

Demo Exercise:

The Bookcase Example

e-Prelude – Intermediate level
(with options : S&OP, Costing, AR&AP)

Objective of this exercise

This exercise presents the main functions of **e-Prelude**, in a very simple and global perspective.

In this exercise, the data corresponding to a simplified model of a production system are introduced and the whole planning process is implemented.

As a consequence, the technical data (items, bills of materials, work centers, routings, etc.) will be entered in the folders. This first step permits the user to clearly understand the structure of the considered system. Furthermore, this step also fully illustrates the different types of master data and their links.

In the second step, these data will be used in order to simulate a planning process over a given horizon, simultaneously for the physical flows, information flows and financial flows (billing process).

Getting started with e-Prelude

Access the site **www.e-prelude.com**.

If you are not already registered, click on **Free Trial** to get a temporary access code. You will receive this 6 digit code in your mail box.

You can then type in your mail address and the access code to login. Click on **Login**.

Click on **Access Application**.

On the application login page, click on **Login**.

If you are not registered in an active course, , the demo folder is automatically opened. You cannot save your work.

If you are registered in an active course, the folder selection page is presented. Select the directory called '**Public Folder Library in English**'. Select the **Demo** folder. Click on the **Open** button.

The folder **Administration** page is presented.

Now you can access all **e-Prelude** functions.

The business functions in the company

e-Prelude is structured with respect to the typical company skills :

- **Engineering** : this menu is associated to the *Engineering Department* which develop and updates information concerning the items, bills of materials and manufacturing routings.
- **S&OP**: this menu is associated to the *management function* in charge of the tactical planning of purchases, productions and sales.
- **Sales**: this menu is associated to the *Sales function* in charge of the customers orders, sales forecasts, sales orders, etc .
- **Planning**: this menu is associated to the *management function* in charge of the operational planning of purchases, productions and sales.
- **Purchasing**: this menu is associated to the *purchasing function* in charge of vendors, purchase orders.
- **Logistics**: this menu is associated to the *function* in charge of the physical operations (receipts, issues, shipments, etc.).
- **Scheduling** :this menu is associated to the *management function* in charge of the short term planning of each operation on each production resource.
- **Control** : this menu is associated to the *Production Activity Control function* in charge of the recording information about the manufacturing operations and material consumption.
- **Costing** : this menu is associated to the *management control function* in charge of the computation of the costs associated to the purchasing and production activities.
- **AR&AP** : this menu is associated to the *accounting department* in charge of managing financial relations with customers and vendors (invoicing, payments, ...).
- **General Ledger¹** : : this menu is associated to the *general ledger function* in charge of the recording all information concerning financial transactions for the different accounts.

¹ This business function is not used in this introductory example.

The products

The *Bookcase* factory is organized as a production-to-stock system and produces two types of bookcases. One bookcase called BC100 is 100 cm width, the other, BC200 is 200 cm width.

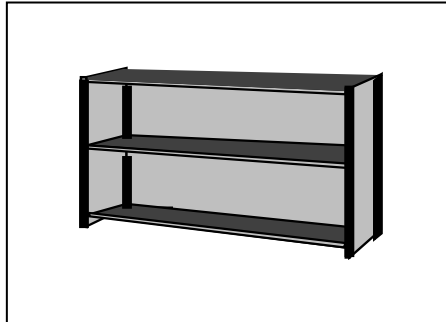


Figure 1

The problem consists of planning and organizing the production of the bookcases during 2022.

In order to do this, the necessary information is of course given and will be gradually introduced during the exercise.

A bookcase of this type decomposes into 3 outside support panels (two small ones on the side and one large one at the back), 4 shaped panels allowing the assembly of the elements, three shelves and twelve metal pegs (4 per shelf),

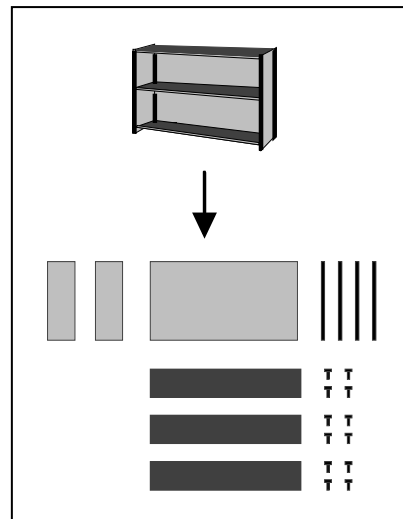


Figure 2

In the factory, production operations are performed by wood shaping machines, saws and assembly workshops.

The plant

The plant consists in several workshops corresponding to the different manufacturing operations:

- Saws,
- Wood machines,
- Assembly centers.

As usual, each workshop corresponds to a specific cost center.

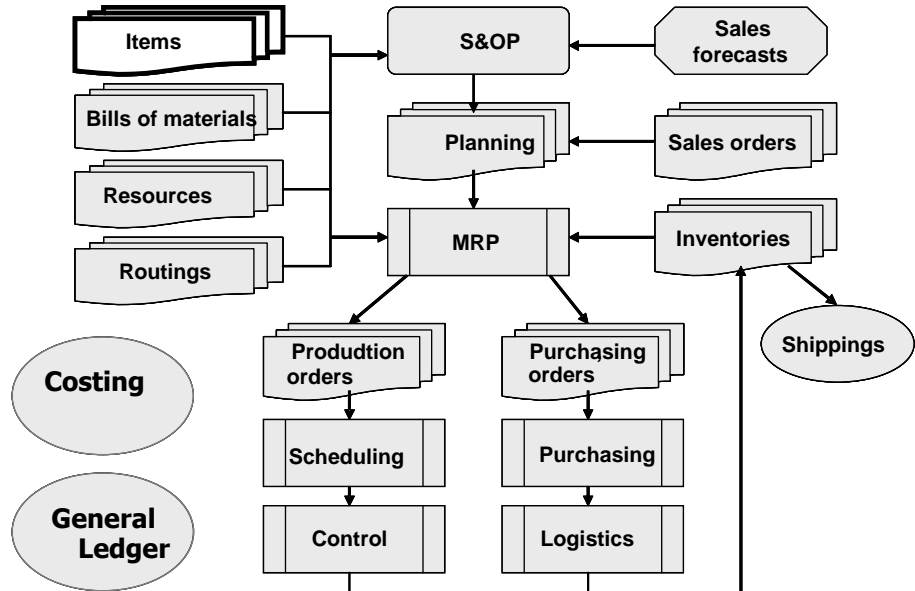
Basic entered data

For this introductory exercise, data entry has been kept focused on main data. In order to simplify (and shorten) the data entry process, all basic data have already been entered. In summary, such data concerns:

- Units of measure definition,
- Warehouses definition,
- Calendar definition,
- Periods definition for S&OP.

All these data will be used and illustrated when necessary.

Session 1: Items



During this phase, you will examine the information that describes all the objects of which the supply and manufacture must be managed. These objects are the **items**. Items correspond on one hand to components (and assemblies) described at the start of the exercise, and on the other hand correspond to raw materials used to manufacture the components. The *Engineering Department* develops and updates information concerning the items.

Items

[Engineering]

1.1	Items	Engineering menu, Item Maintenance option	
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On the left panel, click on the first row. Information about item **BC100** is posted on the page.

Click on the **List** button in the tool bar to see the item list.

Each item has a unit of measure (here all the items are managed by unit). For each item a default warehouse is specified: this is the location where it is normally stored. The other fields are optional.

The selling price of BC100 is \$200, the selling price of BC200 is \$300.

In this exercise, we manage two item types: Manufactured items and Purchased items.

For the manufactured item, we will describe its production process through a routing.

For the purchased items, we will record vendors which can supply the item.

