
PROJECT REPORT

Course Code: CSEG1032

Course Title: Programming in C

Project Title: MEDIX-pharmacy company management system

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Semester: 1st

1. ABSTRACT

MEDIX is a C-based pharmacy management software designed to automate the daily operations of a pharmacy company.

The system manages inventory, billing, raw materials, and production efficiently. This project demonstrates modular programming, file handling, array, strings and dynamic memory management in C etc .

The software reduces manual errors, speeds up operations, and provides accurate record keeping.

2. OBJECTIVE

THE MAIN OBJECTIVES OF THE MEDIX – PHARMACY COMPANY MANAGEMENT SOFTWARE ARE:

- Automate Pharmacy Operations: Reduce manual effort in managing inventory, billing, raw materials, and production.
 - Accurate Inventory Management: Keep real-time track of medicines and raw materials to avoid stock-outs or overstocking.
 - Efficient Billing System: Generate accurate bills quickly and maintain records of all transactions.
 - Production Tracking: Monitor production batches and ensure raw materials are used efficiently.
 - Error Reduction: Minimize human errors in calculations, record-keeping, and stock updates.
 - Demonstrate Programming Concepts: Apply modular programming, file handling, dynamic memory management, and pointer-based string manipulation in C.
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3. PROBLEM DEFINITION

MANUAL MANAGEMENT IS VERY TIME-CONSUMING AND ERROR-PRONE IN A PHARMACY. THE CHALLENGES INCLUDE:

- Tracking medicines and stock manually.
- Calculating bills and maintaining records of transactions.
- Managing raw materials and production batches.
- MEDIX performs all these operations by means of a modular C program, the work process is efficient, reliable, and free from errors.

4. SYSTEM DESIGN AND ALGORITHM

THE MEDIX SYSTEM IS DIVIDED INTO 4 MAIN MODULES:

- Inventory
- Billing
- Raw Materials
- Production
- Utils

THE PROGRAM SHOWS A MAIN MENU AND PERFORMS OPERATIONS BASED ON USER CHOICE.

Module Algorithms :

1. Inventory Module

Open inventory file.
Show list of medicines.
User can Add / Update / Delete medicine.
Save changes and return to menu.

2. Billing Module

Ask customer details.
Show medicines and prices.
User selects medicines and quantity.
Calculate total and apply discount.
Save bill to file and show bill.
Return to menu.

3. Raw Materials Module

Show raw materials and quantity.
User can Add / Update stock.
Alert if stock is low.
Save changes and return to menu.

4. Production Module

Input production batch details.
Check raw material availability.
Deduct used materials from stock.
Save production details.
Return to menu.

5. Utils

-clearScreen()

run clear.
Return to program.

-pauseScreen()

Display message: "Press ENTER to continue...".
Wait for user to press ENTER. Return to program.

5. IMPLEMENTATION DETAILS

Key Language Features Used:

- Modular with header/source separation.
- File-based data storage.
- Console menu-driven interface for inventory, production, and billing.
- Simple array-based data structures for quick access.

*MEDIX Pharmacy Management Software is a C-based console application that handles inventory, raw materials, production, and billing. Data is stored in simple .txt files.

-MODULES-

-Inventory Management:

Manages medicines (medicines.txt).
Loads data into arrays and updates stock.

```
typedef struct { char name[50]; int qty; double price; } Medicine;  
Medicine medicines[100];  
void loadMedicines() { /* read from medicines.txt */ }
```

-Raw Material Management:

Tracks raw materials (rawmaterials.txt).
Deducts materials during production.

-Production Module:

Converts raw materials into medicines.
Updates inventory and reduces raw material stock.

```
void produceMedicine(char *med, int qty) { /* check and deduct raw materials */ }
```

-Billing Module:

Generates customer bills (bills.txt).
Calculates total cost.

```
void generateBill(char *cust, char *med, int qty) { /* compute and save */ }
```

-Utilities:

Screen clearing, pausing, and menu navigation.

```
void clearScreen() { /* system-specific */ }  
void pauseScreen() { printf("Press ENTER..."); getchar(); }
```

6. TESTING & RESULTS:

The MEDIX Pharmacy Software was tested for all functions using sample data files.

1. Inventory & Raw Materials

Added and updated medicines and raw materials.

Checked that stock values in files (medicines.txt, rawmaterials.txt) updated correctly.

2. Production

Produced medicines using raw materials.

Verified that raw materials decreased and medicine stock increased.

3. Billing

Generated bills for customers.

Confirmed that bill details were correctly saved in bills.txt.

4. Sample Result

-Before Production:

Medicines: Paracetamol 100, Ibuprofen 50

Raw Materials: ParacetamolPowder 200, IbuprofenPowder 100

Action: Produced 10 Paracetamol

-After Production:

Medicines: Paracetamol 110, Ibuprofen 50

Raw Materials: ParacetamolPowder 190, IbuprofenPowder 100

Bill Generated:

Someone bought 10 Paracetamol → Total ₹25.0

-Observation:

Inventory, production, and billing worked correctly.

Console menus were simple and easy to use.

7. CONCLUSION AND FUTURE WORK

Conclusion:

- MEDIX Pharmacy Software manages medicines, raw materials, production, and billing.
- Data is saved in files, so nothing is lost when the program closes.
- The program is simple and easy to use.
- All parts of the program work correctly.

Future Work:

- Use a database instead of text files for better storage.
 - Add expiry dates of medicines.
 - Check user inputs to avoid mistakes.
 - Add alerts for low stock or production needs.
 - Make the system ready for more users or branches in the future.
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8. REFERENCES

- YouTube Tutorials: Apna College, CodeWithHarry
 - Class Notes / PPTs provided by the College Faculty
 - Official C Programming Documentation and Examples
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9. APPENDIX

-Sample Data Files

medicines.txt

```
6501,Paracetamol,20,30.00
9155,dolo-650,50,24.00
5340,Seradon,45,30.00
2513,Brufan,39,12.00
3628,Preservatives,600,122.00
```

rawmaterials.txt

```
9728,Excipients,199
3636,Solvents,500
9923,preservatives,600
1176,Coloring_agents,1000
```

bills.txt

```
100,9155,45,1080.00
100,102,23,460.00
104,105,23,851.00
```

-Sample Code Snippets

Add medicine

```
void addMedicine() {
    Medicine m;

    printf("\n--- Add Medicine ---\n");
```

```
printf("Enter Medicine ID: ");
scanf("%d", &m.id);

printf("Enter medicine name: ");
scanf(" %49[^\n]", m.name);

printf("Enter quantity: ");
scanf("%d", &m.quantity);

printf("Enter price: ");
scanf("%f", &m.price);

saveMedicineToFile(m);
printf("\nMedicine added successfully!\n");
}
```

-Sample Console Menu

1. Manage Inventory
 2. Manage Raw Materials
 3. Produce Medicine
 4. Generate Bill
 5. Exit
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