

## **Introduction**

The doctor channeling system is a console-based java application developed to efficiently and systematically manage primary clinic operations. The system offers functionalities including patient registration, doctor registration, appointment scheduling, a waiting list and record viewing through a straightforward menu-driven interface. The system is user friendly and straightforward, as it enables the user to select from a list of enumerated options.

The system employs fundamental data structures, such as ArrayList, LinkedList, Queue and Stack, to ensure robust data management. These structures facilitate the logical and efficient organization of patient records, doctor information, appointments schedule and waiting lists. The doctor channeling system is an example of how simple concepts and data structures of java can be used to build a practical clinic management system.

## **System overview**

The doctor channeling system functions via a menu driven console interface. Users engage with the system by choosing options from the main menu. The chosen options perform different functions, such as patient registration, adding doctors, scheduling appointments and assessing existing records. The system will continue to operate until the user clicks on the exit option.

## **Technologies used**

- Java
- Notepad++
- Command prompt

## **Data structures used**

- ArrayList- stores patient data and doctor records

- LinkedList- Manages appointments records
- Queue- Handles waiting list for appointments
- Stack- track recently registered patients

## How the system works

- **The main prompt**

```
C:\Windows\System32\cmd.exe - java DoctorChannelingSystem
Microsoft Windows [Version 10.0.19045.6466]
(c) Microsoft Corporation. All rights reserved.

C:\Users\TECH STORE\Desktop\DoctorChannelingSystem\src>javac *.java
C:\Users\TECH STORE\Desktop\DoctorChannelingSystem\src>java DoctorChannelingSystem
-----
CLINIC APPOINTMENT SYSTEM
-----
1 - Initialize
2 - Register patient
3 - Display patients
4 - Register doctor
5 - Display doctors
6 - Search doctor
7 - Make appointment
8 - Display appointments
9 - Cancel appointment
10 - Display recent patients
11 - Exit
Enter choice:
```

Figure 1-The main prompt

The doctor channeling system features a menu shown in numerical format at the beginning. This menu enables the user to select the operation within the system. The user can register patients, register doctors, view patient and doctors, search for doctors, schedule appointments, view appointments and cancel appointments by selecting the appropriate option from the menu. The menu will continuously display until the user decides to end the session, thus ensuring ongoing involvement. This design alternative enhances usability and improves user friendliness.

- **Option 1- Initialize**

```
-----  
CLINIC APPOINTMENT SYSTEM  
-----  
1 - Initialize  
2 - Register patient  
3 - Display patients  
4 - Register doctor  
5 - Display doctors  
6 - Search doctor  
7 - Make appointment  
8 - Display appointments  
9 - Cancel appointment  
10 - Display recent patients  
11 - Exit  
Enter choice: 1  
System initialized successfully.
```

Figure 2-Initialize

This is employed to reset the entire the doctor channeling system. When this option is selected, all previously stored data (including registered patient, registered doctor, scheduled appointments, waiting queue records and recent patient data) will be entirely erased. This restores the system to its original, uninitialized state, comparable to its initial startup condition. The initialize command is primarily employed to reboot the system, remove outdated data or conduct a thorough test of it. Upon completing the initialize sequence, the system displays a confirmation message to the user, indicating that the reset process has been effectively executed.

- **Option 2- Register patient**

```
-----  
CLINIC APPOINTMENT SYSTEM  
-----  
1 - Initialize  
2 - Register patient  
3 - Display patients  
4 - Register doctor  
5 - Display doctors  
6 - Search doctor  
7 - Make appointment  
8 - Display appointments  
9 - Cancel appointment  
10 - Display recent patients  
11 - Exit  
Enter choice: 2  
Enter patient name: Ann  
Enter mobile number: 0112234567  
Enter email: ann123@gmail.com  
Enter city: Kandy  
Enter age: 22  
Enter medical history: Allergies  
Patient registered successfully!
```

Figure 3-Register patient

This option helps add a new patient to the system. The user is required to provide fundamentals details, including patient name, mobile number, email, city, age and medical history. Upon completion of data input, the patient's record is stored within the system, followed by the display of a confirmation message ("Patient registered successfully!").

- **Option 3- Display patients**

```
C:\Windows\System32\cmd.exe - java DoctorChannel
CLINIC APPOINTMENT SYSTEM
-----
1 - Initialize
2 - Register patient
3 - Display patients
4 - Register doctor
5 - Display doctors
6 - Search doctor
7 - Make appointment
8 - Display appointments
9 - Cancel appointment
10 - Display recent patients
11 - Exit
Enter choice: 3
Name: Ann
Mobile: 0112234567
Email: ann123@gmail.com
City: Kandy
Age: 22
Medical History: Allergies
-----
```

*Figure 4-Display patients*

This option shows the entire list of patients that have been registered in the system. When there are no registered patients, the system provides a notification that there are no records. Otherwise, the system displays the information about the patients in a sequential manner.

