Productional Planner: Crafting MRP from BOM

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Key Terminologies

Materials Requirement Planning

- provides time scheduling information specifying when each of the materials, parts, and components should be ordered or produced

Bill of Materials

- listing of components, their description, and the quantity of each required to make one unit of a product. Useful in costing and can serve as list of items to be issued to production

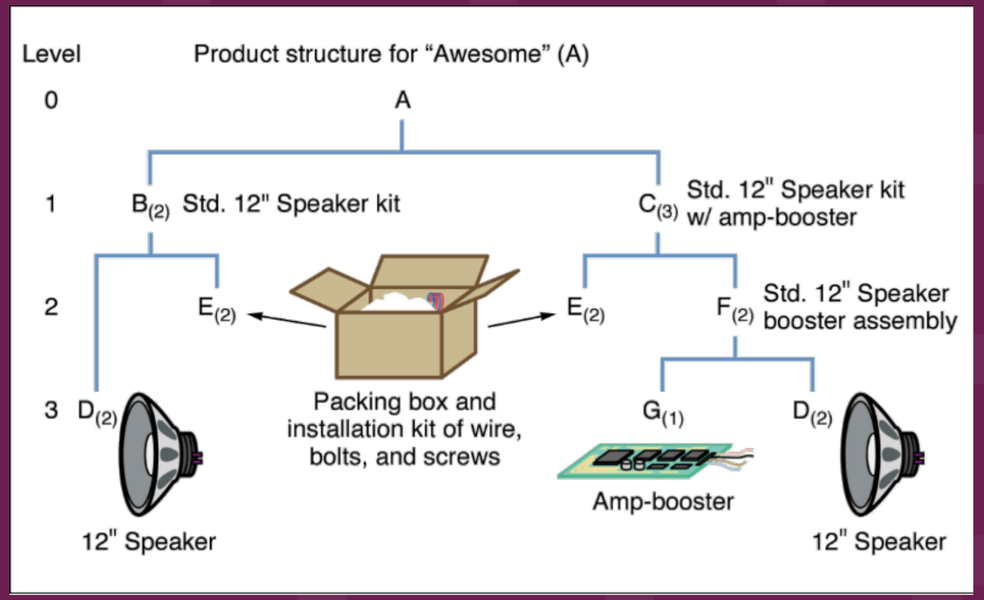
Brief Description

Lot size	Lead time	On hand	Safety stock	Allocated	Low level code	Item ID		Period				
								1	2	3	...	n
							Total Req					
							Scheduled Receipts					
							Projected on hand					
							Net Req					
							Planned order receipts					
							Planned order release					

MRP Planning Sheet

By entering the levels and components of the Bill of Materials (BOM), this system generates a Material Requirements Plan (MRP) that specifies the quantities and timing for the production of each item. It automates the material planning process to enhance production scheduling and optimize resource management.

Brief Description



Bill of Materials

Table 4.1

	Week 1	2	3	4	5	6	7	8	Lead Time
A. Required date								50	
Order release date							50		1 week
B. Required date							100		
Order release date					100				2 weeks
C. Required date							150		
Order release date						150			1 week
D. Required date					200				
Order release date				200					1 week
E. Required date					200	300			
Order release date			200	300					2 weeks
F. Required date						300			
Order release date			300						3 weeks
D. Required date			600						
Order release date		600							1 week
G. Required date			300						
Order release date	300								2 weeks

Net Requirement Plan

Purpose & Objectives

The objective of this application is to simplify material planning by converting a given Bill of Materials into a clear production plan. It helps users determine the quantities and timing of production needed for each material, ensuring that all components are available to meet the final demand

Limitations

- Estimated time of delivery also called as lead time is a necessary input for a successful MRP Planning Sheet
- Number of periods are limited to 20 inputs. The programmers utilized [E-Z] charlist for the column section of the excel.
- Desired demand of Level 0 since this is the basis of requirement planning

Code

```
0 references
Private Sub btnProceed_Click_1(sender As Object, e As EventArgs) Handles btnProceed.Click
    Try
        ' Get the default sheet
        strsheet = txtsheet.Text
        oSheet.Name = strsheet
        'Me.Hide()
        oXL.Visible = True

        intper = txtper.Text

        intcomp = txtcomp.Text
        For Rcounter = 0 To (intcomp - 1) * 9 Step 9 'pinaltan ko from intcomp to (intcomp-1) (reuben)
            For periodcells = 1 To intper + 1 Step 1
                oSheet.Cells(Rcounter + 4, periodcells + 3).value = "Period " & periodcells - 1
            Next
            With oSheet
                .Cells(Rcounter + 3, 3).Value = "BOM line " & Rcounter / 9 + 1
                .Cells(5 + Rcounter, 3).Value = "Gross requirements"
                .Cells(6 + Rcounter, 3).Value = "Scheduled Receipts"
                .Cells(7 + Rcounter, 3).Value = "On Hand Inventory"
                .Cells(8 + Rcounter, 3).Value = "NET POQ Req"
                .Cells(9 + Rcounter, 3).Value = "Planned Receipt"
                .Cells(10 + Rcounter, 3).Value = "Planned Orders"
                .Cells(3 + Rcounter, 4).Value = "Lead Time"
                .Cells(3 + Rcounter, 6).Value = "Safety Stock"
                .Cells(3 + Rcounter, 8).Value = "Lot Size"
```

