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# Software Requirements Specification Document for SYSTEM APPLICATION PROGRAM(SAP)

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# Table of Contents

# 1. Introduction

## 1.1 Purpose:

System Applications Program(SAP) is intended to provide automation to the entire business procedure, right from purchasing goods to production to sales. It is a generic program that can be tailored as per small and medium firm. SAP has a user-friendly interface that serves as a central ERP access point. This document is meant to delineate the features of SAP, so as to serve as a guide to the developers on one hand and as software validation document for the prospective client on the other.

## 1.2 Scope:

I describe what features are in the scope of the software and what are not , for the software to be developed.

*In Scope:*

a. To provide administrative rights to control company's credentials and transactional procedures.
b. To create new company and initializing system parameters.
c. To provide purchase-related operations and control purchase mechanism.
d. To provide sales-related operations and control sales mechanism.
e. To update inventory and business-partners of company.
f. User authentication.
g. To provide production-related operations and control production mechanism.
h. To control financing and banking operations.
i. To manage human resources of company.

*Not in Scope:*

a. All the features of current SAP being used by various MNC and SSI.

## 1.3 Definitions, Acronyms, and Abbreviations:

Acronyms and Abbreviations:
a. SAP B1: SAP Business one.
b. SRS: Software Requirements Specification.
c. WWW: World Wide Web.
d. GUI: Graphical User Interface.

## 1.4 References

To develop the SRS Document, I have taken the following materials as a reference: Existing SAP Business one software's online guide and support desk.

### 1.5 Overview

1. The Following section describes the Basic Requirements (Hardware/Software Requirements, Memory Constraints, Interface required, etc…), Specific Requirements (External Interface, Functions, Performance Requirements etc...), Software Functions ,User Characteristics , Constraints etc..

2. The SRS Document is divided into 6 Sections.

- The 1st Section defines the Introduction of Software.
- The 2nd Section defines the whole Description of the Project including Software Perspective, Software Functions, User Characteristics, Constraints, etc…This may be used by Potential Users.
- The 3rd Section defines the Requirements of the Project i.e. External interfaces, Functions, Performance Requirements, Logical Database Requirements, Design Constraints, etc…This may be Used by Potential Users.
- The 4th Section defines the Change Management Process that mentions that if administrator wants to make any change in project after delivery of the project then how he will contact us. This is used by the Potential Users who want to modify the system as per their Requirements.
- The 5th Section defines the Approval Certificate of Project.
- The 6th Section includes the Supporting Information of the Project that may be used by Potential Users to find their requirement in form of table and Appendixes.

## 2. The General Description

This Section defines the basic Requirements used in background of the Project. These Requirements are listed below.

**Software Perspective**

This project is a Simple Desktop application, like client-server Application. Moreover it is a networked application, in which multiple users access multiple databases to control various business activities.

*Specifications:-*

*Hardware:*

- Any system with Windows XP or higher version.
- GHz, 2GB Ram, 80 GB HDD, 15”TFT or CRT monitor, Optical Mouse, MM Key board, Serial & Parallel port
- Suitable printer

*Software:*

- A computer must be running Windows XP or/and above.
- The application is optimized for screen resolution of 1024x768 and above with Minimum 16 bit color.
- Server must be equipped with any database utility and Microsoft Windows OS.

- For hosting the database, the server need to be equipped with secured SQL or ACCESS database and all machines should be in LAN/ WAN with server depending upon the locations.

### 2.1.1 System Interfaces

Interfaces: JAVA or Visual Studio 2008/2005 (VB.NET)
MS ACCESS or SQL Server

### 2.1.2 Interfaces Specify:

- The System can be made in JAVA or VB.NET and every user must be connected with the server for daily transaction.
- The System will interact with the User through GUI. So, User can easily operate with the System.

### 2.1.3 Hardware Interfaces

- Printer
- Server Connection.

### 2.1.4 Software Interfaces

Specify the use of other required software and interfaces with other application systems. For each, required software include:
• Name: MS ACCESS or SQL Server, Visual-Studio
• Version number: MS ACCESS 2003 or SQL Server 2005, Visual Studio 2005 or 2008
• Source: Windows XP bootable CD, MS OFFICE 2003 CD, Visual studio 2005 and/or 2008 CD.
• The System is made in VB.NET. The user must have the visual studio 2005 and MS ACCESS or SQL Server to have communication with administrator.

### 2.1.5 Communications Interfaces

• The System is Desktop based and interaction between users and administrators take place through Network Service.