Vendors and catalogs [Purchasing]

1.2	Vendors	Purchasing menu, Vendor Maintenance option	
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Vendor information is recorded in a vendor table. Only one vendor is recorded: SUPPLY named Global Supplier

You can enter any information if the empty fields.

In our exercise, the normal delivery lead time is 10 days.

For this vendor, the selected payment term is 30DEM which can be selected from the drop-down list.

1.3	Terms of Payment	AR&AP menu, Term of Payment Table Maintenance option	
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As an illustration, the different terms of payment that have been defined in this exercise can be specified in the **Term of Payment** table.

A term of payment is defined by a discount rate, a credit term and a maturity prolonging option.

1.4	Vendor's catalog	Purchasing menu, Vendor Maintenance option, Catalog button	<input type="checkbox"/>
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For the vendor, it is necessary to specify which items it can deliver and the delivery conditions. These characteristics, detailed in the following table, have to be entered

Item Code	Purchasing Unit	U/M coefficient conversion	List price	Lead-time (days)	Minimum quantity	Packaging
WD002	EA	1	30.00	10	1	1
WD010	EA	1	50.00	10	1	1
ROD40	EA	1	10.00	10	10	10
PEG000	EA	1	0.10	20	50	50

Standard purchasing prices [Costing]

1.5	Standard purchase prices and costs	Costing menu, Purchased Items Standard Purchasing Price option	
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In order to associate a standard value to inventories and material issues, standard prices have to be defined for the purchased items. Such prices will be used in order to establish budgets and/or plans.

Standard purchase prices

Items	Standard purchasing price
WD002	30
WD010	50
ROD40	10
PEG000	0,10

Preferred Vendor selection

[Purchasing]

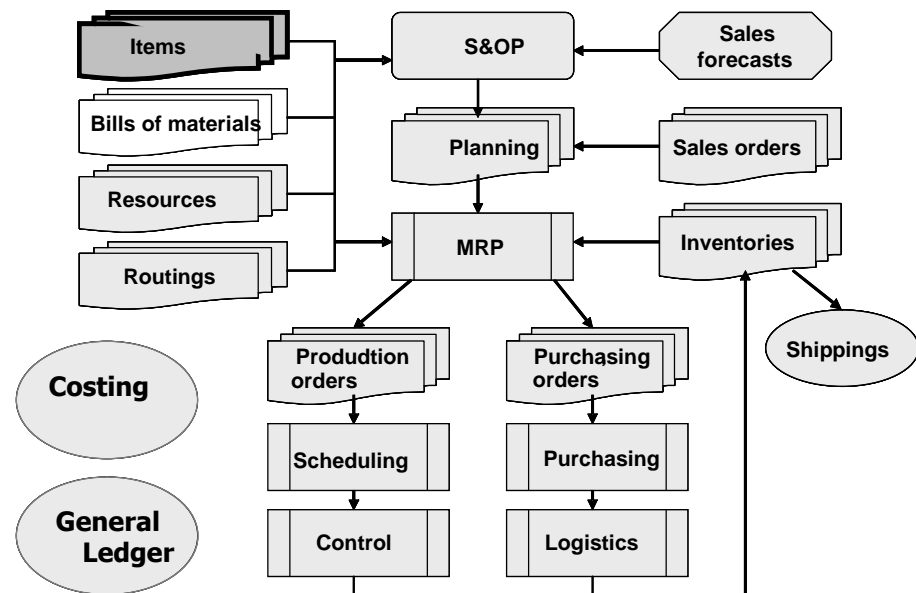
1.6	Vendor selection for each purchased item	Purchasing menu, Purchased Item Vendor Selection option	
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For each **purchased** item, a preferred vendor has to be selected.

Select an item in the left panel list. All the vendors which have this item in their catalog are listed (in this exercise, there is only one).

For all the purchased items, the only vendor has been selected.

Session 2: Bills of Materials Maintenance



The different items entered in session 1 are linked to each other. For example *BC100* and *BC200* are items assembled from other parts and items. In this session 2, you will examine these links (component, assembly, sub-assembly, ...) which are represented as **manufacturing Bills of materials**.

Below is a blown-up representation of the finished products for the considered example,

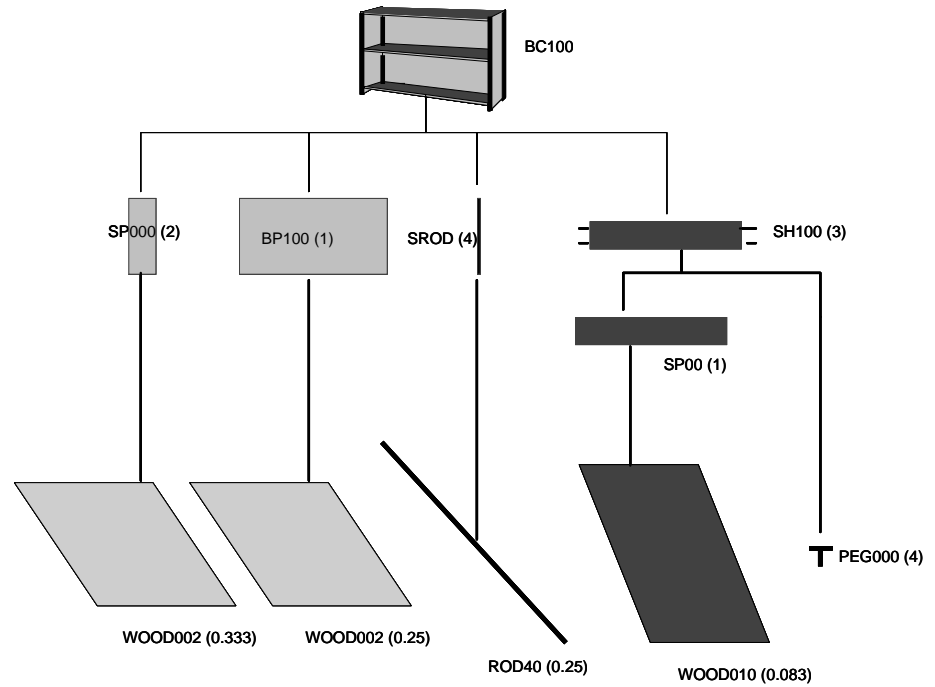


Figure 4: Bookcase product structure

Bills of materials of manufactured items [Engineering]

2.1	Bills of materials of manufactured items	Engineering menu, Bills of material Maintenance option	
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The BOMs have already been entered.

1. Select item BC100 from the left panel list (the BOM type M is set as default); the list of direct components is posted.
2. Click on the **Maintenance** button and enter the corresponding data in the **Product Structure Record Maintenance** page,
3. Record each link data by clicking on the **OK** button and switch to another item via the **Back** button.

2.2	Low Level Code	Engineering menu, Bills of material Maintenance option	
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Access the **Low Level Code Calculation** function in order to update all the graphs linked to the bills of materials definitions and confirm the data update.

2.3	Bills of materials for manufactured items	Engineering menu, Bills of material Maintenance option	
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We show now the different functions linked to the bills of materials.

Select the item **SH100** from the left panel list.

Several Bill of Material Inquiries can be performed. Click on each of the buttons in the Bill Of Materials Inquiries frame (except the mast on – Work Loads – which will be explained later).

