Chapter 2

Enterprise Systems

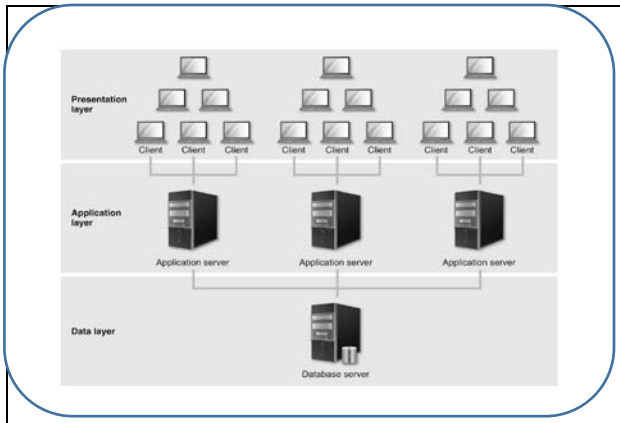
Enterprise Systems:

- Complex and powerful information systems that covered all the organization.
- Integrates data from the key Business Processes.

بيربط المنظمة ببعضها وبقدر أوصل للمعلومات بسهولة

Architecture of Enterprise Systems:

1- Client-Server Architecture	2-service-Orinted Architecture
Consists of 3 layers: 1)presentation layer: how you interact with the application. زي الفيسبوك او جوجل 2)Application layer: what the application allows you to do. 3)Data layer: where the application stores your work. NOTE: 1- Application layer and Data layer can be mixed in one layer. لكن انا مش بعمل كدا لان الداتا عندي حساسة جدا لو ضاعت انا كدا فقدت البيزنس بتاعي عشان كدا تفضل تبقي في لاير لوحدها 2- user interact with presentation layer only without knowing where other layers are.	Web services : Used to expose ES (and other system) functionality. Standard interface – input and output. By using Web services, we can integrate multiple client-server applications. Composite applications: Connect multiple applications via Web services.



By using web services, we can Build new capabilities without changing the underlying applications.

مثلا لما باجي ادفع في نون بدخل بيانات الكارد بتاعي والفلوس بتتسحب علي طول, طب ازاي دا حصل؟ عن طريق ان نون والبنك تواصلو عن طريق ويب سيرفس , يعني خدمة ربطت الاتنين ببعض من غير ما اغير حاجة ولا اعمل سيستم جديد

Types of Enterprise Systems:

1) Supply Chain Management (SCM):

It helps the Enterprise with planning for their production requirements and optimize complex transportation and logistics for material. بيساعد المنظمة للتخطيط لاحتياجتها ووسيلة الحصول عليها.

2) Supplier Relationship Management (SRM):

it manages the relationship with the material Suppliers, also manages the quotation and Contracts Processes. إدارة المعاملات والعلاقات مع الموردين

3) Customer Relationship Management (CRM):

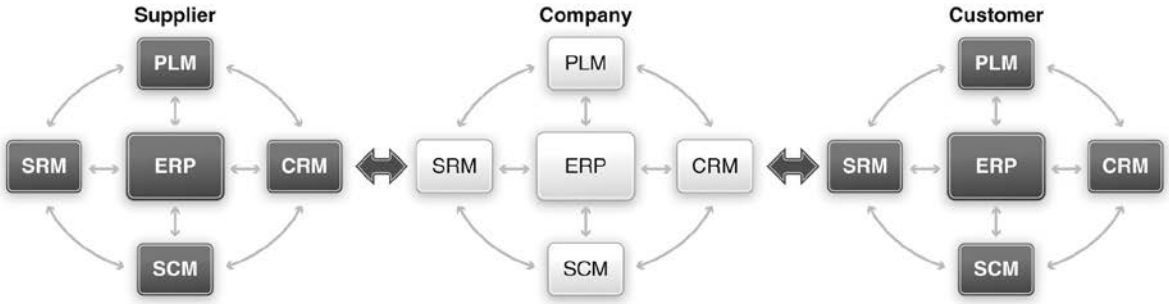
it helps with connecting the company with its customers and manage marketing, sales and customer service. إدارة العلاقات مع العملاء

4) Product Lifecycle Management (PLM):

it helps the enterprise to research, design and Management it's Product. نظام بيساعد المنظمة على تصميم و إدارة و تطوير منتاجاتها

5) Enterprise Resource Planning Systems (ERP):

- is the world's most popular Enterprise System.
- Focus primary on internal operations of an organization.
- Integrate functional and cross-functional business processes.



