SUBMIITED TO:

Jesha Faye Librea

PROJECT NAME:

Production Planner: Crafting MRP from BOM

PREPARED FOR:

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Project Documentation

22. May, 2025

ENSC 26 - E3L
Course Rquirement

Visual Basic -
Visual Studio

Bil of Materials
Materials Requirement Planning

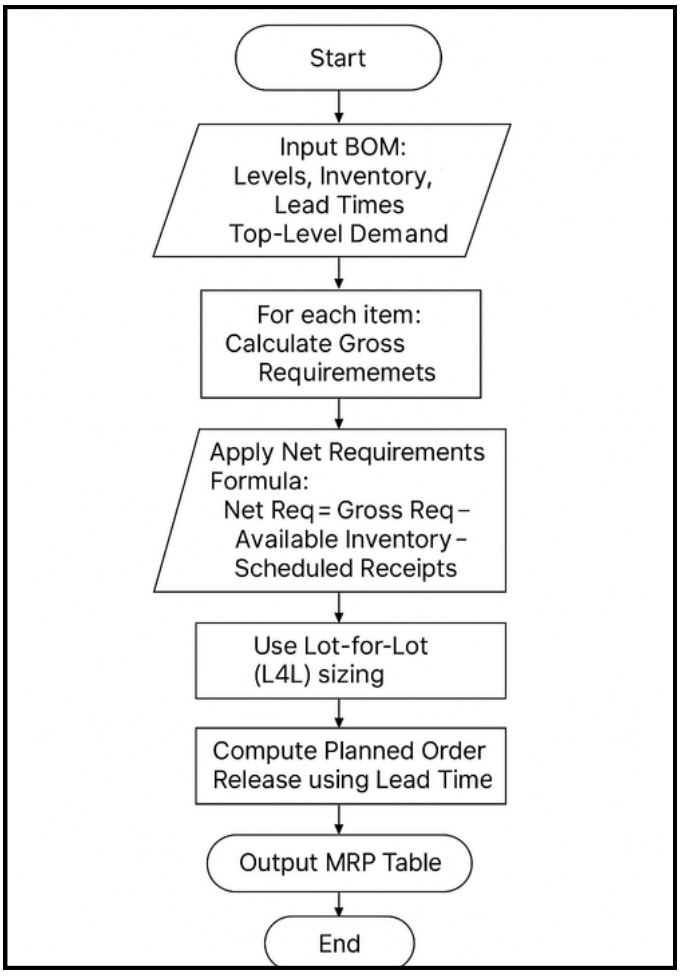
Technical Manual

Following the approval of our project concept, the team—composed of Vic, Rovic, and Reuben—focused on the implementation and refinement of the core features, with particular attention to the functionality and technical accuracy of our Material Requirements Planning (MRP) system.

Our project timeline was carefully structured to ensure that tasks flowed logically, with early completion of preliminary steps allowing us to shift focus toward core development and enhancements. The coding phase was distributed based on skill sets:

- Reuben led the initial revision and interface development, ensuring feedback received was applied efficiently.
- Vic and Rovic began working on the functionality, particularly on implementing the MRP formulas for each component.
- As the project progressed, all team members collaborated on developing extra features and final proofreading.

01 Computational Flow Chart



The computational flowchart illustrates the step-by-step process by which the system converts Bill of Materials (BOM) data into a detailed Material Requirements Plan (MRP). It begins with user input of essential data such as BOM structure, inventory levels, lead times, and top-level demand. The system then processes each BOM level sequentially, calculating gross and net requirements for every item. Using Lot-for-Lot (L4L) sizing and lead times, it determines the planned order releases. The final output is a comprehensive MRP table that guides efficient and timely production.

02 Timeline & Key Dates

01

Initial Revisions & Planning

During this phase, Reuben focused on refining the interface and addressing usability issues identified in earlier testing. He also incorporated expected feedback into the working prototype. This set a solid base for the following week's computational work.

PROJECTED DURATION:

April 30 - May 4

02

Formula Construction & Core Functionality

At this stage, the workload transitioned toward developing the core engine of the planner:

- Vic concentrated on the proper implementation of the Gross Requirements logic.
- Rovic constructed the Net Requirement module
- Reuben developed the Planned Order Release logic, using lead time offsets and ensuring the MRP reflected backward scheduling where necessary.

This division of labor helped establish a fully functioning MRP algorithm by the end of the week.

PROJECTED DURATION:

May 5 - May 10

03

Extra Features

With the core functionality complete, the team added enhancements:

- Vic and Rovic worked on graphical representation through Excel chart export features.
- Reuben enhanced the GUI, enabling more intuitive data entry and error handling for incomplete inputs.

PROJECTED DURATION:

May 10 - May 19

04

Final Revisions and Proofreading

The last week was dedicated to proofreading, bug fixing, and troubleshooting, with all three team members—Reuben, Rovic, and Vic—involved.

PROJECTED DURATION:

May 20 - May 24

03 How Components and Feature Work Together

- Input Form: Accepts structured BOM data, including:
  - Level numbers
  - Inventory counts
  - Scheduled receipts
  - Lead times
  - Top-level demand

- Processing Module:
  - Performs level-wise traversal of BOM
  - Calculates Gross and Net Requirements using team-coded formulas
  - Determines Planned Order Releases, accounting for lead times

- Lot Sizing Logic:
  - Implements Lot-for-Lot (L4L) production planning to match demand precisely

- Output Module:
  - Displays MRP Table and optionally exports data to Excel for visualization

These components are tightly integrated to allow accurate and efficient production scheduling from any given BOM.

04 Troubleshooting Guide

Problem	Cause	Solution
Blank output or incomplete MRP	Missing BOM or inventory data	Ensure all required fields are filled before running the program
Negative Net Requirements	Inaccurate inventory or receipts	Recheck and update Available Inventory or Scheduled Receipts
Incorrect Order Timing	Wrong lead time or level assignment	Validate BOM structure and lead time inputs
System crash or no response	Input format error	Follow input formatting guide; use correct level numbers and consistent structure