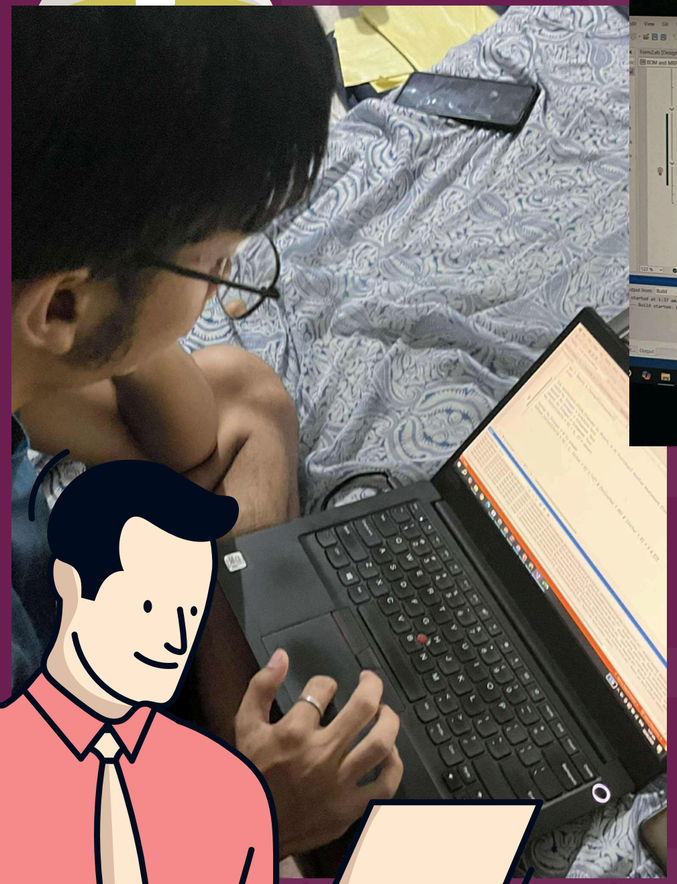
```
            For Ccounter = 0 To intper - 1 Step 1
                oSheet.Cells(Rcounter + 8, Ccounter + 5).formula = "=IF((" & Chr(Ccounter + 69) & Rcou
                oSheet.Cells(Rcounter + 9, Ccounter + 5).FOrmula = "=(" & Chr(Ccounter + 69) & Rcounte
                oSheet.Cells(Rcounter + 10, Ccounter + 5).formula = "=INDEX(" & Chr(Ccounter + 69) & I
            Next


            'Planned Orders:
            'For Ccounter = 0 To intper - 1 Step 1
            'oSheet.Cells(Rcounter + 10, Ccounter + 5).formula = "=INDEX(" & Chr(Ccounter + 69) & Rcou
            'Next
        Next
        oWB.Saved = True 'tells Excel that oWB has been saved


        oSheet.Columns.AutoFit()
        oSheet.Rows.AutoFit()
        txtchild.Enabled = True
        txtparent.Enabled = True
        txtamount.Enabled = True
        btnConnect.Enabled = True
        txtsheet.Enabled = False
        txtcomp.Enabled = False
        txtper.Enabled = False
        btnProceed.Enabled = False
        Me.TopMost = True
        Me.BringToFront()
        Me.Activate()
        Me.TopMost = False
        'Form1.Show()
    Catch ex As Exception
        MessageBox.Show(ex.Message)
    End Try
```

