INTRODUCTION

Welcome to the Disease Identification Application, a pioneering C++ mini project designed to revolutionize the way we approach healthcare. With a integration of file handling for patients data, this application empowers users to efficiently identify potential diseases based on a detailed survey of their symptoms.

Our application begins by inviting users to input their symptoms comprehensively. Through this algorithm, we analyze the user's symptoms, we determine the most probable disease. Once the most likely disease is identified, users are presented with a curated list of potential diagnoses, enabling them confirm the diagnosis.

Following confirmation, the application provides a detailed list of medications & cures for the diagnosed disease.
Moreover, our application incorporates a robust billing system, calculating the cost of prescribed medications and generating a bill that includes the total cost of the services provided and availed.

With user privacy at the forefront, our application generates a unique ID for each user, facilitating future access while maintaining confidentiality.

WORKING

- **Welcome Window and Login:**
  - Display the welcome window.
  - Prompt the user to log in.
  - Read the credentials from the "patients.txt" file.
  - If the user exists and the password matches, login is successful.
  - If the user doesn't exist, give the option to register.
  - If the password is incorrect, give the user three chances to enter the correct one.

- **Menu Display:**
  - After successful login, display a menu with three options:
  - View personal details
  - Identify disease
  - Exit

- **Personal Details:**
  - If the user chooses to view personal details, display the details stored for that user.

- **Disease Identification:**
  - If the user chooses disease identification:
  - Present a list of common symptoms.
  - Prompt the user to enter yes/y or no/n for each symptom.
  - If the number of 'yes' or 'y' responses is less than 2, present a list of uncommon symptoms.
  - Prompt the user to enter numeric values for uncommon symptoms.
  - Match symptoms with diseases and print the most possible diseases.
  - Allow the user to access tests and details for the identified diseases.

- **Bill Calculation:**
  - Calculate the bill amount based on the services used.
  - Print the bill amount.

- **Payment:**
  - Offer two payment options: Cash and Online.
  - For Cash payment, calculate change if applicable or inform if the cash given is insufficient.
  - For Online payment, simulate a basic net banking procedure.

- **Feedback:**
  - Ask the user if they want to provide feedback.
  - If yes, prompt the user with a set of questions and store the feedback.

- **Program End:**
  - End the program.

Header Files and Functions

Header File Included	Description
<iostream>	Input/output stream operations
<fstream>	File stream operations
<string>	String operations
<vector>	Dynamic array operations
<sstream>	String stream operations
<iomanip>	Input/output manipulators
<ctime>	Date and time functions
<algorithm>	Algorithms that operate on sequences
<unordered_set>	Unordered set container
<cctype>	Character classification functions

Function	Headers Utilized
toLowercase	<string>, <algorithm>
validateMobile	<string>
validateName	<string>, <algorithm>
isValidDate	<string>, <algorithm>
isNumeric	<string>, <algorithm>
generatePatientId	<vector>, <string>
writePatients	<vector>, <fstream>
readPatients	<vector>, <fstream>

login	<iostream>, <vector>, <string>, <algorithm>, <cctype>
registerPatient	<iostream>, <vector>, <string>, <algorithm>, <ctime>, <fstream>
hasSymptom	<vector>, <string>
askYesNoQuestion	<iostream>, <string>
selectSymptoms	<iostream>, <vector>, <string>, <algorithm>, <sstream>
identifyDiseases	<iostream>, <vector>, <algorithm>, <string>, <unordered_set>
viewDiseaseDetails	<iostream>, <string>
displayPersonalInformation	<iostream>, <vector>
suggestTests	<iostream>, <algorithm>, <vector>
calculateBill	<iostream>
provideDoctorDetails	<iostream>

Concepts Used

The following concepts were used in the program:

1. Structures in C++
2. File Handling (Text File)
3.
4. STL:
    - Vectors
    - Mapping
    - Unordered Set
5. Exception Handling

Possible Future Developments in the Project

- Reducing the program's running time and complexity.
- Summarizing the Diagnosis in a receipt format.
- Introducing 2 access Modes:
    - Manager's Window
        - Features:
            - Record the Patient's visit and diagnosis.
            - Most and Least Predicted Diseases.
            - Most Common Symptoms.
            - Option to Add more diseases and diseases.
    - Patient
        - Features:
            - Option to Change Password and Edit Personal Information.
            - Access last disease(s) diagnosed.