- **Option 4- Register doctor**

```
CLINIC APPOINTMENT SYSTEM
-----
1 - Initialize
2 - Register patient
3 - Display patients
4 - Register doctor
5 - Display doctors
6 - Search doctor
7 - Make appointment
8 - Display appointments
9 - Cancel appointment
10 - Display recent patients
11 - Exit
Enter choice: 4
Enter doctor name: Dr. sunil perera
Enter specialization: General Physician
Enter number of time slots: 2
Enter slot 1: 10AM
Enter slot 2: 3PM
Enter consultation fee: 3000
Doctor registered successfully!
Generated Doctor ID: 1
```

Figure 5-Register doctor

Register doctor option enables the user to add a new doctor into the system. When this is option is chosen, the system will automatically generate a unique identifier for the doctor.

Subsequently, the user is prompted to enter the doctor's name, the medical specialization of the doctor, the designed availability hours and the consultation fee. Upon submission, the doctor's details are reordered for future use in the appointment scheduling process.

- **Option 5- Display doctors**

```
C:\Windows\System32\cmd.exe - java DoctorChannel
-----
CLINIC APPOINTMENT SYSTEM
-----
1 - Initialize
2 - Register patient
3 - Display patients
4 - Register doctor
5 - Display doctors
6 - Search doctor
7 - Make appointment
8 - Display appointments
9 - Cancel appointment
10 - Display recent patients
11 - Exit
Enter choice: 5
Doctor ID: 1
Name: Dr. sunil perera
Specialization: General Physician
Time Slots: 10AM 3PM
Consultation Fee: Rs.3000.0
-----
Doctor ID: 2
Name: Dr. sewwandi disanayaka
Specialization: Dermatologist
Time Slots: 10PM 4PM 5PM
Consultation Fee: Rs.3500.0
-----
```

Figure 6-Display doctors

The option 5 presents a comprehensive inventory of all registered doctors. It provides comprehensive information about each doctor, including their name, specialization, available time periods and consultation fees, thereby enabling users to make informed decisions during the appointment scheduling process.

- **Option 6- Search doctor**

```
-----  
CLINIC APPOINTMENT SYSTEM  
-----  
1 - Initialize  
2 - Register patient  
3 - Display patients  
4 - Register doctor  
5 - Display doctors  
6 - Search doctor  
7 - Make appointment  
8 - Display appointments  
9 - Cancel appointment  
10 - Display recent patients  
11 - Exit  
Enter choice: 5  
Doctor ID: 11  
Name: Dr.Sunil  
Specialization: General Physician  
Time Slots: 12/02/2026 | 09:00 AM - 11:00 AM 16/02/2026 | 09:00 AM - 11:00 AM  
Consultation Fee: Rs.3000.0  
-----  
Doctor ID: 12  
Name: Dr. Nirmala priyadasa  
Specialization: Dermatology  
Time Slots: 09:00 AM - 09:30 AM 09:30 AM - 10:00 AM 10:00 AM - 10.30 AM 10:30 AM - 11:00 AM  
Consultation Fee: Rs.3500.0  
-----
```

*Figure 7-Search doctor*

This option facilitates the identification of doctors based on their specialization. The user inputs a specialty and the system searches the registered doctors to display those who specialization aligns with the submitted requirement.

- **Option 7- Make appointment**

```
-----  
CLINIC APPOINTMENT SYSTEM  
-----  
1 - Initialize  
2 - Register patient  
3 - Display patients  
4 - Register doctor  
5 - Display doctors  
6 - Search doctor  
7 - Make appointment  
8 - Display appointments  
9 - Cancel appointment  
10 - Display recent patients  
11 - Exit  
Enter choice: 7  
Select Patient:  
0 - Ann  
1 - Tom  
1  
Select Doctor:  
0 - ID: 1 | Name: Dr. dunil pranandu | Specialization: General Physician  
1 - ID: 2 | Name: Dr. Kasuni perera | Specialization: General Physician  
2 - ID: 3 | Name: Dr. Eshangi jayasooriya | Specialization: Dermatologist  
1  
Enter time slot: 6PM  
Appointment booked successfully!
```

Figure 8-Make appointment

Make appointment option allows the user to schedule an appointment between a patient and a doctor. The user selects a registered patient and a doctor, then specifies a preferable time slot. If the selected time slot is already in use, the system places the patient on waiting list. Otherwise, the appointment is made and registered in the system.