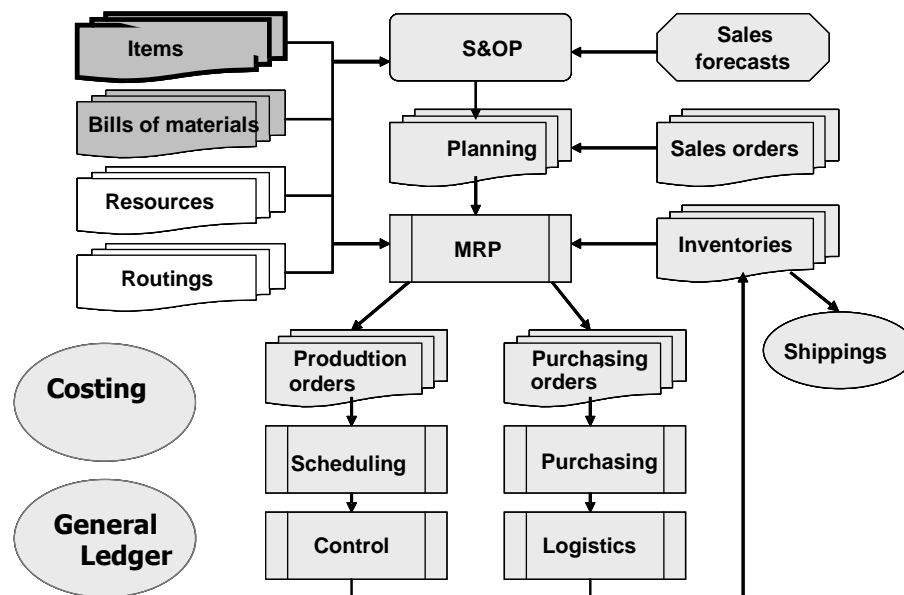
2.4	Bills of materials Graphs	Engineering menu, Bills of material Maintenance option	
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Select item BC100 from the left panel list. Click on the **Graphs** button.

You can see a visual representation of the product structure.

Click on the **Offsets** button in the tool bar. You can see the time required to manufacture the end item.

Session 3: Cost Centers, Work Centers and Routings



In this session, we consider the production resources (saws, wood shaping machines, ...), described as **work centers** and the manufacturing procedures entered as **manufacturing routings**. Each work center is characterized by an activity calendar and is associated to a cost center (for cost computation purposes).

Definition of the Standard Calendar [Planning]

3.1	Calendar maintenance	Planning menu, Calendar Maintenance function	
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In order to plan production activity, an activity calendar timetable has been defined for the coming year. The standard plant calendar (PC) for the current week is displayed.

With the **Graph per...** button on the left of the tool bar, select day, week, month to see the working time in each period.

Cost Centers

[Costing]

3.2	Budget Lines	Costing menu, Budget Line Table option	
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The different types of costs have to be defined in budget lines which represent cost types. These budget lines have been entered and can be displayed via the **Costing Data** menu, **Budget Line Table** option.

3.3	Cost Centers	Costing menu, Cost Center Maintenance option	
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Each cost center is characterized by specific hourly rates (direct labor and machine). These rates will be applied to the resources associated to the work enter in the cost calculation procedure.

In this example, the plant is associated to two cost centers :

- the production cost center (PROD)
- and the assembly cost center (ASS).

The different data necessary for the cost computations have already been entered, namely the standard activities and budgets. These data are displayed by clicking on **Budget Lines** button in the tool bar.

The **Budget Line Maintenance** page is posted.

Work Centers

[Engineering]

3.4	Work Centers	Engineering menu, Work Center Maintenance option	
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We can now describe the work centers. The data corresponding to the table below have been recorded.

Work Center #	Description	Type	Cost Center	WorkShop #	Calendar	Capacity Coefficient	Efficiency Coef.	Critical
100	Cutting	F	PROD	PROD	PC	3.00	1.00	x
200	Machining	F	PROD	PROD	PC	3.00	1.00	x
930	S/A Assembly	F	ASS	ASS	PC	1.00	1.00	x
940	Final Assembly	F	ASS	ASS	PC	2.00	1.00	x

It is possible to describe each of the machines in the different the work centers. Click the **Machines** button to post the **Machine Maintenance** page.

Routings

3.5	Routing Maintenance	Engineering menu, Routing Maintenance option	
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Now, as the production resources are known, the operation times and the routings can be defined.

For each routing, the data recorded are

- the routing Id,
- the revision Id (namely **00** for base routings),
- the description,
- the validity start date,
- the standard and transfer lot sizes.

Select the SC100 routing in the left panel list. Click on the **Operations** button in the tool bar in order to define the successive operations of the routing. For each operation, the following data is specified:

- the operation Id,
- the description,
- the work center Id,
- the set-up time (machine and labor),
- the run time (machine and labor),
- the quantity per time,
- the quantity per cycle,
- the move time,
- the fixed scrap percentage,
- the proportional scrap percentage.

Items and routings

3.6	Routings selection	Engineering menu, option Items , Select Type: Manufactured	
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For each manufactured item, the routings to be used are defined in the **Routings** panel of the **Item Maintenance** page.

On the **Routings** panel, for all the items except the first one, be sure that the **Backflush** option is set to 'WorkOrder'.

Both 'Release' and 'Budget' boxes should be ticked.

3.7	Resources and Items	Engineering menu, Bills of material Maintenance option	
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Select item *BC100*. Click on the **Graphs** button and afterwards on the **Resources** button. The corresponding graph displays all the operations associated to item BC100,.

Standard costs calculation

[Costing]

It is now possible to calculate the costs of the manufactured items.

3.8	Standard costs of the manufactured items	Costing menu, Items costs rollup option	
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Select the following options:

Purchase Prices	<i>Standard prices</i>
Depreciation	<i>Economic</i>
Lot sizes	<i>Standard Routing</i>
BOM's and routing	<i>Manufacturing</i>
Cost types to include	<i>Budget</i> - <i>Direct Costs</i> - <i>Depreciation</i> - <i>Overhead Costs</i> - <i>Purchasing Overhead</i>

Click on the **OH Rates** button and enter 5 (%) as **Budget Purchasing OH Rates**. Validate by the **OK** button.

Select the **Update standard costs** option and validate by the **OK** button.

In addition, this functions estimates :

- the standard hourly cost rates for the cost centers (and as a consequence for the work centers and machines),
- the routings costs,
- the costs of the purchased items,
- the costs of the manufactured items.

3.9	Item Cost List		
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The **Item Cost List** is posted.

Double click on the first item. The item **Cost Breakdown** is displayed.

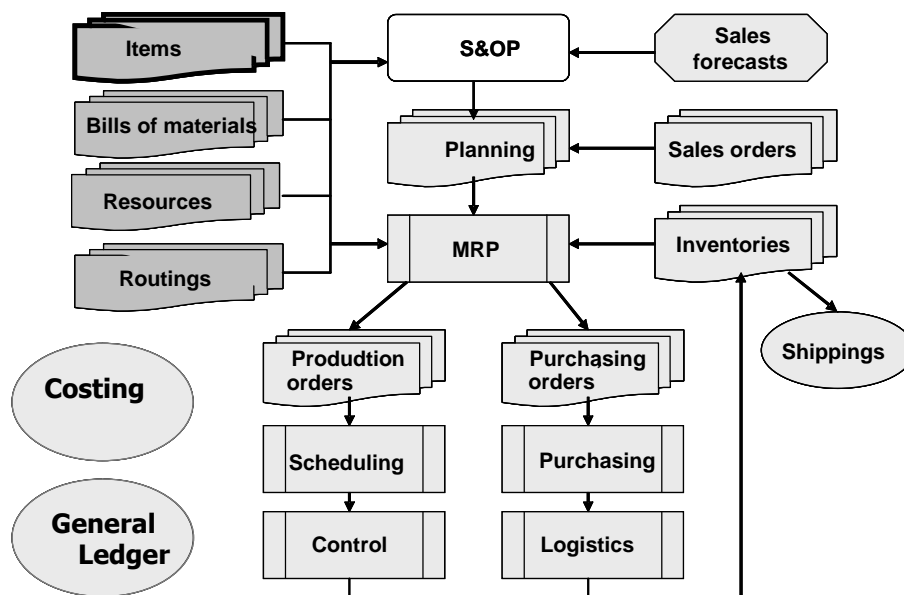
3.10	Standard hourly cost rates	Engineering menu, Work center Maintenance option	
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Access the different work centers. You can see the standard hourly cost rates.