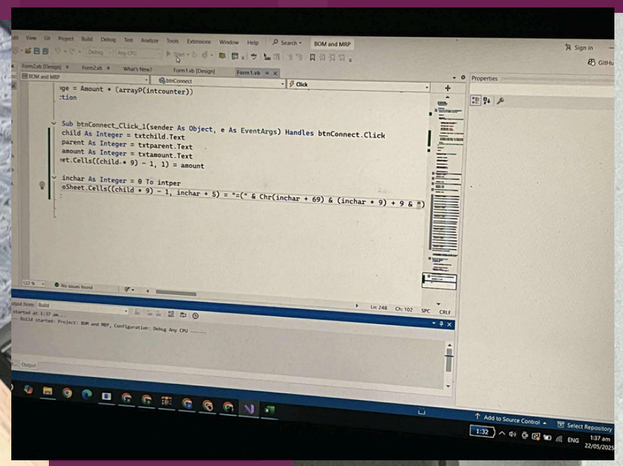
Code

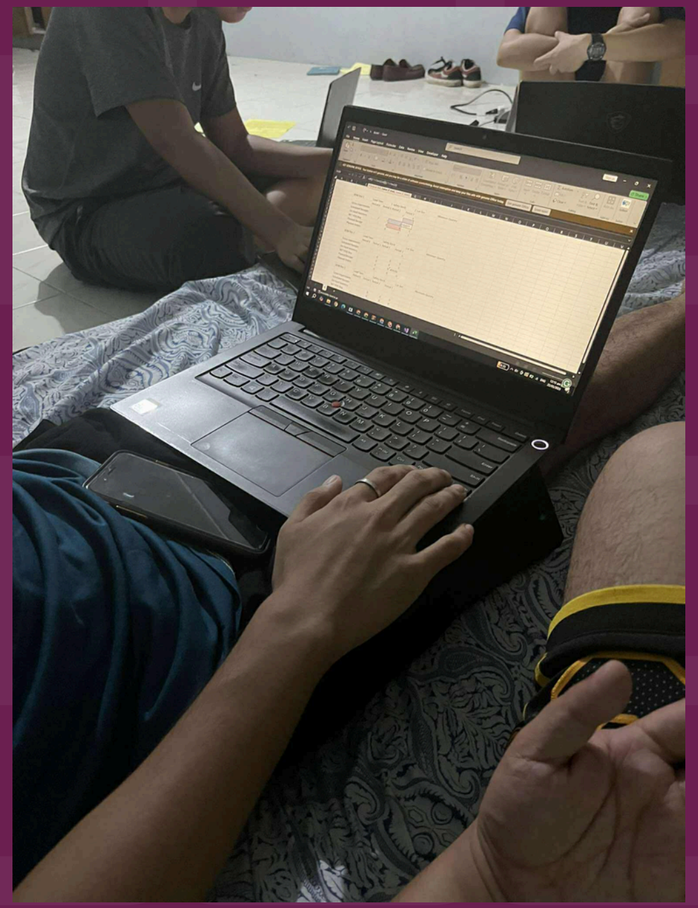
```
0 references
Private Sub Form1_Load(sender As Object, e As EventArgs) Handles MyBase.Load
    txtchild.Enabled = False
    txtparent.Enabled = False
    txtamount.Enabled = False
    btnConnect.Enabled = False
    pnlinput.BackColor = Color.White
    RoundPanelCorners(pnlinput, 20)
    pnlcomp.BackColor = Color.White
    RoundPanelCorners(pnlcomp, 20)
    btnProceed.BackColor = Color.RoyalBlue
    btnProceed.ForeColor = Color.White
    btnProceed.FlatStyle = FlatStyle.Flat
    btnProceed.FlatAppearance.BorderSize = 0
    btnProceed.UseVisualStyleBackColor = False
    btnReset.BackColor = Color.RoyalBlue
    btnReset.ForeColor = Color.White
    btnReset.FlatStyle = FlatStyle.Flat
    btnReset.FlatAppearance.BorderSize = 0
    btnReset.UseVisualStyleBackColor = False
    btnConnect.BackColor = Color.RoyalBlue
    btnConnect.ForeColor = Color.White
    btnConnect.FlatStyle = FlatStyle.Flat
    btnConnect.FlatAppearance.BorderSize = 0
    btnConnect.UseVisualStyleBackColor = False
End Sub

0 references
Private Sub pnlinput_MouseEnter(sender As Object, e As EventArgs) Handles Lat
    pnlinput.BackColor = Color.RoyalBlue
    Label1.ForeColor = Color.White
    Label.ForeColor = Color.White
    Label4.ForeColor = Color.White
End Sub
```

```
2 references
Function Change(ByRef arrayP() As Integer, ByRef intcounter As Integer, ByVal Amount As Integer) As Integer
    Change = Amount * (arrayP(intcounter))
End Function

0 references
Private Sub btnConnect_Click_1(sender As Object, e As EventArgs) Handles btnConnect.Click
    Dim child As Integer = txtchild.Text
    Dim parent As Integer = txtparent.Text
    Dim amount As Integer = txtamount.Text

    oSheet.Cells((child - 1) * 9 + 3, 1).Formula = "=" & amount

    For inchar As Integer = 0 To intper - 1
        oSheet.Cells((child * 9) - 4, inchar + 5).formula = "=(" & Chr(inchar + 69) & (parent * 9) + 1 & ")
    Next
End Sub

0 references
Private Sub ExitToolStripMenuItem_Click(sender As Object, e As EventArgs) Handles ExitToolStripMenuItem.Clic
    If MessageBox.Show("Exit?", "Exit", MessageBoxButtons.YesNo, MessageBoxIcon.Question) = vbYes Then
    End If
    'Code to exit the form using the message box.
    oXL.Quit()
    oSheet = Nothing
    oWB = Nothing
    oXL = Nothing
End Sub
```

Documentation







Conclusion

Enhances Efficiency

- Automates material planning, reducing manual effort and planning errors.

Data-Driven Decisions

- Accurately schedules production to meet demand without shortages or excess inventory.

Ensures Material Availability

- Accurately schedules production to meet demand without shortages or excess inventory.

Scalable for Industry Use

- Ideal for small to medium manufacturers looking to streamline operations and boost productivity.

Improves Resource Management:

- Optimizes use of materials, labor, and machine time through precise scheduling.


Thank You
For Listening!