### 2.1.6 Memory Constraints

• The Memory Constraints for running the project is:
RAM: 2 GB
Hard Disk: 1 GB free

### 2.1.7 Operations

The normal and special operations required by the administrator and operators are:

- The SAP is an ERP application to assist through real-time business activities like administration, purchase, production, sales, logistics, HR management, accounting and finance.

- Minimize repetitive work done by the system administrator and clerks. Maintain consistency among different access modes, e.g. by phone, by web, at the information desk and across different physical locations.

- The users should be able to access any information regarding any company provided they have access rights.

- Maintain business information regarding all the transactions of the company like generating purchase order, sales order, production order, invoices, tax payments, accounts, inventory management.

- Increase automation of business activities and leads to optimization.

- Reduce effort and frustration for employees in getting the information regarding any matter of the company, especially by reducing the time and efforts for the information need.

- Show all possible information that a employee should know as well as for the admin regarding the work of administration.

- Reduce redundancy in the information required from the employees in order for them to save time and information is available as and when required.

- Check the validity of input data and give a feedback to the user in case of errors or inconsistency.

- Provide different access modes to users, administrator and clerks. Protect confidential information from unauthorized access.

### 2.1.8 System Adaptation Requirements

The System Adaptation requirements for our system are

- Net framework 2.0
- Any of the MSDE(Microsoft Desktop Engine)
- System Setup which is installed on the user machine.

## 2.2 Software Functions

- User Authentication
- Staff administration
- Business-partner Administration
- Account Management
- Production Process
- Sales information

• Purchase Information
• Inventory Information
• Report Generation
• Bank Account Management
• Tax Payment Management
• Human Resource Management
• Others

### 2.3 User Characteristics

An employee at any level, needs a very good experience of using software. Only a trained personal can operate the system in efficient manner.

### 2.4 Constraints

The general descriptions of any other application that will limit developer's options are:

- Regulatory policies – Copyright will be as per systems. All Rights Reserved. Except as permitted under the Indian Jurisdiction copyright act. No part of this software may be reproduced or distributed in any form or by any means, without the prior written permission of the developing organization.

- Some ancillaries including the documentation except the user manual will not be available to the user until a prior execution of the application.

- All the other issues/disputes regarding the terms and conditions shall be liable to the Indian Jurisdiction.

- There is no interface with other application because it is simple client-server desktop application.

- The system is 100% reliable.

- Improper knowledge of the user about the system leads to the criticality and inconsistency of the system.

- Back-up and recovery system is available for safety and security.

### 2.5 Assumptions and Dependencies

If the Central Database System changes to Distributed Database System, then system requirements affect and it should be changed accordingly.

### 2.6 Apportioning of Requirements

The Functionalities that can be included in the future version are:

- SAP that includes other functionalities.

## 3. Specific Requirements

The SAP will provide the following types of easy-to-use, interactive, and intuitive graphical and telephonic interfaces.

- The UMS will provide an easy-to-use, intuitive Graphical User Interface (GUI) as part of the Clerk/Administrator's working desktop environment.
- The UMS will also provide an interactive GUI, on the World Wide Web for the general customers.

### 3.1 External Interfaces

#### 3.1.1 User Interfaces

- The interface must be easy to understand. The user interface includes
  - **SCREEN FORMATS/ORGANIZATION:**
    The introductory screen will be the first to be displayed which will allow the users to choose either of the two options, viewing University detail or he can login as an admin.
  - **WINDOW FORMAT/ORGANIZATION:**
    When the user chooses some other option, then the information pertaining to that choice will be displayed in a new window which ensures multiple windows to be visible on the screen and the users can switch between them.
  - **DATA FORMAT:**
    The data entered by the admin will be alphanumeric.
  - **END MESSAGES:**
    When there are some exceptions raising error like entering invalid details, then error messages will be displayed prompting the admin to re-enter the details.
  - **PRINT FACILITY:**
    User and admin both can take the print out of related information through available print options.

#### 3.1.2 Hardware Interfaces

The system must basically support certain input and output devices. Their descriptions are as follows.

| | Description of Purpose | Source of Input/<br>Description of output |
|---|---|---|
| Key board | To accept data from user like item name, purchase order, etc | Source of Input |
| Printer | To print the reports E.g.:Sales Report. | Destination of Output |

### 3.1.3 Software Interfaces

Not applicable since the product under considerations is an independent one.

### 3.1.4 Communication Interfaces

Every client system connected through LAN establishes a communication only with the server and not with any client system. An LAN of 10 Mbps is used.