الرسمة بتوضح فكرة ال ES , اني مثلا بكلم العملاء عن طريق ال CRM وبكلم الموردين عن طريق ال SRM وبالنسبة للمورد انا عميل ف هو بيكلمني من CRM وبالنسبة للعميل انا مورد ف يكلمنى منSRM

Sap ERP Modules

- Production Planning (PP)
- Materials Management (MM)
- Sales and Distribution (SD)
- Plant Maintenance (PM)
- Project Systems (PS)
- Quality Management (QM)
- Financial Accounting (FI)
- Management Accounting / Controlling (CO)
- Human Resources (HR)
- Business Intelligence (BI)

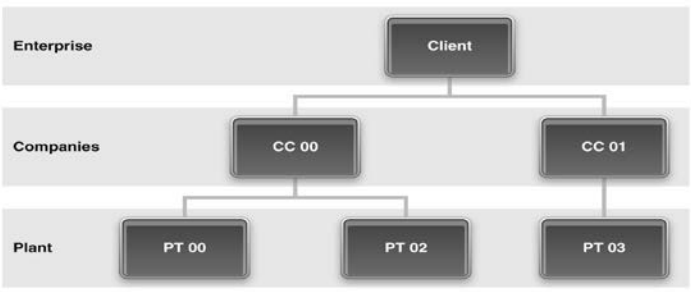
Data in an Enterprise System

1- Organizational Data 2- Master Data 3- Transactional Data

1) Organizational Data: البيانات الي بتمثل الهيكل التنظيمي للمنظمة والمستويات الادارية

- Defines the structure of the enterprise . لو شركة عندها فروع في مصر وبرا مصر أكون عارف تفاصيل الهيكل التنظيمي وفروعها وفين المصانع والمخازن
- Data rarely changes . مش كل يوم هفتح كلية جديدة وقسم جديد
- Consists of 3 levels:

1- Client	1- The Highest Level. الشركة الأم 2- Client can have Multiple company code.
2- Company Code	1-Central organizational element in financial accounting 2- Legally independent from other companies in the enterprise زي كلية تجارة وحاسبات رغم انهم تحت اسم جامعة اسكندرية لكن كل واحدة فيهم مستقلة بذاتها قانونيا وماديا وتحاسب قانونيا لوحدها وتقدم القوائم المالية بتاعتها لوحدها. 3- Company code must belong to only one client
3- Plant	1- Performs Multiple functions. 2- Not only a factory but it can be a warehouse or an office. 3- Must belong to only one company code.



2- Master Data: الكيانات الي المنظمة بتتعامل معاهم

- is a Long-term data that represent entities associated with all processes. عشان مش بتتغير كل يوم سواء عملاء او موردين بقعد معاهم فترة كبيرة
- It Includes:

  1- Customer Master Data

  2- Vendor Master Data

  3- Material Master Data و دي الي هتكلم عنها

Material Master Data: كل الماتريال والمنتجات الي في المنظمة

- Data about the material which used in many processes.
- Each process requires data about the material
  - Data are grouped based on 3 حجات

    1- Process: the material master data includes different categories or views about materials, each of them is relevant to one or more processes. مثلا في عملية التصنيع لازم اعرف معلومات عن المواد الخام الي هستخدمها او عملية البيع لازم يكون معايا داتا عن المنتجات الي ببيعها ومتوفر منها كمية اد ايه وطرق شحنها.

و ال views بتختلف علي حالة المنتج عندي.. مثلا لو لسا مادة خام ف مش هيكون عندي sales view لان مش هيهمني هبيع لمين ولا بكام..لاني لسا بنتجه . ممكن احتاج production viewاو storage view بيتخزن فين والكميات المتاحة منه , دي المعلومات الي تهمني دلوقتي. وهنعرف دا دلوقتي اكتر.

