

MRP

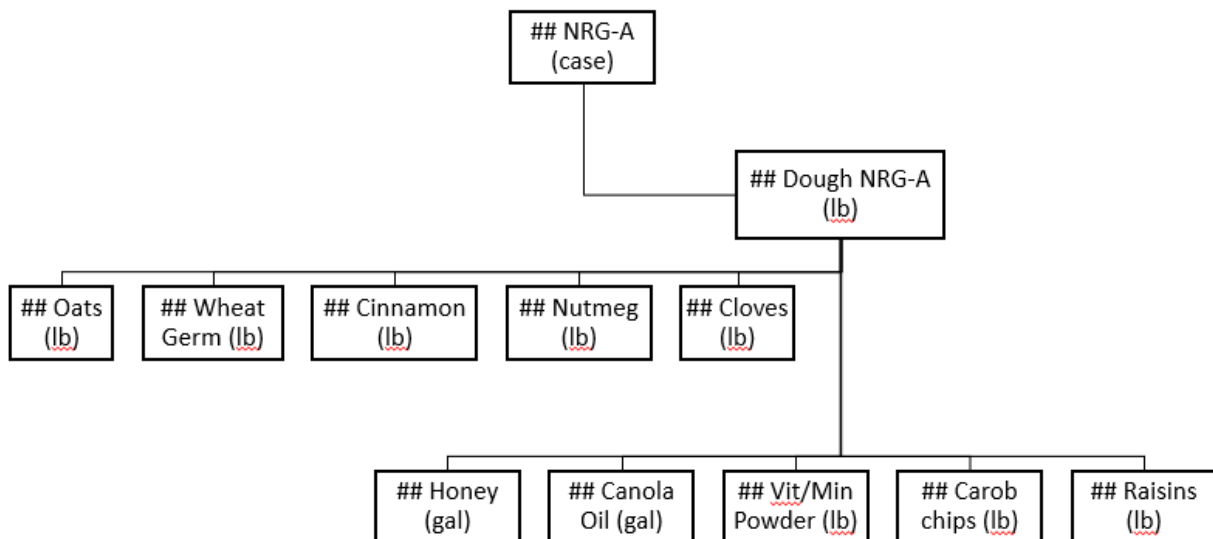
Exercise Introduction

Material resource planning is intended for 3 objectives:

- Ensure materials are available for production and products are available for delivery to customers.
- Maintain the lowest possible material and product levels in store to achieve LEAN processes.
- Plan manufacturing activities, delivery schedules and purchasing activities.

Bill of Material (BOM)

A critical input to the MRP process is the bill of material (BOM), which shows how components and semi-finished products are combined to produce the final product. A graphical representation of the BOM for the NRG-A bar is shown below:



The raw materials (Oats, Wheat Germ, etc.) are combined in a mixer to produce a 500 lb. batch of dough. The dough is then transferred to the baking line, where it is formed into bars, baked and packaged. For simplicity, we have ignored the wrappers, boxes and cases that are needed to produce a complete case of Fitter Snacker bars.

To view the BOMs for Fitter Snacker, follow the menu path:

Logistics > Production > Master Data > Bills of Material > Reporting > BOM Explosion > Material BOM > Multilevel BOM

MRP

Material BOM Edit Goto Extras Settings Environment System Help

Explode BOM: Multi-Level BOM: Initial Screen

Material: 00F100
 Plant: 00PT
 Alternative BOM: ☐
 BOM Application: PP01

Selection
 Valid From: 07/31/2008
 Change Number:
 Required qty:

Enter ##F100 for Material, ##PT for Plant and PP01 for BOM Application, then click on the execute (⏏) icon

Material BOM Edit Goto Extras Settings Environment System Help

Display Multilevel BOM

Material: 00F100
 Plant/Usage/Alt.: 00PT / 1 / 01
 Description: 00 NRG-A
 Base Qty (CS): 7.000
 Reqd Qty (CS): 7

| Level no. | Item | Qty | Component | Description | Unit | Reqd Qty | Unit | Unit |
|-----------|------|--------|-----------|-------------------|------|----------|------|------|
| ..1 | 0010 | 00S200 | | | | | | |
| ..2 | 0010 | 00R380 | | | | | | |
| ..2 | 0020 | 00R420 | | 00 Wheat Germ | | 50 | LB | L |
| ..2 | 0030 | 00R320 | | 00 Cinnamon | | 5 | LB | L |
| ..2 | 0040 | 00R370 | | 00 Nutmeg | | 2 | LB | L |
| ..2 | 0050 | 00R330 | | 00 Cloves | | 1 | LB | L |
| ..2 | 0060 | 00R360 | | 00 Honey | | 10 | GAL | L |
| ..2 | 0070 | 00R300 | | 00 Canola | | 7 | GAL | L |
| ..2 | 0080 | 00R410 | | 00 Vit/Min Powder | | 5 | LB | L |
| ..2 | 0090 | 00R310 | | 00 Carob Chips | | 50 | LB | L |
| ..2 | 0100 | 00R400 | | 00 Raisins | | 50 | LB | L |