## 3.2 Functions

Functional requirements define the fundamental actions that must take place in the software in accepting and processing the inputs and generating the outputs. These are generally listed as "shall" statements starting with "The system shall…

These include:

- Validity checks on the inputs
- Exact sequence of operations
- Responses to abnormal situation, including
    - Overflow
    - Communication facilities
    - Error handling and recovery
- Effect of parameters
- Relationship of outputs to inputs, including
    - Input/output sequences
    - Formulas for input to output conversion

It may be appropriate to partition the functional requirements into sub-functions or sub-processes. This does not imply that the software design will also be partitioned that way.

## Requirements:

**R1 Login**

**R1.1 Verify login and password**

Input : User provides user name and password.
Output : System allows user to proceed.
Processing : System verifies user name and password.

**R1.2 Check user type and rights given to users**

Input : User provides user name and password.
Output : System allows access to the system if user is authenticated.

Processing : System verifies user name and password.

**R2 Change Company**

Input : User provides user name and password.
Output : System allows access to the system if user is authenticated.
Processing : System verifies user name and password.

**R3 Administration**

**R3.1 Change Company**

Input :User selects company from list.
Output :System allows access to selected company's data.
Processing:Checks access rights of user.

**R3.2 System Initialisation**

Input :System configuration settings.
Output :System stores specified configurations.

**R3.3 Change Rates and Indexes**

Input :User enters new rates and indexes.
Output :System stores specified configurations.

**R3.4 Data Import/Export**

Input : User selects data to be imported or exported.
Processing : System incorporates changes in data-base during import or export.

**R4 Purchase**

**R4.1 Purchase Quotation**

Input :User enters various quotations of vendors.
Output :System displays best quotation.
Processing:System compares various quotations based on goods prices.

**R4.2 Purchase Order**

Input :User enters goods purchase details.
Processing:System updates stock data master.

**R4.3 Goods Receipt**

Input :User enters information about goods recieved.
Output :Sytem generates reciept.

**R4.4 Goods Return**

Input :User enters details of goods to be returned to vendor.
Processing:System updates stock data master accordingly.

**R4.5 Invoice Generation**

Input :User enters goods purchase details.
Output :System generates invoice for vendor.

**R4.6 Credit Memo**

Input :User enters details of goods to be returned to vendor.
Output :System generates new invoice.
Processing:System updates stock data master, cancels previously generated invoice.

**R4.7 Report**

Input :User specifies start and end dates.
Output :System generates purchase report.

**R5 Inventory**

**R5.1 Item Master Data**

Input : User enters information about item.

Processing: System updates item data master.

**R5.2 Item Management**

**R5.2.1 Managing Serial Numbers.**

Input : User manages items by serializing them.

Processing : System updates data master.

**R5.2.2 Managing Batch Numbers.**

Input : User manages items by grouping them in batches.

Processing : System updates data master.

**R5.2.3 Defining Alternative Items.**

Input : User defines alternatives for each item for unavailability of that item.

Processing : System updates data master.

**R5.3 Price List**

Input : User enters prices of a item for different business-partners.

Processing : System updates data master.

**R5.4 Report**

Input :User specifies start and end dates.

Output :System generates item inventory report.

**R6 Production**

**R6.1 Bills of Materials**

Input : User enters quantities of components required for producing a product.

Processing : System records details in data master.

**R6.2 Production Order**

Input : User enters steps of using components to produce an item.

Output : System generates production order receipt.

**R6.3 Receipt from production**

Input : User enters end-date and description of produced item.

Output : System generates receipt of production completion.

**R6.4 Report**

Input :User specifies start and end dates.

Output :System generates production report.

**R7 Sales Opportunities**

**R7.1 Sales Opportunities**

Input : User manages sales process stages for various business-partners.

Processing : System optimizes sales processes.

**R7.2 Report**

Input : User specifies start and end dates.

Output : System generates sales opportunities' report.

**R8 Sales**

**R8.1 Sales Quotation**

Input : User enters various quotations given by customers.

Output : System displays fissible quotation.

Processing: System compares various quotations based on goods prices.

**R8.2 Sales Order**

Input : User enters sold goods details.
Processing: System updates stock data master.

**R8.3 Goods Delivery**

Input : User enters information about goods delivered.
Output : System generates receipt.

**R8.4 Goods Return**

Input : User enters details of goods returned by customer.
Processing: System updates stock data master accordingly.

