiveTreatment();
67         assigned_staff = staff_factory.CreateStaff("Surgeon", "Dr. John", "9876543210", new DateTime(1975, 3, 10), "24/7", "15 years");
68         hospital_manager.AddPatientRecord(patient1, treatment_plan.ExecuteTreatment(patient1), assigned_staff.Name);
69     }
70
71     // Decorator Pattern: Add special abilities or expertise to the assigned medical staff
72     assigned_staff = new MedicalStaffDecorator(assigned_staff, "Cardiology Expertise");
73
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74         // Display the assigned staff and begin treatment
75         Console.WriteLine($"You have been assigned to: {assigned_staff.GetType().Name} {assigned_staff.Name}");
76         Console.WriteLine("Your treatment plan is: " + treatment_plan.ExecuteTreatment(patient1));
77
78         // The assigned staff provides diagnosis and treatment
79         assigned_staff.Diagnose();
80         assigned_staff.ProvideTreatment();
81
82         // Update the patient record and notify doctor (Observer Pattern)
83         patient1.Notify();
84
85
86
87
88         break;
89     case "2":
90         Console.Write("Enter the patient's name to remove: ");
91         string name_to_remove = Console.ReadLine();
92         hospital_manager.RemovePatientRecord(new Patient(name_to_remove, DateTime.MinValue, "", null));
93         break;
94
95     case "3":
96         Console.Write("Enter the patient's name to edit: ");
97         string name_to_edit = Console.ReadLine();
98
99         Console.Write("New Contact Number: ");
100        string new_contact = Console.ReadLine();
101
102        Console.WriteLine("New Symptoms (comma-separated): ");
103        string[] new_symptoms = Console.ReadLine().Split(',');
104
105
106        surgical_nurse.UpdatePatientRecord(hospital_manager, name_to_edit, new_contact, new_symptoms);
107        break;
108
109    case "4":
110        hospital_manager.DisplayAllRecords();
111        break;
112
113    case "5":
114        return;
115
116    default:
117        Console.WriteLine("Invalid option. Try again.");
```

```
118         break;
119     }
120 }
121 }
122 }
123
```