3.9	Standard costs for the routings	Engineering menu, Routing Maintenance option	
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Access the **Routings maintenance** windows for routing *BP100*. Click on the **COSTS** button.

Session 4: Sales and Operations Plan



In session 4, the long term capacity utilization balancing will be achieved by creating a **Sales and Operations Plan (S&OP)** for the whole year 2022. The balancing will be done from a global analysis of the workloads, calculated for the product families on a monthly basis. In this example, we will consider the labor workloads for fabrication and assembly.

Family Items

[S&OP]

In order to enter an S&OP, we have defined the item **BCFAM**, an imaginary item that represents the family of sold products (in other words the two types of bookcase *BC100* and *BC200*).

4.1	Family Items	S&OP menu, Family Item Maintenance option
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Examine the Family item BCFAM.

Its price is **\$250** and its standard cost is **\$165**.

The numerous other fields can be used to check the plan against constraints. They are not considered in this exercise.

4.2	Resource Items	S&OP menu, Resource Item Maintenance option	
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It has been decided to check balance between workloads and capacities for the different work centers (cutting, machining, assembly of sub-assemblies and final assembly). The feasibility of a global production plan will be validated. At this aggregated level, the loads of the different work centers that are involved in the manufacture of a **BCFAM** item are modeled simply using the “**Resource**” items.

Access the two resource items entered for this example. The costs associated to these items are defined as \$36,50 for the assembly resource item and \$37,00 for the production resource item.

4.3	Resource Items	S&OP menu, Bill of Materials Maintenance option	
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Select BCFAM in the left panel list.

At this aggregated level, the loads of the different work centers that are involved in the manufacture of a **BCFAM** item are modeled by the **Resource BOM** of **BCFAM**, which define the necessary amount of capacity (or loads) for the production of a unit of item **BCFAM**. Clearly these average workloads are estimated via the routings. It is considered that the production of a unit *BCFAM* requires 1,95 hour production time and 0,85 hour assembly time, as summarized in the following table:

Link	Resource	Coefficient
010	H_FAB	1.90
020	H_ASS	0.85

4.4	S&OP	S&OP menu, Sales and Operations Plan Maintenance option	
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The sales plan has been entered. We assume that we will sell 350 unit per month over the first six months and 600 per month over the last six months.

The production plan has also been entered.

The corresponding projected inventory is calculated.

4.5	S&OP Appraisal	S&OP menu, S&OP Appraisal option	
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This function calculates the global inventory value profile, the turn-over and the gross margin for all the S&OP plans.

4.6	Resource Capacities	S&OP menu, Resource Capacity option	
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The capacity coefficients are equal to 3 for the assembly resource item and 6 for the production resource item.

We can see the capacity utilization and alter, if necessary, the resource capacity to match the production plan.

4.7	S&OP Valuation	S&OP menu, S&OP Valuation option	
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This function evaluates the gross margin and the inventory value corresponding to the S&OP.

S&OP Disaggregation

[S&OP]

Once the S&OP is confirmed, it is assumed that the production system has sufficient capacity to meet sales demand. It is necessary to make a detailed plans (or **requirements plans**) in terms of finished products to manufacture (namely BC100 and BC200).

The Sales plan can be disaggregated into sales forecasts on sold items using the Commercial bill of materials.

For the production plan, the aggregate plan has to be disaggregated into specific product requirements. This disaggregation can be carried out via the definition of a planning bill of materials.

4.8	S&OP disaggregation	S&OP menu, Bill of Materials Maintenance option	
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The Commercial BOM is accessed by selecting *BCFAM* in the list and the **Commercial BOM** Type.

The forecasts for items BC100 and BC200 are computed as the disaggregation of the sales plan for item BCFAM according to the following percentages (defined in the commercial BOM):

Links	Component	Coefficient
010	BC100	0.5
020	BC200	0.5

The Planning BOM is accessed by selecting *BCFAM* in the list and the **Planning BOM** Type.

The inventory variations for items BC100 and BC200 are computed as the decomposition of the inventory variations for item BCFAM according to the following percentages (defined in the planning BOM,

Links	Component	Coefficient
010	BC100	0.5
020	BC200	0.5

Disaggregating of the S&OP for 2022

4.9	S&OP Disaggregation	S&OP menu, S&OP Disaggregation option	
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This function converts the **S&OP** plan into finished product sales forecast and production schedules

The disaggregation end date is set to *06/30/2022*. Tick the box **Spread quantities over working days**. Click on **OK**.

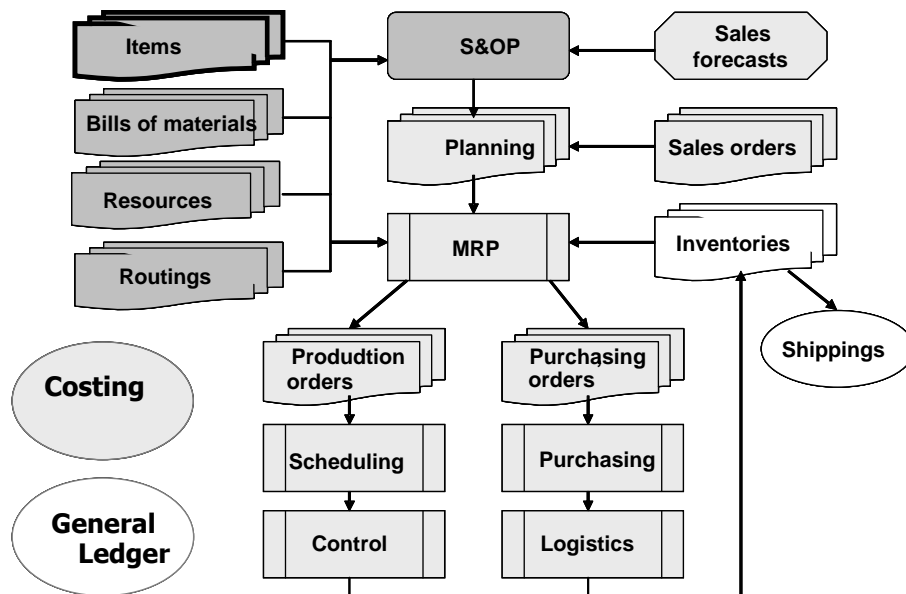
4.10	Sales Forecasts	Sales menu, Sales Forecasts option	
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The sales forecasts for items *BC100* and *BC200* originating from S&OP disaggregation are reported in the **Calculated Forecast** line

4.11	Master Schedules	Planning menu, Master Schedules option	
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The requirements to meet the projected inventory for *BC100* and *BC200* appear in the **Internal Requirements** line.

Session 5: Inventories, receipts, transfers and issues



In the previous sessions technical data have been entered and capacity balancing realized. Before explicitly considering flow planning, this session displays the different issues associated to physical inventory management.

Warehouses and inventories

[Logistics]

5.1	Warehouses	Logistics menu, Warehouse Table option
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The different warehouses have been defined in the warehouse table

Beginning inventories

[Logistics]

The inventories corresponding to the current date have to be entered. The amounts are given in the following table:

Item	Status	Quantities
Warehouse FGW – Cost Centers ASS		
BC100	AVAI	50
BC200	AVAI	50
Warehouse SFW– Cost Centers FAB		
BP100	AVAI	100
BP200	AVAI	100
SH100	AVAI	300
SH200	AVAI	250
SP000	AVAI	400
SP100	AVAI	400
SP200	AVAI	500
SROD	AVAI	750
Warehouse RMW– Cost Centers FAB		
PEG000	AVAI	5000
ROD40	AVAI	500
WD002	AVAI	500
WD010	AVAI	200

These quantities were entered via the **Physical Inventory Counting** function.