This screen shows 7 cases of snack bars requires 500 lbs. of dough, and that to produce 500 lbs. of dough, 300 lbs. of Oats, 50 lbs. of Wheat Germ, etc. are required

This screen shows the recipe required for seven cases of dough. To learn more about any of the materials required to make an NRG-A bar, select the item and click on the detail icon.

With the nutmeg selected, click on the where-used icon (⏏), which will call up the following screen:

MRP

| Lv | U | Plant | Ob | Component number | Alt | Item | R | Required quantity | Un | R | Resulting qty | B... |
|----|---|-------|----|------------------|-----|------|---|-------------------|----|---|---------------|------|
| 1 | 1 | 00PT | | 00S200 | | 0040 | | 2.000 | LB | | 500.000 | LB |
| 1 | 1 | 00PT | | 00S210 | | 0040 | | 2.000 | LB | | 500.000 | LB |

This screen shows that Nutmeg is used in two products—the dough for NRG-A and NRG-B bars. (You can double click on each line to view the products.) According to help.sap.com, the where-used list can be used to:

- Determine requirements for a specific material
- Select products that are affected by a change to an individual part
- Find assemblies that will be delayed if, for example, there is a delay in the delivery of a raw material
- Calculate the effect on the cost of a product if the price of a raw material rises

Click on the exit icon (🏠) until you return to the SAP Easy Access screen.

Display Workcenters

Production is carried out at workcenters. In the SAP ERP system, workcenters can represent machines or groups of machines, production lines, assembly lines, employees or groups of employees.

To display the workcenters used for Fitter Snacker's snack bar production, follow the menu path:

Logistics > Production > Master Data > Work Centers > Work Center > Display

Work center Edit Goto Extras System Help

Display Work Center: Initial Screen

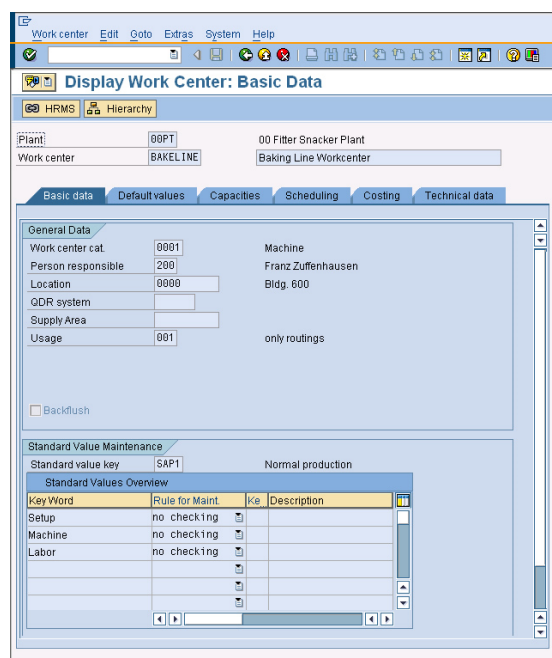
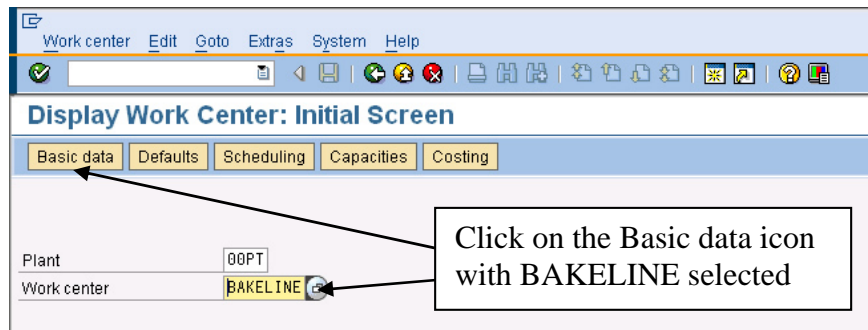
Basic data Defaults Scheduling Capacities Costing

Plant 00PT

Work center

Enter **##PT** for plant, then click on the **Work center** field, and click on the search icon and search for BAKELINE using **##PT** as filter criterion OR type BAKELINE directly

MRP



This multi-tabbed screen contains all relevant data for the workcenter.
Click on the exit icon (🏠) until you return to the SAP Easy Access screen.