2- Material Type: بقسم حسب حالة او نوع الماتريال

* الاختصارات الي جاية مهمة و دي زي كود بنستخدمه لما نعمل سيرش في ال SAP لان منهجنا كله يخص ال SAP ERP*

Material Type		Related Views	Not Available Views	Code In SAP
Raw material	Purchased, not sold, used in production.	Purchasing- and production	No sales-related view	**ROH**
Semi-finished goods	• Produced using other materials. • Used in the production of other materials	production	Not purchased or sold	**HALB**
Finished goods	• Produced using other materials (ROH, HALB) • Sold to customers.	Sales-view	Not purchased	**FERT**
Trading goods	Purchased and resold without additional processing	purchased or sold	Not Produced	**HAWA**

3- Organizational Level:

- Same material can be used differently by different organizational levels.
- HALB in one, FERT in another.

مثال انا شركة ملابس عندي مصنعين.. مصنع **A** بيصنع زرايز القمصان دا كدا بالنسباله ومصنع**B** بيصنع القمصان بياخد الزرايز من المصنع **A** عشان يستخدمها في صنع القمصان . ف بتكون الزرايز بالنسبة لمصنع **B** انها semi-finished goods.. لان انا المنتج النهائي عندي هيكون القميص.

3- Transaction Data:

- Data generated during execution of process steps.
- It frequently changes.
- It consists of 3 types of data:
  - Organizational data
  - Master data
  - Situational data

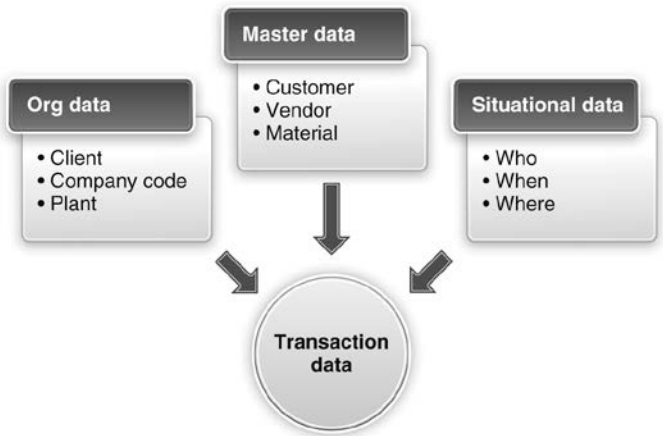
Example: sales order creation. **مثلا فاتورة من فتح الله**

1- Organizational Data: Client, Company Code, Sales Area. فتح الله, الإسكندرية, فرع المنتزة

2- Master Data: Material. اشتريت ايه واد ايه وبكام

3- Situational Data: Date, Time, Sales Person. تاريخ العملية و الوقت واسم الكاشير

ال **Transactional Data** بتتكون من العمليات اليومية زي مثلا عمليات ال **ATM** او الشحن او تحويل فودافون كاش, التفاصيل الي بتطلعلك علي الفاتورة دي **transactional data.**



Documents:

A) Documents are created while the process is being executed:

1. Transaction documents, Example: Requisition, purchase order, invoice, delivery document .

B) Documents that record data generated after the process steps had completed. بعد تنفيذ العملية بيتعمل ملفات متخزن فيها الداتا بتاعت كل عملية

1- FI Documents	Record the impact on **financial accounting.** مثلا لما الشركة تستلم فلوس من العملاء بيكون في تأثير مالي يعني حصل زيادة في فلوس الشركة ف بيتعمل **fi document** متسجل فيه كل الداتا الي تخص العملية دي
2- CO Documents	Record the impact on **management accounting**. زي تكاليف الانتاج
3- Material Documents	Record the impact on **material status** (value, location) لما اجي استلم ماتريال من ال**vendor** او ابعت ماتريال ل **customer** لازم يحصل **update** للمخزون عندي سواء بالزيادة او النقصان ف بيتعمل **material document** فيها البيانات دي

Reporting: دلوقتي عندي كميات كبيرة من الداتا منها حجات ملهاش لازمة فانا محتاج اجمع الداتا واعرضها واحللها واعمل ريبورت يساعدني في اتخاذ القرارات.

بعض المفاهيم المهمة

Transaction data: data relate to processes that are currently in use or have been completed recently, within days or weeks.

Historical data: data are comprised of transaction data for processes that have been completed within months or years.