5.2	Inventory Transactions	Logistics menu, Inventory Transaction History option	
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This function lists all the inventory transactions. They can be grouped by date, warehouse or item.

Inventory Inquiries [Logistics]

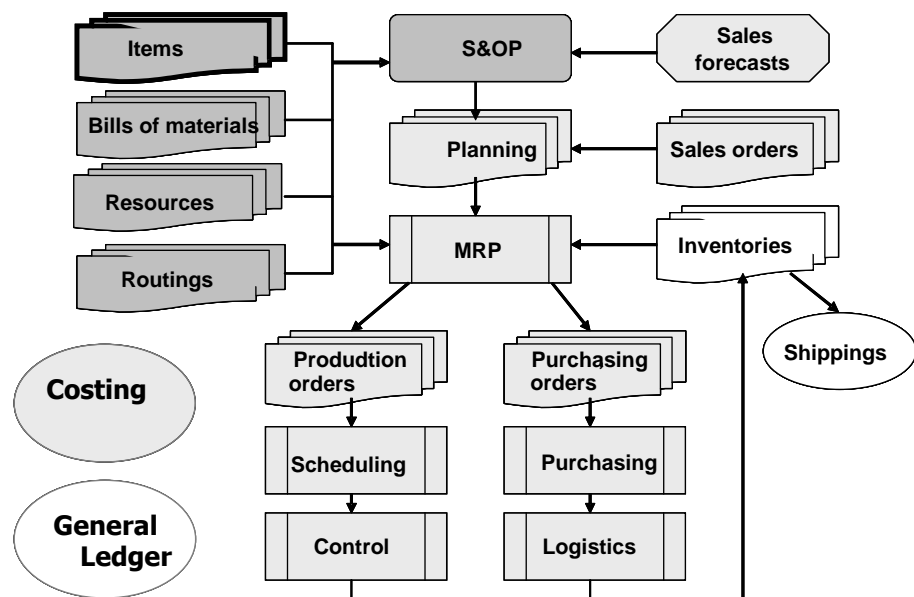
5.3	Warehouses	Logistics menu, Inventory by warehouse option	
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This page presents all the items which are stored in a warehouse. For example, click on SFW warehouse.

5.4	Items	Logistics menu, Inventory by item option	
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This page presents all the stock positions for an item.

Session 6: Material Requirements Planning (MRP)



In the previous sessions, master production schedules have been defined for items *BC100* and *BC200*. In this session, we will calculate all that is required to meet the demand.

6.1	Item Parameters	Planning menu, Item Reorder Policy option	
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We have decided that all the items have the same reorder policy:

- Reorder Policy: **Net Requirements**
- Lot sizing rule: **Weekly requirements**
- no safety stock
- Standard lot size: 100
- Lead time: 5 days (for manufactured items, 10 days for purchased items)

Check the reorder policy for *BC100*.

6.2	MRP	Planning menu, Master Schedules option	
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Select item *BC100*.

The projected inventory shows stockouts.

Tick the **New suggestions** box in the tool bar.

The projected inventory is going up.

Planning for the first quarter of 2022

The MRP procedure

Purchasing and production activities will be planned accordingly to the finished goods master schedules (namely corresponding to items *BC100* and *BC200*).

The MRP process plans work orders and purchase requisitions in order to supply the requirements of the master schedules.

6.3	MRP	Planning menu, Material Requirements Planning option	
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Enter the ending date for the planning horizon (*03/31/2022*) and click on the **OK** button. Do not tick any MRP options.

The MRP calculation takes a few seconds.

6.4	Planned work orders	Planning menu, Planned Work Order List option	
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This list presents the work orders which have been generated by the MRP algorithm for all the manufactured items.

By double-clicking on any work order in the list, the **Planned Work Order Maintenance** page is posted.

The **Components** tab shows the Components requirements for this work order.

6.5	Planned purchase requisitions	Planning menu, Planned Purchase Requisition List option	
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This list presents the purchase requisitions which have been generated by the MRP algorithm for all the purchased items.

By double-clicking on any purchase requisition in the list, the **Planned Purchase Requisition Maintenance** page is posted.

6.6	Master schedules	Planning menu, Master schedules option	
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After the computation of the planned orders by the MRP procedure, you can view projected inventory profiles. Select the item *BC100*.

By clicking on any cell of the first six lines the underlying data are displayed.

6.7	Pegging	Requirements Pegging	
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Click on the **Pegging** button in the tool bar.

This window shows how the planned orders have been calculated up to the top level.

Capacity Requirements Planning

The workloads directly associated with the planned production orders can be computed by the **Infinite Capacity Scheduling** function.

It consists in calculating the earliest and latest dates for each work order without considering the available capacity.

At the same time, the work loads are calculated for each work enter and for each period.

6.8	Infinite Capacity Scheduling	Planning menu, Infinite Capacity Scheduling option	
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Set the **CRP Limit Date** to 03/31/2022 and click OK.

This function takes several seconds.

6.9	Infinite Capacity Scheduling	Planning menu, Scheduling Chart option	
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The scheduling chart displays the planning corresponding to the planned orders.: Select the planning according to the different dates: **Required, Forward and Backward** in the tool bar,

6.10	Planned Work Orders	Planning menu, Planned Work Order Maintenance option	
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Select the first planned order.

Click on the **Dates** tab which show the dates which have been calculated.

The schedule associated to this order can be displayed via the **Gantt** button.

The workloads which have been generated can be seen by clicking on the **Workloads** button.

Try the different options in the tool bar.

Slacks Analysis

6.11	Slacks	Planning menu, Planned Work Orders Slacks option	
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For the different planned work orders, it is possible to compute the slacks corresponding to the infinite capacity schedule. Some work orders have negative slacks.

Workload Analysis

Once the infinite capacity schedule is made, it is possible to compute the corresponding workloads for the different resources.

6.11	Work Load Profile	Planning menu, Workload Table option	
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This page shows the workloads for each work center (or cost enter or workshop) totaled per period (shift, day, week, month).

Click on a cell. The list of work orders generating the work load is posted.

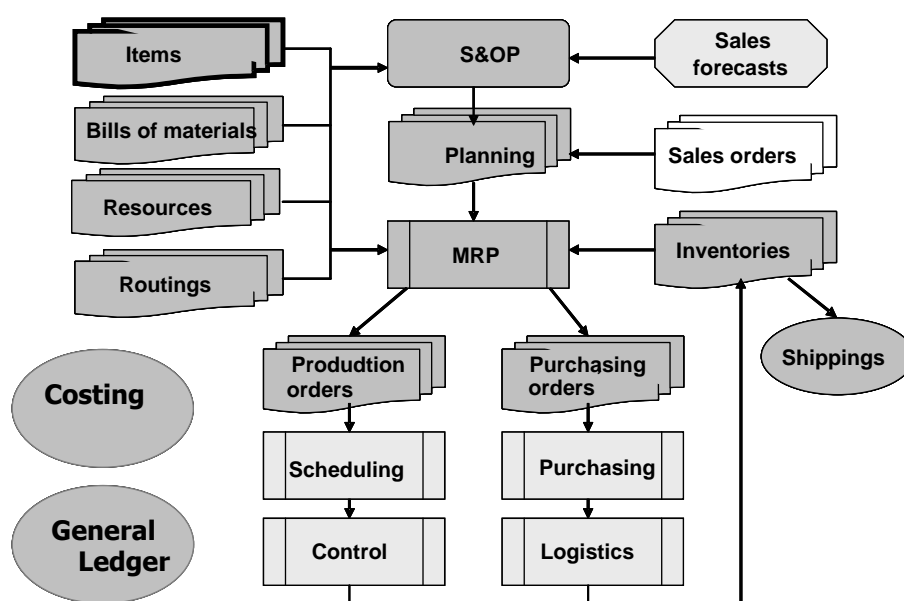
Click on the **Graph** button. A summary graph of workloads per resource is displayed.