- Option 8 – Display appointments

```
-----  
CLINIC APPOINTMENT SYSTEM  
-----  
1 - Initialize  
2 - Register patient  
3 - Display patients  
4 - Register doctor  
5 - Display doctors  
6 - Search doctor  
7 - Make appointment  
8 - Display appointments  
9 - Cancel appointment  
10 - Display recent patients  
11 - Exit  
Enter choice: 8  
Patient: Tom  
Doctor: Dr. Kasuni perera  
Specialization: General Physician  
Time Slot: 6PM  
-----  
Patient: Tom  
Doctor: Dr. dunil pranandu  
Specialization: General Physician  
Time Slot: 3PM  
-----
```

Figure 9-Display appointments

Option 8 provides the user with the capability to access a comprehensive inventory of all scheduled appointments within the system. When this option is chosen, the system verifies the existence of any appointments. If there are no appointments, a message stating “No appointments found” will be displayed. When appointments are available, the system sequentially presents each appointment, displaying the patient’s name, doctor’s name, doctor’s specialization and the designated time slot. This enables users to effortlessly examine all existing appointments in the clinic.

- Option 9- Cancel appointments

```
C:\Windows\System32\cmd.exe - java DoctorChann
-----
CLINIC APPOINTMENT SYSTEM
-----
1 - Initialize
2 - Register patient
3 - Display patients
4 - Register doctor
5 - Display doctors
6 - Search doctor
7 - Make appointment
8 - Display appointments
9 - Cancel appointment
10 - Display recent patients
11 - Exit
Enter choice: 9
0 - Patient: Tom
Doctor: Dr. Kasuni perera
Specialization: General Physician
Time Slot: 6PM
-----
1 - Patient: Tom
Doctor: Dr. dunil pranandu
Specialization: General Physician
Time Slot: 3PM
-----
1
Appointment cancelled.
```

Figure 10-Cancel appointments

This option enables the user to cancel an existing system. Upon selecting this option, the system first presents all existing appointments along with their corresponding index numbers. The user cancels the desired appointment by inputting the associated number. Upon cancellation, the system cancels the appointment. If patients are present in the waiting queue (FIFO), the cancelled time slot is immediately allocated to the subsequent patient. This guarantees that appointments are administrated equitably and effectively.

- Option 10- Display recent patient

```
CLINIC APPOINTMENT SYSTEM
-----
1 - Initialize
2 - Register patient
3 - Display patients
4 - Register doctor
5 - Display doctors
6 - Search doctor
7 - Make appointment
8 - Display appointments
9 - Cancel appointment
10 - Display recent patients
11 - Exit
Enter choice: 10
--- Recent Patients (LIFO) ---
Name: Kamala
Mobile: 0435678345
Email: kamala@gmail.com
City: Galle
Age: 45
Medical History: Diabetes
-----
Name: Tom
Mobile: 0989756343
Email: tom123@gmail.com
City: colombo
Age: 54
Medical History: Diabetes
-----
Name: Ann
Mobile: 0987678956
Email: ann@gmail.com
City: Kandy
Age: 34
Medical History: Fever
```

Figure 11-Display recent patient

This option represents the most recently registered patients using stack (LIFO) methodology. Upon registration, a patient is added to the top of the array. Choosing this option displays patients beginning with the most recently registered and progressing to the earliest, exemplifying the Last In, First Out principle characteristic of a stack.

- **Option 11- Exit**

```
-----  
CLINIC APPOINTMENT SYSTEM  
-----  
1 - Initialize  
2 - Register patient  
3 - Display patients  
4 - Register doctor  
5 - Display doctors  
6 - Search doctor  
7 - Make appointment  
8 - Display appointments  
9 - Cancel appointment  
10 - Display recent patients  
11 - Exit  
Enter choice: 11  
Exiting system...  
  
C:\Users\TECH STORE\Desktop\DoctorChannelingSystem\src>_
```

Figure 12-Exit

This option securely stops the doctor appointment system. When chosen, the system will display an exit message and stop program's execution, thereby terminating the application properly.

## **How to run the system**

- 1- Open the command prompt.
- 2- Access the folder that contains the .java files.
- 3- Compile the program

```
C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.19045.6466]
(c) Microsoft Corporation. All rights reserved.

C:\Users\TECH STORE\Desktop\DoctorChannelingSystem\src>javac *.java

C:\Users\TECH STORE\Desktop\DoctorChannelingSystem\src>_
```

Figure 13-Compile the program

- 4- Run the system

```
C:\Windows\System32\cmd.exe - java DoctorChannelingSystem
Microsoft Windows [Version 10.0.19045.6466]
(c) Microsoft Corporation. All rights reserved.

C:\Users\TECH STORE\Desktop\DoctorChannelingSystem\src>javac *.java

C:\Users\TECH STORE\Desktop\DoctorChannelingSystem\src>java DoctorChannelingSystem
-----
CLINIC APPOINTMENT SYSTEM
-----
1 - Initialize
2 - Register patient
3 - Display patients
4 - Register doctor
5 - Display doctors
6 - Search doctor
7 - Make appointment
8 - Display appointments
9 - Cancel appointment
10 - Display recent patients
11 - Exit
Enter choice: _
```

Figure 14-Run the system