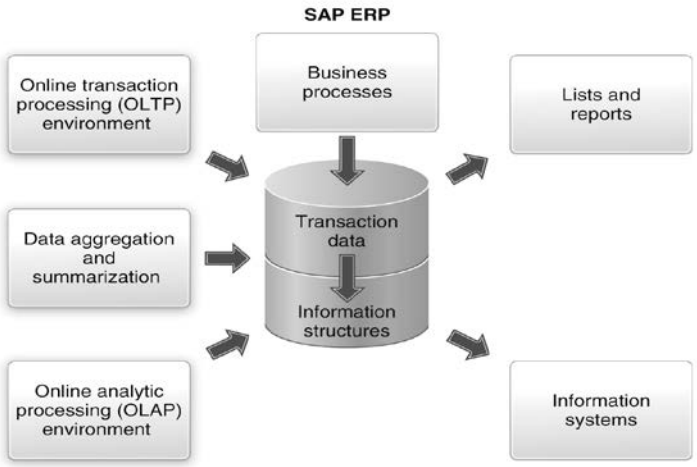
Reporting: is a general term used to describe the ways that users can view and analyze both transaction and historical data to help them make decisions and complete their tasks.

ونخلينا عارفين ان **SAP** بتديني نوعين من ال **Reporting**:

Simple lists of data: يديني الداتا زي ما هي في صورة معلومات

Analytics: يحللها ويديني ريبورت مفهوم

Online analytic processing **(OLAP)**	Online transaction processing **(OLTP)**
1- Environment in the form of information systems that use information structure to provide analytic capabilities. 2- Work on information structures: aggregated and summarized forms of transaction data that enables users to analyze data as needed. **بياخد الترانزكشن داتا ينضفها من المعلومات الي ملهاش لازمة زي الوقت واسم الكاشير ويطلعلي معلومات صافية اقدر احللها واشتغل عليها واتخذ القرارات زي منتج اتباع منه اد ايه خلال العام** 3- provide reporting in the form of analytics via information systems.	1- is designed to capture and store detailed transaction sata. 2- works on transaction data. 3- **NO** analytical capabilities, provides reporting in the form of lists. **زي الscanner بتاع الكاشير بيلقط بيانات المنتجات عشان يطلع فاتورة** **بيعرض الداتا على شكل list**



Types of lists in OLTP:

1- Online lists : displays the document with a status that requires processing. Ex: Open quotation.

2- Work lists : identify tasks that are scheduled to be completed In a process.

to do list اكنها

Ex: Picking due list الشحنات الي محتاج اجهزها للشحن

Billing due list الحجات الي محتاج ادفعها

Delivery due list الشحنات الي جاهزة تتشحن

Three broad categories OLAP information systems:

1) logistics information systems:

support all of the logistics processes, logistical processes are concerned with acquiring, storing, creating, and distributing materials. Examples:

- ✓ Purchasing IS. ✓Sales IS.
- ✓ Inventory control IS.
- ✓ Shop floor IS.

2) financial information systems :

supports reporting related to:

- ✓ the general ledger.
- ✓ accounts receivable.
- ✓ accounts payable.

3)human resources information systems :

is used to retrieve information about different HR components such as personnel, positions, and jobs.

دلوقتي عاوز اعرف ال information structure الي الinformation systems بتستخدمهم لتحليل الداتا:

1- Standard information structures: are predefined in the SAP ERP system, and they collect the data needed to generate the most commonly used reports.

دا بيعرضلي الداتا المستخدمة في اغلب التقارير زي اسم المنتج و الكمية الي اتباعت. يعني مش بيخليني اعمل حاجة, هو بياخد ال ترانسكشن داتا الخاصة بكل عمليات البيع عندي ويصفي ويشيل الحجات الملهاش لازمة ويديني تقرير خاص بالمبيعات.

2- user defined information structures: enables users to define their own structures to meet specific reporting requirements.

مثلا لو انا عاوز التقرير بتاعي يكون في معلومات زيادة علي مزاجي ف بيخليني اعمل هيكل خاص بيا بالمواصفات ال عايزها, مثلا انا حابب ازود في التقرير الوقت واسم الفرع.

Each information structure in the OLAP environment is defined in terms of three features: characteristics, key figures, and period definition.

Period	Characteristic		Key figures	
Date	**Customer**	**Material**	**Sales quantity**	**Sales amount**
5/12/09	Rocky mountain bikes	DXTR8000	23	$64,400
5/19/09	Philly bikes	PRTR8000	45	$135,000
5/23/09	Beantown bikes	DXTR8000	34	$95,200
....	....	....	....	....