Routings

Routings define the work centers that a product must visit in the production process. Routings also define the operations that must be performed at each workcenter and the components that are needed for each operation.

1. Create ##F100 (NRG-A bar) and ##F110 (NRG-B bar) Routings

To create a routing for the NRG-A bars, follow the menu path:

MRP

Logistics ▷ Production ▷ Master Data ▷ Routings ▷ Routings ▷ Standard Routings
▷ Create

Routing Edit Goto Details Extras Environment System Help

Create Routing: Initial Screen

Copy from Routings Sequences Operations

Material 00F100

Plant 00PT

Sales Document Sales Document Item

WBS Element

Group 00GROUP

Validity

Change Number

Key date 08/01/2008

Revision Level

Additional data

Profile

Enter ##F100 for material, ##PT for plant and ##Group for Group, then click on the enter icon

Routing Edit Goto Details Extras Environment System Help

Create Routing: Header Details

Routings MatAssignment Sequences Operations CompAlloc

Material 00F100 00 NRG-A

Task list

Group 00GROUP

Group Counter 1

Plant 00PT

Production line

Line hierarchy

General data

Deletion flag

Usage 1

Status 4

Planner group

Planning work center

CAPP order

From Lot Size

Old task list no.

Enter 1 for Usage and 4 for Status, then click on the Operations icon

Routing Edit Goto Details Extras Environment System Help

Create Routing: Operation Overview

Work center CompAlloc Sequences PRT Inspection Characteristics

Material 00F100 00 NRG-A

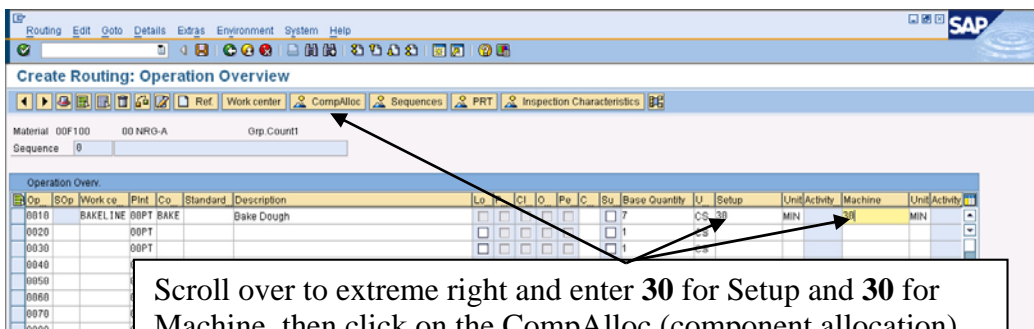
Sequence 0

Operation Overv.

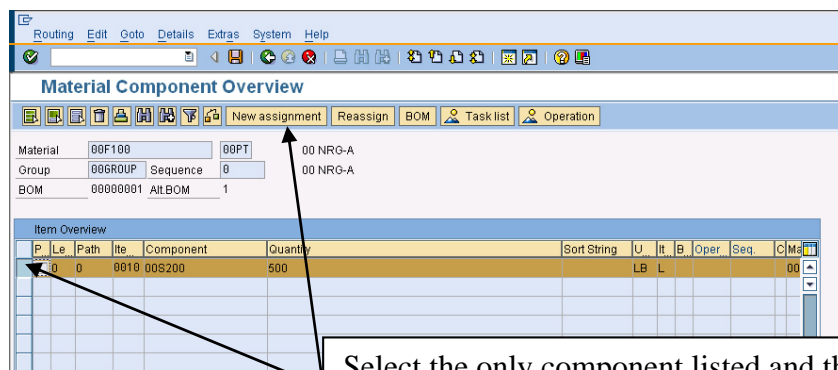
| Op | SOp | Work ce | Plant | Co | Standard | Description | Lo | P | Cl | O | Pe | C | Su | Base Quantity | U | StdValuTxd1 | UnitActivity | UnitActivity |
|------|-----|----------|-------|------|----------|-------------|----|---|----|---|----|---|----|---------------|----|-------------|--------------|--------------|
| 0010 | | BAKELINE | 00PT | BAKE | | Bake Dough | | | | | | | | 7 | CS | | | |
| 0020 | | | 00PT | | | | | | | | | | | 1 | CS | | | |
| 0030 | | | 00PT | | | | | | | | | | | 1 | CS | | | |

Enter BAKELINE for Work center
Enter BAKE for Control key
Enter Bake Dough for Description
Enter 7 for Base Quantity
Then click on the enter icon