**R8.5 Invoice Generation**

Input : User enters sold goods details.
Output : System generates invoice for customer.

**R8.6 Credit Memo**

Input : User enters details of goods returned by customer.
Output : System generates new invoice.
Processing: System updates stock data master, cancels previously generated invoice.

**R8.7 Report**

Input :User specifies start and end dates.
Output :System generates stock report.

**R9 Business Partners**

**R9.1 Business Partners Master Data**

Input : User enters details of Business partner.
Processing: System updates business partner master data.

**R9.2 Report**

Input : User specifies start and end dates.
Output : System generates business partners report.

**R10 Human Resources**

**R10.1 Employee master data**

Input : User enters details of employee.
Processing: System updates employee master data.

**R10.2 Report**

Input :User specifies start and end dates.
Output :System generates employee report.

**R11 Financial**

**R11.1 Journal Entry**

Input : User enters transaction entry of particular business-partner.
Output : System displays updated journal entries for particular business-partner.

**R11.2 Reverse Transactions**

Input : User selects an entry of journal to modify.
Output : System displays updated journal entries for particular business-partner.

**R11.3 Report**

Input : User specifies start and end dates.
Output : System generates financial report.

**R12 Banking**

**R12.1 Incoming payments.**

Input : User enters details of payment received from customers.
Processing : System updates accounts.

**R12.2 Outgoing Payments.**

Input :User enters details of payment done to vendors or employees.
Processing : System updates accounts.

**R12.3 Tax Payment**

Input : User selects type of tax payment and mode and amount.
Output : System generates receipt.
Processing : System updates accounts.

**R12.4 Report**

Input :User specifies start and end dates.
Output :System generates banking report.

## 3.3 Performance Requirements

- **Performance**
  - Response time of the SAP should be less than 2 second most of the time. Response time refers to the waiting time while the system accesses, queries and retrieves the information from the databases (DB-user, DB-schedule etc) (A local copy of database is maintained as DB-schedule to reduce this access time)
  - SAP shall be able to handle at least 1000 transactions/inquiries per second.
  - SAP shall show no visible deterioration in response time as the number of users increases.
- **Reliability**
  - SAP shall be available 24 hours a day, 7 days a week.
  - SAP shall always provide real time information about Company.
  - SAP shall be robust enough to have a high degree of fault tolerance. The system should not crash incase of invalid input and shall identify the invalid input and produce a suitable error message.
  - SAP shall be able to recover from hardware failures, power failures and other natural catastrophes and rollback the databases to their most recent valid state.
- **Usability**
  - SAP shall provide a easy-to-use graphical interface similar to other existing systems so that the users do not have to learn a new style of interaction.
  - The web interface should be intuitive and easily navigable. Users should be able to understand the menu and options provided by SAP.

- Any notification or error messages generated by SAP shall be clear, succinct, polite and free of jargon.

❖ **Integrity**

- Only system administer has the right to change system parameters, such as pricing policy etc. The system should be secure and must use encryption to protect the databases.

- Users need to be authenticated before having access to any company data.

❖ **Interoperability**

- SAP shall minimize the effort required to couple it to another system.

## 3.5 Design Constraints

### 3.5.1 Standards Compliance

- **Report format**

  The document in this file is an annotated outline for specifying software requirements, adapted from the IEEE Guide to Software Requirements Specifications (Std 830-1993).

- Requires 256 MB on-board memory.

- Based completely on Windows functionality platform.

- The software should be portable and must be inaccessible to unauthorized users.

## 3.6 Software System Attributes

❖ User Interface and Human Factors

- Administrator, users and operator will be using the system
- According to the web application any number of users can access the web application at any time.
- The user must have the minimum knowledge of the computer and should be literate.
- The system's GUI is easy to be understood by the normal user.
- The user should try to avoid the maximum number of errors possible.
- The basic input device is keyboard and the output device is printer.

❖ Documentation

- Documentation required are:

**Software Project Management Plan (SPMP)**

SPMP provides the brief introduction about the project, its requirements, process involved, resources utilized and task division between the working team.

**Software Requirement Specification (SRS)**

It gives detail introduction of the project with specific requirements, process flow involved in the project. It also states the data involved in it and detailed study of pros and cons involved in it.

- All the organization members are addressed in through the documentation.

❖ Hardware Considerations

- Any system with Windows XP or Windows 97/98/2000
- GHz, 2GB Ram, 80 GB HDD, 15"TFT or CRT monitor, Optical Mouse, MM Key board, Serial & Parallel port, Suitable printer

❖ Error Handling and Extreme Conditions

- Input errors should be responding by the message box.
- The system should be re-started in order to over come the extreme condition.
- Automatically back up the file.