عندي طريقتين لتحليل الinformation structure في sap:

1- Standard analysis: Provides predefined analytics for data in standard information structure.

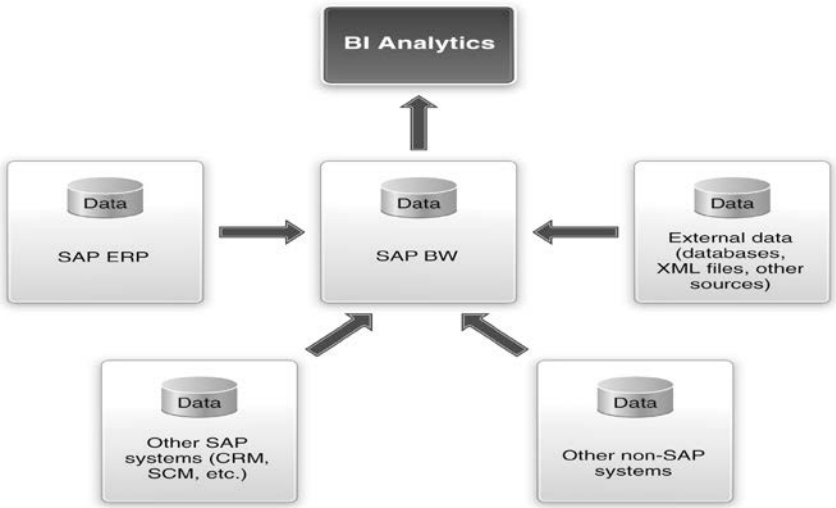
2- Flexible analysis: allows users to define the content and format of the analysis.