6.12	Work Load Profile	Planning menu, Workload Chart option	
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Select each of the work centers in the list.

Use the **Periods** and **Type** buttons to show the associated work center capacity utilizations.

Session 7: Sales Order Entry



We consider now the demands that have to be delivered by the plant. These demands are entered as customer orders. From these orders it will be possible to deduce the work orders and purchasing orders guaranteeing feasibility of the required deliveries to customers.

Customers

[Sales]

The customers have to be defined first.

7.1	Customers	Sales menu, Customer Maintenance option	
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The following data have already been recorded in the Customer Table:

Customer Id	Company	Transportation lead time (days)	Discount	Term Of Payment	Credit Limit
CUSTA	Customer A	1	0%	30DEM	10000
CUSTB	Customer B	2	0%	30DEM	15000

Sales Orders [Sales]

7.2	Sales Order Maintenance	Sales menu, Sales Order Maintenance option	
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Two sales orders will be entered, according to the table below:

Order # 00000001	Customer : CUSTA	Delivery date: 28/01/2001
Line 001	Item : BC100	Quantity : 20
Line 002	Item : BC200	Quantity : 10
Order 00000002	Customer : CUSTB	Delivery date: 28/01/2001
Line 001	Item : BC100	Quantity : 15
Line 002	Item : BC200	Quantity : 25

The data entry procedure is as follows :

1. in order to define a new order click on the **New** button,
2. select the customer in the drop down list,
3. select the delivery date,
4. click on the **Lines** button and accept the recording,
5. on the **Sales Order Line Maintenance** page, for the two order lines
 - a. click on the **New** button,
 - b. select the item in the drop down list,
 - c. enter the quantity ordered,
 - d. validate by the **OK** button.
6. click on the **Back** button and enter the second sales order,

7.3	Planned requirements deletion	Planning menu, Planned Requirements Deletion option	
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This function deletes all the planned work orders and the planned purchase requisitions.

7.4	Master schedules	Planning menu, Master Schedules option	
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Access the master schedule for item *BC100*.

You can see that the sales orders you entered are in the Sales Orders line.

By clicking on the **New suggestions** button, the new suggested orders are calculated.

7.5	Sales orders approval	Sales menu, Sales Order Maintenance option	
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Open successively the two sales orders that have been entered and approve each order by clicking on the **Approve** button. Confirm the approval.

7.6	Sales forecasts	Sales menu, Sales Forecasts option	
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Access the Sales Forecast page for item *BC100*. This page displays the forecasts and the sales orders,

7.7	Sales order book	Sales menu, Sales Order Book option	
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Access the sales order book. You can see all the goods which must be delivered.

7.8	MRP	Planning menu, Material Requirements Planning option	
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In order to take into account the sales orders, launch again the MRP procedure by clicking. Click on the **OK** button.

Planned to Firm Work Order Conversion [Planning]

If the planned orders are considered as satisfactory, they can be converted into firm orders (which are not modified anymore by next MRP procedures).

7.9	Work Order Conversion	Planning menu, Planned to Firm Work Order Conversion option	
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Enter *01/14/2022* as *Conversion End Date* and click on the **OK** button. This converts all the Planned Work Orders with an order date earlier than or equal to the date specified into **Firm Work Orders**.

7.10	Infinite Capacity Scheduling	Planning menu, Infinite Capacity Scheduling option	
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Launch again the **Infinite Capacity Scheduling** function and click on the **OK** button.

Once the infinite capacity schedule is made, it is possible to compute and display the corresponding periodic workloads for the different resources.

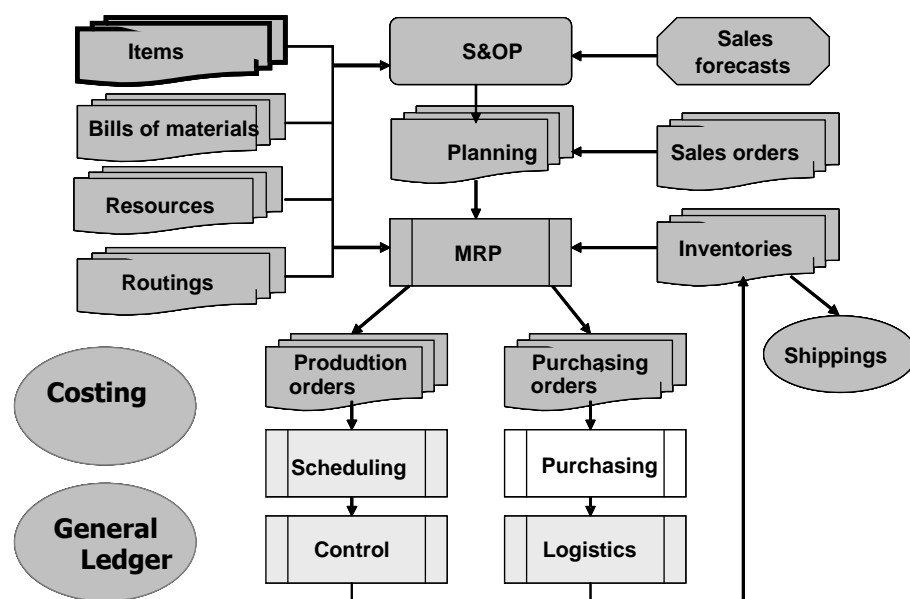
7.11	Work Load Profile	Planning menu, Work Load Profile option	
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Access the **Work Load Profile** page to display this analysis for the planned and firm work orders.

7.9	Purchase Requisition Conversion	Planning menu, Planned to Firm Purchase Requisition Conversion option	
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This convert the planned purchase requisitions Enter *01/28/2022* as *Conversion End Date* and click on the **OK** button. The generated firm purchase requisitions will have to be included into purchase orders.

Session 8: Purchase Orders Entry



The required purchased orders will be transmitted to the corresponding vendors (for a time horizon until 31/01/2001).

Purchase Order Entry

[Purchasing]

8.1	Purchase Orders	Purchasing menu, Purchase Order Maintenance option	
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The firm purchase requisitions are transformed into purchase orders.

Click on **New** in order to start a new order.

Select the vendor (namely *SUPPLY*) in the drop down list and enter *01/31/2001* as delivery date.

In order to integrate the purchase requisitions, click on the **PR Integration** button. Accept recording.

On the Purchase Requisition Integration window,

- 1- tick the **Select All** box to select all the purchase requisitions,
- 2- tick the **Delete Requisition Orders** and **Group Requirements by Item** boxes,
- 3- click on **OK**.

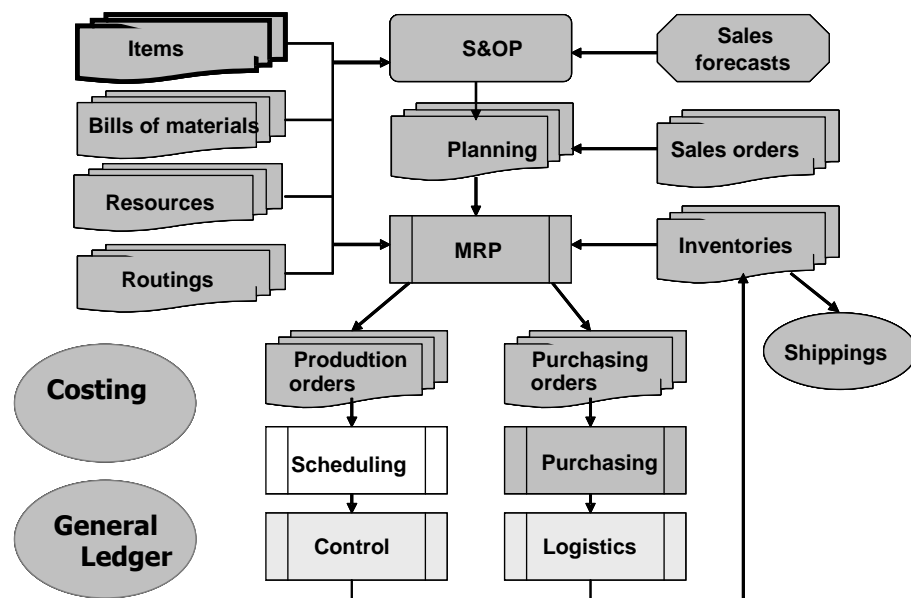
The purchase order lines have been prepared.