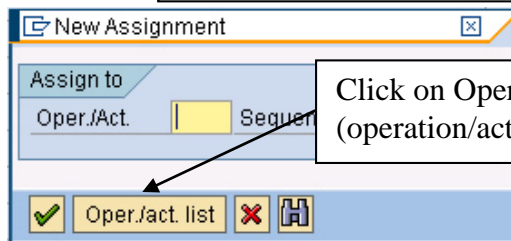
MRP



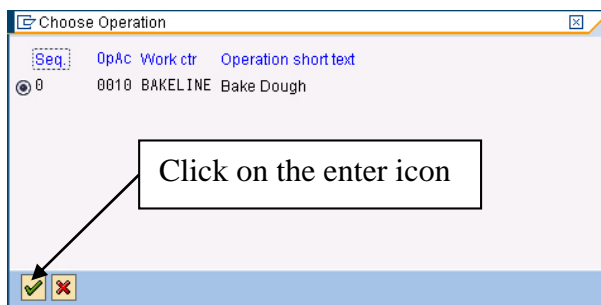
Scroll over to extreme right and enter **30** for Setup and **30** for Machine, then click on the CompAlloc (component allocation) icon



Select the only component listed and then click on the New assignment icon

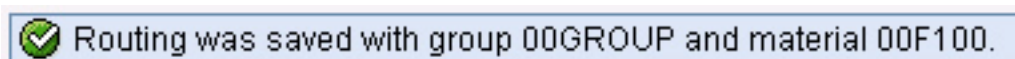


Click on Oper./Act. (operation/activity) list



Click on the enter icon

Click on the save icon (💾) to save the routing. You will get a message like the following:



MRP

Return to the beginning of section 1 and repeat the process to create a routing for material **##F110** (NRG-B bars). All entries are the same as for the **##F100** (NRG-A bars).

2. Create Routings for material **##S200** (dough for NRG-A bars) and **##S210** (dough for NRG-B bars)

To create a routing for **##S200** (dough for NRG-A bars), again follow the menu path:

Logistics ▷ **Production** ▷ **Master Data** ▷ **Routings** ▷ **Routings** ▷ **Standard Routings** ▷ **Create**

Routing Edit Goto Details Extras Environment System Help

Create Routing: Initial Screen

Copy from Routings Sequences Operations

Material 00S200
Plant 00PT
Sales Document
Sales Document Item
WBS Element
Group 006GROUP

Validity
Change Number
Key date 08/01/2008
Revision Level

Additional data
Profile

Enter ##S200 for material, ##PT for plant and ##Group for Group, then click on the enter icon

Routing Edit Goto Details Extras Environment System Help

Create Routing: Header Details

Routings MatlAssignment Sequences Operations CompAlloc

Material 00S200 00 Dough NRG-A
Task list
Group 006GROUP
Group Counter 3
Plant 00PT
00 Dough NRG-A
Long text exists

Production line
Line hierarchy

General data
Deletion flag
Usage 1
Status 4
Planner group

Enter 1 for Usage and 4 for Status, then click on the Operations icon

MRP

Routing Edit Goto Details Extras Environment System Help

Create Routing: Operation Overview

Material 00S200 Sequence 0

Enter the information shown, then click on the enter icon (✓)

| Op | SOp | Work | Plnt | Mo | Standard | Description | Lo | P | Cl | O | Pe | C | Su | Base Quantity | U | StdVs |
|------|-----|--------|------|-----|----------|-------------|----|---|----|---|----|---|----|---------------|----|-------|
| 0010 | | MIXERS | 00PT | MIX | | Mix Dough | | | | | | | | 500 | LB | |
| 0020 | | | 00PT | | | | | | | | | | | 1 | LB | |
| 0030 | | | 00PT | | | | | | | | | | | 1 | LB | |

Routing Edit Goto Details Extras Environment System Help

Create Routing: Operation Overview

Material 00S200 00 Dough NRG-A Grp.Count3 Sequence 0

Scroll over to the right and enter 30 for Setup and 30 for Machine, then click on CompAlloc

| Op | SOp | Lo | P | Cl | O | Pe | C | Su | Base quantity | U | Setup | Unit Activity | Machine | Unit Activity | Labor | Unit Activity |
|------|-----|----|---|----|---|----|---|----|---------------|----|-------|---------------|---------|---------------|-------|---------------|
| 0010 | | | | | | | | | 500 | LB | 30 | MIN | 30 | MIN | | |
| 0020 | | | | | | | | | 1 | LB | | | | | | |
| 0030 | | | | | | | | | 1 | LB | | | | | | |