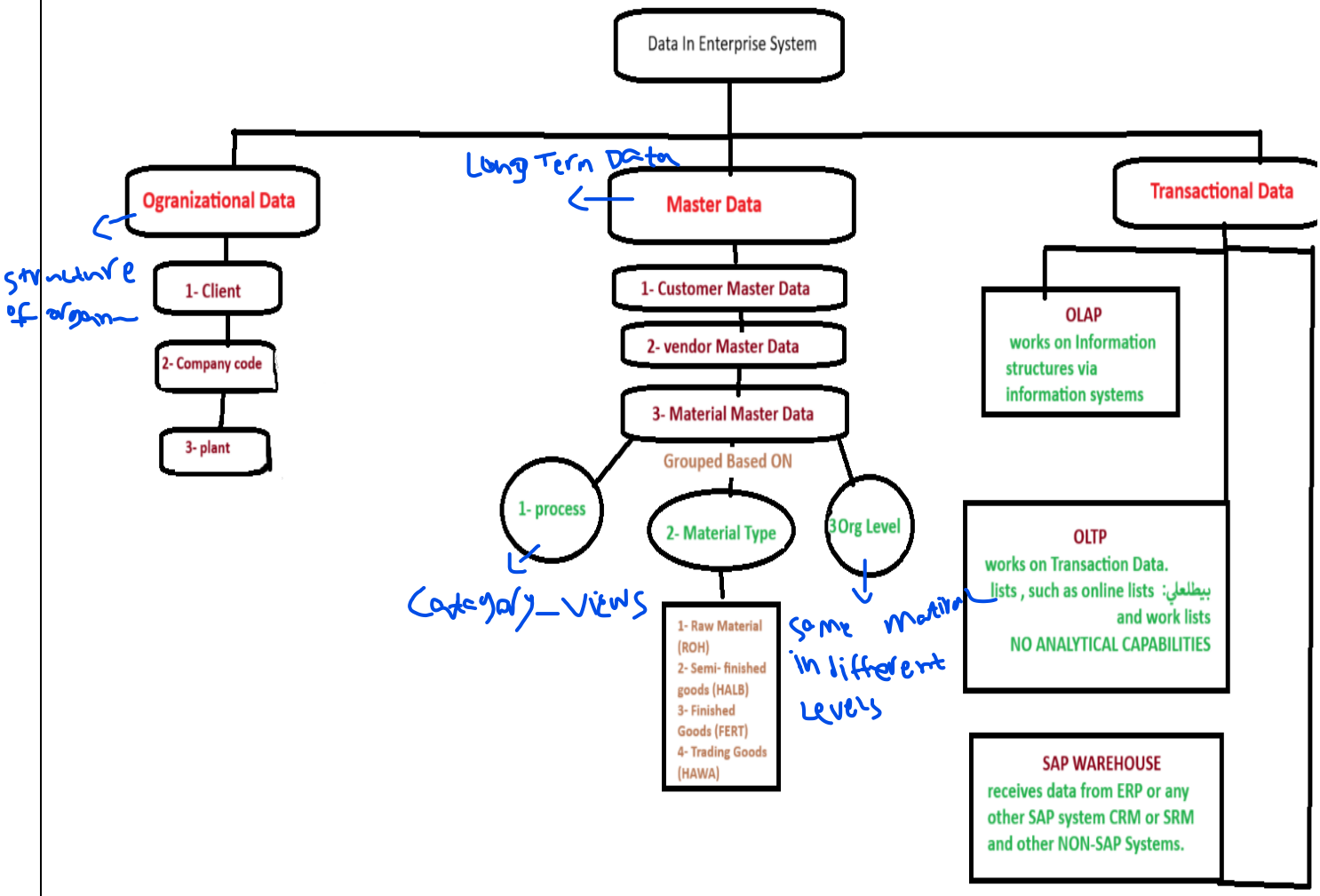
SAP Business Warehouse

دلوقتي انا لو عاوز حاجة اقوي من ال olap وتقدر تدخلي داتا من مصادر من برا ومن أي حتة, ف SAP وفرتلي ال BW ومن خلاله اقدر اتعامل مع ال Business intelligence

Business intelligence: is a general term that refers to the overall capabilities a company uses to collect and analyze data from variety of sources, for that purpose, business use SAP Business Warehouse.

SAP Business Warehouse: is a separate system that receives data from the SAP ERP System, other SAP Systems, such as SAP CRM and SRM , and other **non-sap Systems**.




Data In Enterprise System
Ogranizational Data
Master Data
Transactional Data
1- Client
2- Company code
3- plant
1- Customer Master Data
2- vendor Master Data
3- Material Master Data
Grouped Based ON
1- process
2- Material Type
3Org Level
1- Raw Material (ROH)
2- Semi- finished goods (HALB)
3- Finished Goods (FERT)
4- Trading Goods (HAWA)
OLAP
works on Information structures via information systems
OLTP
works on Transaction Data.
lists , such as online lists
and work lists
NO ANALYTICAL CAPABILITIES
SAP WAREHOUSE
receives data from ERP or any other SAP system CRM or SRM and other NON-SAP Systems.

T OR F

1-The architecture of an enterprise system refers to the technical structure of the software, how users interact with the software, and how the software is physically managed on computer hardware.

2-The three layers of the "three-tier client-server architecture" are the presentation layer, windows layer, and data layer.

3-When you access the Internet, your browser is the presentation layer.

4- Service-oriented architecture (SOA) is the fundamental concept behind systems connecting through standardized interfaces called Web services.

5- Enterprise resource planning (ERP) focuses on the internal operations of an organization.

6- Customer relationship management (CRM) systems connect a company's ERP system to its accounting software system.

7- Supply chain management (SCM) systems help companies execute the processes of research, design, and product management.

8- Organizational data are used to represent the structure of an enterprise.

9- A company code is the highest organizational level in SAP ERP.

10- A client represents each company within an enterprise.

11- Material master are organizational elements that performs multiple functions and is relevant to several processes.

12- A plant can be a factory, a warehouse, a regional distribution center, or a service center.

13- The material master includes a large amount of data because it is used in numerous processes.

14- Materials are categorized into different material types based on the way they are used in the firm's operations.

15- The four most common material types are raw materials, semi-finished goods, finished goods, and exported goods.

16- Raw materials (ROH) are purchased from an external source -a vendor- and used in the production process.

17- Trading goods (HAWA) are resold to customers after they have been modified by the company.

18- Transaction data reflect the consequences of executing process steps.

19- The financial accounting documents, management accounting or controlling documents, and material documents are all “virtual.”

20- Reporting is a general term for the methods a user can utilize to update data in the ERP system to execute process steps.

21- The online transaction processing (OLTP) system is designed to capture and store detailed organizational data.

22- online lists identify tasks that are scheduled to be completed in a process.

1	2	3	4	5	6	7	8	9	10	11	12	13	14
T	F	T	T	T	F	F	T	F	F	F	T	T	T

15	16	17	18	19	20	21	22
F	T	F	T	T	F	F	F

Choose:

1. Which term relates to the technical capabilities that allow systems to connect with one another through standardized interfaces called Web services?

A. Enterprise Resource Planning

B. Supply Chain Management

C. Architecture

D. Service-Oriented Architecture

2. Which term refers to the technical structure of the software, how users interact with the software, and how the software is physically managed on computer hardware?

A. Architecture

B. Supply Chain Management

C. Enterprise Resource Planning

D. Service Oriented Architecture

3. Which system connects a company's ERP system to those of its customer?

A. Application Platform

B. Customer Relationship Management (CRM)

C. Enterprise Solution

D. Product Lifecycle Management (PLM)

4. Which of the following systems helps companies administer the processes of research, design, and product management

A. Application Platform

B. Customer Relationship Management (CRM)

C. Enterprise Solution

D. Product Lifecycle Management (PLM)

5. The highest organizational level in SAP ERP is the

A. Vendor

B. Client

C. Material Master

D. Plant

6. Which of the following is (are) used to represent the structure of an enterprise?

A. Organizational Data

B. Project Management

C. Client

D. Plant

7. Which of the following terms refers to an organizational element that performs multiple functions and is relevant to several processes?

A. Warehouse

B. Procurement

C. Plant

D. Fulfillment

E. Lifecycle Data Management

8. How many company codes can a plant belong to?

A. One

B. Two

C. Three

D. Any Number

9. Which of the following master data is used in numerous processes?

A. Material Master B. Plant

C. Company Code

D. Customer Master

E. Vendor Master

10. Materials that are created by the production process from other materials are referred to as

A. Finished Goods (FERT)

B. Semi-finished Goods (HALB)

C. Trading Goods (HAWA)

D. Raw Materials

E. None of the above

11. What type of materials is purchased from a vendor?

A. Trading Goods

B. Finished Goods (FERT)

C. Semi-finished Goods (HALB)

D. Material Types

E. None of the above

12. Materials that are purchased from an external source (a vendor) and used in the production process are known as _____

A. Finished Goods (FERT)

B. Semi-finished Goods (HALB)

C. Trading Goods (HAWA)

D. Raw Materials

E. None of the above

13. Which of the following terms refers to materials with similar characteristics?

A. Material Master

B. Material Group

C. Transaction Data

D. Material number

E. None of the above

14. _____reflect(s) the consequences of executing process steps.

A. Material Groups

B. Organizational Data

C. Transaction Data

D. Project Management

E. None of the above

15. Financial accounting (FI) documents management accounting or controlling (CO) documents, and material documents are referred to as

A. Transaction Documents

B. Transaction Data

C. Material Group

D. Virtual Documents

E. None of the above

16. Which term is generally used to describe the ways that users can view and analyze data to help them make decisions and complete their tasks?

A. Reporting

B. Evaluating

C. Characteristics

D. Period Definition

E. Online Analytic Processing (OLAP)

17. Which of the following is(are) used to capture specified transaction data in an aggregated and summarized form that enables users to analyze the data as needed.

A. Reporting

B. Evaluating

C. Information Structures

D. Period Definition

E. Online Analytic Processing (OLAP)

18. Which of the following identify tasks that are scheduled to be completed in a process?

A. Online Lists

B. Parameters

C. Information Structures

D. Work Lists

E. Period definitions

19. A three-tier architecture includes which of the following components?

A. Data layer

B. Presentation layer

C. Application layer

D. All of the above

20. Which of the following SAP systems are used to support inter-company processes?

A. SAP ERP

B. SAP SCM

C. SAP CRM

D. B and C

E. A, B and C

21. Which of the following are examples of master data in SAP?

A. Vendor

B. Customer

C. A and B

D. None of the above

22. A plant can be used to represent which of the following?

A. A factory

B. A storage facility (warehouse, DC)

C. An office

D. All of the above

E. None of the above

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
D	A	B	D	B	A	C	A	A	A	A	D	B	C	D	A	C	D	D	A	C	D