Click on the **Approve** button and confirm. This means that the purchase order is sent to the vendor.

8.2	Expected Receipts	Purchasing menu, Purchase Order Book option	
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The list presents the orders to be delivered by the vendors.

Session 9: Detailed Scheduling



Via MRP, a list of work order has been generated in order to deliver the item demands. The release date and the due date for each production order have been computed. The planned work orders have been converted into firm work orders.

Firm Work Orders List

[Scheduling]

9.1	Firm Work Orders	Scheduling menu, Firm Work Orders List option	
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Access the list of work orders to be scheduled. Double-click on the first order in the list. The **Firm Work Order Maintenance** page is posted

The panels in the page display a full description of the characteristics of the order.

Planning Chart and Machines Schedule

[Scheduling]

It is now necessary to plan the operation sequences of the firm orders. The **Detailed Scheduling** function plans the different operations for the resources, namely for the machines (while the **Infinite Capacity Scheduling** was made at the work center level). Clearly, for the

different work orders, scheduling has to take into account the release date and the due date defined by the MRP process.

9.2	Prepare Schedule	Scheduling menu, Finite Capacity Scheduling option	
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Select the **Prepare Schedule** option and select *01/14/2022* as *Scheduling End Date*. Click on **OK**.

The Machine Scheduling Chart is posted. Click on the **Options** button in the tool bar and tick the '**Display Working Days only**' option.

9.3	Work Order Scheduling		
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We schedule the operation of the first firm work order for item *BC100*. Click on this work order in the left panel list. The **Work Order Scheduling** window is posted.

Click on the **Schedule** button. The operation is scheduled i.e. Start date and End date have been calculated. Click on the **Close** button.

You can see that the work order operation has been placed on the chart.

9.4	Global Scheduling Process	Scheduling menu, Finite Capacity Scheduling option	
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Select: *Scheduling Type: Forward Scheduling, Work Order sorting criteria: Work Order Id*). Click on the **OK** button.

Click on the **Chart** button.

9.5	Due date analysis	Scheduling menu, Work Order Due Date Analysis option	
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Some work orders can be late with respect to the due date (or in advance with respect to the due date). This function displays an analysis of work order lateness.

9.6	Workload Profile	Scheduling menu, option Workload Profile	
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The workload profile associated to the schedule can be displayed.

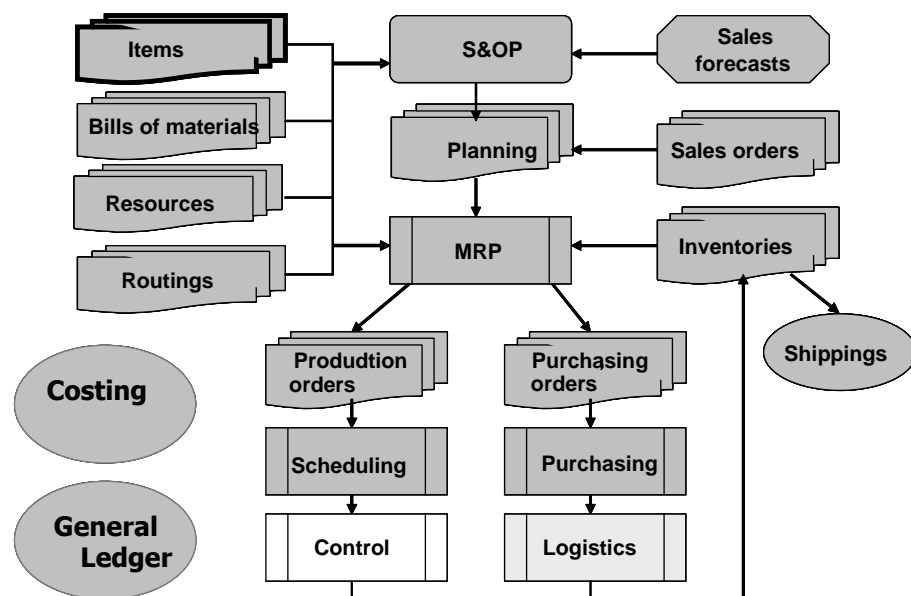
Priority Scheduling

9.4	Priority Rule Scheduling	Scheduling menu, Finite Capacity Scheduling option	
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Select: *Scheduling Type: Priority Scheduling, Priority Rule: FIFO*. Click on the **OK** button.

Click on the **Chart** button.

Session 10: Work Order Release and Production Activity Control



Work Order Release

[Control]

A firm work order release consists in the following steps:

- required materials and components have to be reserved in the corresponding warehouses,
- the exact characteristics of the required operations have to be defined (according to the release routing),
- start operations (with the planning defined by the detailed scheduling procedure).

10.1	Firm work order release	Scheduling menu, Firm Work Order Maintenance option	
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Select the first firm work for item *BC100*.

The **Components** tab displays the required component list, and for each of them, the required quantity and the available quantity in inventory.

Click then on the **Release** button (and confirm the release) in order to release this firm.

10.2	Open Work Orders	Control menu, Open Work Order Maintenance option	
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Examine then the open work order.

The complete information concerning this open work order is given in the three tabs (**Operations**, **Components** and **Dates**),

10.3	Component Status	Logistics menu, Inventory Inquiry per Item option	
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Select in the left panel list a component of the work order: SROD. Required components have been reserved in the their warehouses. Their status is changed from AVAI (Available) to RESV (Reserved).

10.4	Open Work Orders Components Issues	Control menu, Work Order Component Issue option	
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In order to issue the reserved components for the open work order, select the open order concerning item *BP100* and click on the **OK** button.

The issued components are recorded as work-in-process, as it can be displayed with the **In Process Inventory** function (**Logistics** menu).

10.5	Shortage analysis	Scheduling menu, Component Shortage Analysis option	
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As it is necessary to check availability of the required components before the release of a firm work order, the **Component Shortage Analysis** function provides a global analysis for all the firm work orders.

10.6	Mass Work Orders Release	Scheduling menu, Automatic Work Orders Release option	
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An automatic procedure permits the user to release all the work orders until a given horizon. Select *01/14/2022* as *Release End Date*.

Validate by the **OK** button.

10.7	Open Work Orders Schedule	Scheduling menu, Finite Capacity Scheduling option	
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The open work orders need to be rescheduled.

Select: *Scheduling Type: Forward Scheduling*, *Work Order sorting criteria: Due Date*). Click on the **OK** button.

Click on the **Chart** button.

Production reporting

[Control]

Production reporting consists in recording the actual time consumption and components consumption corresponding to the physical production of the open work orders.

10.8	Change the current date	Administration	
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Set the current date at *01/10/2022* on the Folder Administration page.

10.9	Production reporting for a work order	Control menu, Open Work Order Maintenance option	
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Select the first open work order related to the *BC100* item.

Display the operation by clicking on the **Operations** button.

Select the **Control** tab.

Click on **Reporting** button.

Enter the values as follows :

- Worker Id: PP
- Activity: 00 ((Production))
- Quantity Good: equal *Quantity to process*
- Times used:
 - Machine: equal *Standard Time*
 - Labor: equal *Standard Time*

Validate by clicking on the **OK** button.