Routing Edit Goto Details Extras System Help

Material Component Overview

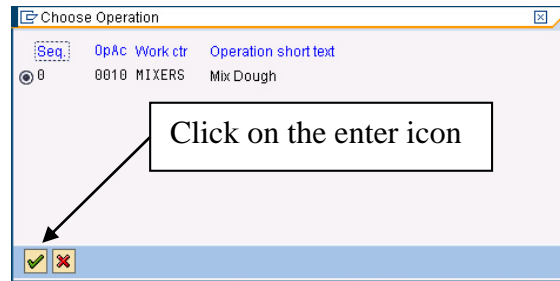
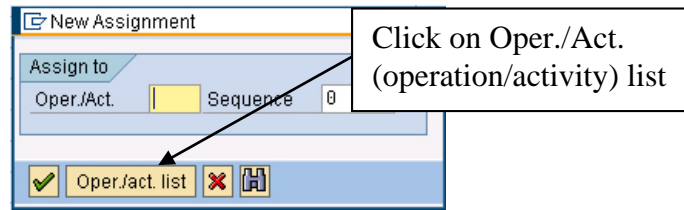
Material 00S200 00PT 00 Dough NRG-A
Group 006R0UP Sequence 0 00 Dough NRG-A
BOM 00000001 AILBOM 1

New assignment Reassign BOM Task list Operation

Select all components, then click on the New assignment icon

| P | Le | Path | Itc | Component | C | M | Q | U | StdVs |
|---|----|------|--------|-----------|---|---|---|---|-------|
| 0 | 0 | 0010 | 00R380 | | | | | | 00 |
| 0 | 0 | 0020 | 00R420 | | | | | | 00 |
| 0 | 0 | 0030 | 00R320 | | | | | | 00 |
| 0 | 0 | 0040 | 00R370 | | | | | | 00 |
| 0 | 0 | 0050 | 00R330 | | | | | | 00 |
| 0 | 0 | 0060 | 00R360 | | | | | | 00 |
| 0 | 0 | 0070 | 00R300 | | | | | | 00 |
| 0 | 0 | 0080 | 00R410 | | | | | | 00 |
| 0 | 0 | 0090 | 00R310 | | | | | | 00 |
| 0 | 0 | 0100 | 00R400 | | | | | | 00 |

MRP



Click on the save icon (floppy disk) to save the routing. You will get a message like the following:

✓ Routing was saved with group 00GROUP and material 00S200.

Return to the beginning of section 2 and repeat the process to create a routing for **##S210** (dough for NRG-B bars).
All entries are the same as for **##S200** (dough for NRG-A bars).

3. Create Product Group

Many firms produce hundreds of products, and planning for each product individually is not feasible or desirable. What these firms do is create product groups, and then plan production for a small number of product groups and then transfer these plans to individual products based on historic percentages. While Fitter Snacker does not have a large number of products, we will use the product group process anyway.

To create a product group for Fitter Snacker, follow the menu path:

Logistics ▷ Production ▷ SOP ▷ Product Group ▷ Create

which will produce the following screen:

MRP

Product groups Edit Goto Extras System Help

Create Product Group: Initial Screen

Product group 00 NRG Group 00 NRG-Aand NRG-B Bars

Plant 00PT

Base Unit CS

Members

☒ Materials

☐ Product groups

Enter ## NRG Group and ## NRG-A and NRG-B Bars
Enter ##PT for Plant
Enter CS for Base unit
Then click on the enter icon

Product groups Edit Goto Extras System Help

Create Product Group: Maintain Members (Materials)

Hierarchy graphic Versions... Master data... Product grp. graphic

Product group 00 NRG GROUP 00 NRG-Aand NRG-B Bars

Plant 00PT 00 Fitter Snacker Plant

Base Unit CS

| Member number | Plnt | Unit conv. Short Text | Aggr. fact. | Proportion | UoM | V M Fx |
|---------------|------|--------------------------|-------------|------------|-----|--------------------------|
| 00F100 | 00PT | | 1 | 70 | | <input type="checkbox"/> |
| 00F110 | 00PT | | 1 | 30 | | <input type="checkbox"/> |

Enter ##F100 and ##F110 for member numbers
Enter ##PT for Plnt, 1 for Aggr. fact. for both bars
Enter 70 for the Proportion for NRG-A and 30 for the proportion for NRG-B bars

These proportions mean that whatever production is planned for the NRG group, it will be assumed that 70% of the production should be NRG-A bars and 30% should be NRG-B bars. Click on the enter icon (✓) to confirm that you have the correct products in the group: