



Vivekanand Education Society's Institute Of Technology
Department Of Information Technology

DSA mini Project
A.Y. 2025-26

Title: Health Checker

Sustainability Goal : Advancing Health Awareness and Accessible
Medical Guidance

Domain: Data Structures & Algorithms
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1 NO
POVERTY



2 ZERO
HUNGER



3 GOOD HEALTH
AND WELL-BEING



4 QUALITY
EDUCATION



5 GENDER
EQUALITY



6 CLEAN WATER
AND SANITATION



7 AFFORDABLE AND
CLEAN ENERGY



8 DECENT WORK AND
ECONOMIC GROWTH



9 INDUSTRY, INNOVATION
AND INFRASTRUCTURE



10 REDUCED
INEQUALITIES



11 SUSTAINABLE CITIES
AND COMMUNITIES



THE GLOBAL GOALS

For Sustainable Development

12 RESPONSIBLE
CONSUMPTION
AND PRODUCTION



13 CLIMATE
ACTION



14 LIFE BELOW
WATER



15 LIFE
ON LAND



16 PEACE AND JUSTICE
STRONG INSTITUTIONS



17 PARTNERSHIPS
FOR THE GOALS





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Introduction to Project

Health Checker is a healthcare technology project developed using C programming with a binary decision tree architecture. This system serves as a command-line based medical assistant that conducts preliminary health assessments through intelligent symptom analysis.

By guiding users through an interactive question-and-answer process, Health Checker evaluates symptoms for over fifteen common medical conditions while providing reliable medication recommendations and implementing a crucial severity-based triage system to support informed healthcare decisions.



Problem Statement

In today's healthcare landscape, several critical issues exist:

- **Limited Access to Healthcare:**
 - Long waiting times at clinics for non-emergency cases
 - Healthcare costs for routine consultations
- **Information Overload:**
 - Difficulty distinguishing between reliable and unreliable sources
 - Lack of structured guidance for symptom assessment
- **Delayed Care:**
 - People often delay seeking medical help due to uncertainty about severity

Solution: A systematic, tree-based diagnostic tool that provides reliable preliminary assessment, clear recommendations, and guidance on when professional medical care is necessary.



Objectives of the project

- Implement binary tree for symptom assessment
- Provide preliminary health evaluation
- Offer treatment guidance (meds + home remedies)
- Determine urgency levels
- Health education & prevention tips
- Create user-friendly CLI interface



Requirements of the system (Hardware, software)

Hardware:

- Processor: Intel i3 or higher (Any modern processor)
- RAM: Minimum 2GB (4GB recommended)
- Storage: 50MB free disk space

Software:

- OS: Windows 10/11
- Compiler: GCC (GNU Compiler Collection) - MinGW/TDM-GCC for Windows
- Terminal: CMD/PowerShell



Front End

Health Checker provides a simple, user-friendly and intuitive CLI interface which features:

- **Interactive Q&A Flow** - Guided yes/no questions about symptoms
- **Color-coded Severity Levels** - Emergency (red), Urgent (yellow), Moderate (cyan), Mild (green)
- **Comprehensive Diagnosis Reports including:**
 - Condition description and severity assessment
 - Home remedies.
 - Specific medication guidance with dosages
 - When to seek professional medical help
- **Multiple Health Categories covering:** Respiratory issues, Digestive problems, Headaches and pain, General wellness, etc



Implementation

- Uses **binary decision tree** to navigate symptom assessment in C language.
- **Tree nodes contain:**
 - Question nodes for symptom interrogation
 - Diagnosis nodes for final condition assessment
-
- **Tree Architecture:**
 - Root Node: Starts with emergency symptom detection (chest pain, breathing difficulty)
 - Internal Nodes: Question nodes that branch based on Yes/No responses
 - Leaf Nodes: Diagnosis nodes that provide final assessment
- **Dynamic memory allocation** using malloc and free functions in tree management.



Gantt Chart

Task	Week 1	Week 2	Week 3	Week 4
Project Planning	✓			
Data Structure Design	✓			
Core Logic (Tree)		✓		
Traversal Algorithm		✓		
UI/CLI Implementation			✓	
Testing & Debugging			✓	✓
Documentation & Report				✓



Conclusion

- Successfully implemented a binary tree-based health diagnostic system
- Provided specific medication recommendations with dosages
- Applied DSA concepts to solve real-world healthcare problems
- **Impacts:**
 - Provides preliminary health assessment without immediate doctor visit
 - Helps users make informed decisions about seeking medical care
 - Reduces unnecessary emergency room visits for minor conditions
 - Educates users about common health conditions



References

- The C Programming Language - Brian W. Kernighan & Dennis M. Ritchie
- C Programming: A Modern Approach - K. N. King
- Data Structures Using C - Aaron M. Tenenbaum
- Programming in ANSI C - E. Balagurusamy
- C Programming Tutorial - GeeksForGeeks