The Operation status is changed to **Closed** and the Work Order status to **Completed**.

Click on the **Back** button. The operation maintenance page – Control tab – displays the current state of the operation.

Click on the **Back** button. The work order has now the status **Completed**, and there is a quantity of goods in the work shop.

10.10	Work Order Receipt Into Warehouse		
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Click on **Receipt** button in order to transfer the completed work order into the physical warehouse.

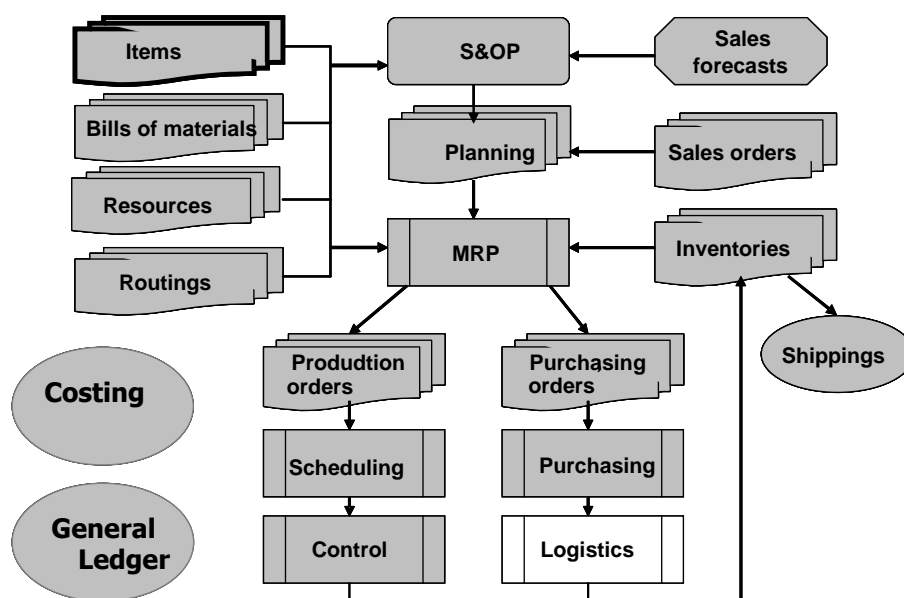
Validate the receipt by clicking on the **OK** button.

Click on the **Back** button.

10.11	Work Order Closing		
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Click on **WO Closing** button in order to close the completed work order and confirm.

Session 11: Purchase Order Receipt



Purchase order receiving

[Logistics]

The purchase order will be received into the warehouse.

11.1	Change the current date	Administration	
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Set the current date at *01/28/2022* on the **Administration** page.

11.2	Receiving	Logistics menu, Purchase Order Receipt option	
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Select the first order in the list.

The purchase order lines are displayed. Validate the receiving by clicking in the **OK** button. The order is now closed.

11.2	Inventory	Logistics menu, Inventory Inquiry by item option	
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The corresponding inventory levels for the received items can be displayed. Select item *PEG000*.

The list of inventory transactions can be displayed by clicking on a line.

Vendor Invoice Entry

[Purchasing]

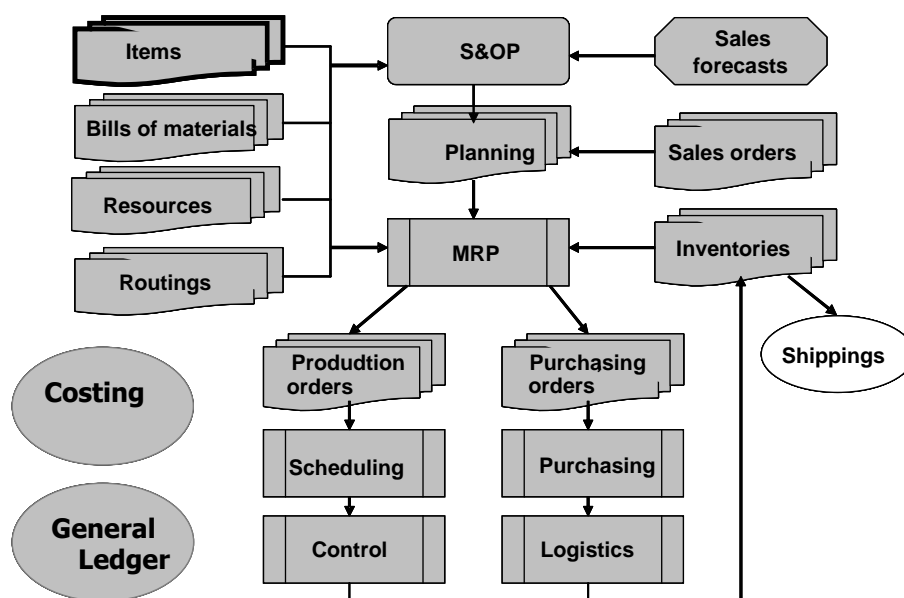
The vendor invoice is to be recorded.

11.4	Vendor invoices	AR&AP menu, Vendor Invoice Entry option	
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Click on the **New** button. Select the vendor *SUPPLY*. The list of receipt notes is displayed in the left panel. Click on the Receiving Note. Enter 12345678 as Vendor Invoice Id.

Validate by clicking on the **OK** button.

Session 12: Sales Order Shipping



Sales Order Preparation [Sales]

12.1	Sales Order Preparation	Sales menu, Sales Order Preparation option	
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Select the first sales order in the list.

The order lines are displayed. Validate the preparation by clicking in the **OK** button. The order should be prepared.

Do the same for the second sales order.

Sales Order Shipping [Logistics]

12.2	Sales Order Shipping	Logistics menu, Sales Order Shipping option	
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Select the **warehouse FGW** and the first preparation note.

The order lines are displayed. Validate the shipment by clicking on the **OK** button. The order is now closed.

Do the same for the second preparation note.

12.3	Inventory	Logistics menu, Inventory Inquiry by item option	
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The corresponding inventory levels for the received items can be displayed. Select items *BC100*,
The list of inventory transactions can be displayed by clicking on a line.

Customer Invoice [AR&AP]

12.4	Customer Invoice	AR&AP menu, Customer Invoicing option	
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Click on the **New** button. Select the customer *CUSTA*. The list of receipts is displayed.
Validate by clicking on the **OK** button.
Do the same for *CUSTB*.

12.5	Customer Invoice	AR&AP menu, Accounts Receivable Inquiry option	
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Select the customer *CUSTA*. The list of invoices is displayed.

12.6	Customer Invoice	AR&AP menu, Accounts Receivable Balance option	
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Select the customer *CUSTA*. The list of invoices is displayed.

Payments [AR&AP]

12.7	Change the current date	Administration	
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Set the current date at *03/01/2022* on the **Administration** page.

12.8	Customer Invoice	AR&AP menu, Customer Payments option	
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Click on the **New** button. The list of customers is displayed on the left panel. Select customer *CUSTA*.
The list of its invoices is posted in the grid.
Enter the payment amount equal to the total amount of the invoice.
Click in the 'Matching' column to note that the invoice is paid.
Validate by clicking on the **OK** button.

12.9	Customer Invoice	AR&AP menu, Accounts Receivable Inquiry option	
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Select the customer *CUSTA*. The list of invoices and payments is displayed.

12.10	Customer Invoice	AR&AP menu, Vendor Payments option	
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Click on the **New** button. The list of vendors is displayed on the left panel. Select the vendor.
The list of its invoices is posted in the grid.
Enter the payment amount equal to the total amount of the invoice.
Click in the 'Matching' column to note that the invoice is paid.
Validate by clicking on the **OK** button.

12.11	Customer Invoice	AR&AP menu, Accounts Payable Inquiry option	
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Select the vendor. The list of invoices and payments is displayed.