❖ System Interfacing

- Input is coming from the proposed system itself.
- Output is going from proposed system to the printer to get the print of the reports.
- Date should be in the suggested format only.

❖ Quality Issues

- The requirements for the reliability are:
  - ✓ System Date should be accurate.
  - ✓ Data should be backed up
  - ✓ Different check point should be made at regular time intervals to recover from system crashes.
  - ✓ There should be an immediate re-start after the system crash and there should not be any time delay in the restart of the system.
  - ✓ It is not necessary for the system to be portable. It works as a single stand alone application and is working at different places by being installed at the particular place.

❖ System Modifications

- It is a small model. If it will successfully run then it can be extended to incorporate other features.
- Modifications and other utilities which can help to improve the efficiency of web application are expected.

- Physical Environment
  - No environmental conditions have an effect on the system.

- Security Issues
  - Data access must be restricted accordingly the permissions given to the user.
  - Physical security is also maintained and it is also one of the main issue.

- Resources and Management Issues
  - System back up is done.
  - Only admin users will be responsible for the system backup.
  - System is installed by the engineer who is well-known with the system.
  - Operators and the admin user at main server are responsible for system maintenance.

### 3.6.1 Reliability

The factors needed to establish the software expected reliability are

- The user inputs should be valid and within the given range.
- Normal termination of the program.

### 3.6.2 Availability

- The factors guarantee the software's availability includes proper termination and correct input details. Also the resources used for the project development are Microsoft Certified which speaks of its high quality standards.

### 3.6.3 Security

- It must be ensured that access will be provided to the authorized persons through user ID and password.
- Network security will be provided by the use of firewalls.
- Checks can be performed at regular intervals to ensure data integrity.

### 3.6.4 Maintainability

- The software will be developed by implementing the concept of modularity which in turn reduce s the complexity involved in maintaining it. The administrator should have a sound technical knowledge about maintaining the software and further enhancements will be undertaken by the developer.

### 3.6.5 Portability

The application is portable which ensures its adaptability for use on different computer terminals with different operating systems and standards.

Definitions of the quality characteristics follow.

• Correctness - extent to which program satisfies specifications, fulfills user's mission objectives

- Efficiency - amount of computing resources and code required to perform function
- Flexibility - effort needed to modify operational program
- Interoperability - effort needed to couple one system with another
- Reliability - extent to which program performs with required precision
- Reusability - extent to which it can be reused in another application
- Testability - effort needed to test to ensure performs as intended
- Usability - effort required to learn, operate, prepare input, and interpret

### 3.7 Organizing the Specific Requirements

#### 3.7.1 System Mode

- SAP works in different modes like user mode, admin mode, clerk mode.
- The system interfaces and performance work are done are different for different modes of operations.

#### 3.7.2 User Class

- The functionalities changes depending on the user login.
- Such as the admin user has all the rights, where as the normal user can just do these functionalities but cannot change or access the database just they are able to see.
- Administrator user has right to change the database and any other information which is critical to both user side and server side.

#### 3.7.3 Feature

- A feature is an externally desired service by the system that may require a sequence of inputs to affect the desired result. Each feature is generally described in as sequence of stimulus-response pairs (same as input-output).

#### 3.7.4 Stimulus

- Same as above
- Some systems can be best organized by describing their functions in terms of stimuli.

#### 3.7.5 Response

- Same as above
- Some systems can be best organized by describing their functions in support of the generation of a response.

### 3.8 Additional Comments

Whenever a new SRS is contemplated, more than one of the organizational techniques given in 3.7 may be appropriate. In such cases, organize the specific requirements for multiple hierarchies tailored to the specific needs of the system under specification.

There are many notations, methods, and automated support tools available to aid in the documentation of requirements. For the most part, their usefulness is a function of organization. For example, when organizing by mode, finite state machines or state charts may prove helpful; when organizing by object, object-oriented analysis may prove helpful; when organizing by feature, stimulus-response sequences may prove helpful; when organizing by functional hierarchy, data flow diagrams and data dictionaries may prove helpful.

**Change Management Process**

The Change management Process is carried out by communication i.e. meeting. Changes to SRS or any other change in the requirement is carried out by written application.

**Document Approvals**

Approver name:

Signature:

Date:

**Supporting Information**

The supporting information makes the SRS easier to use. It includes:

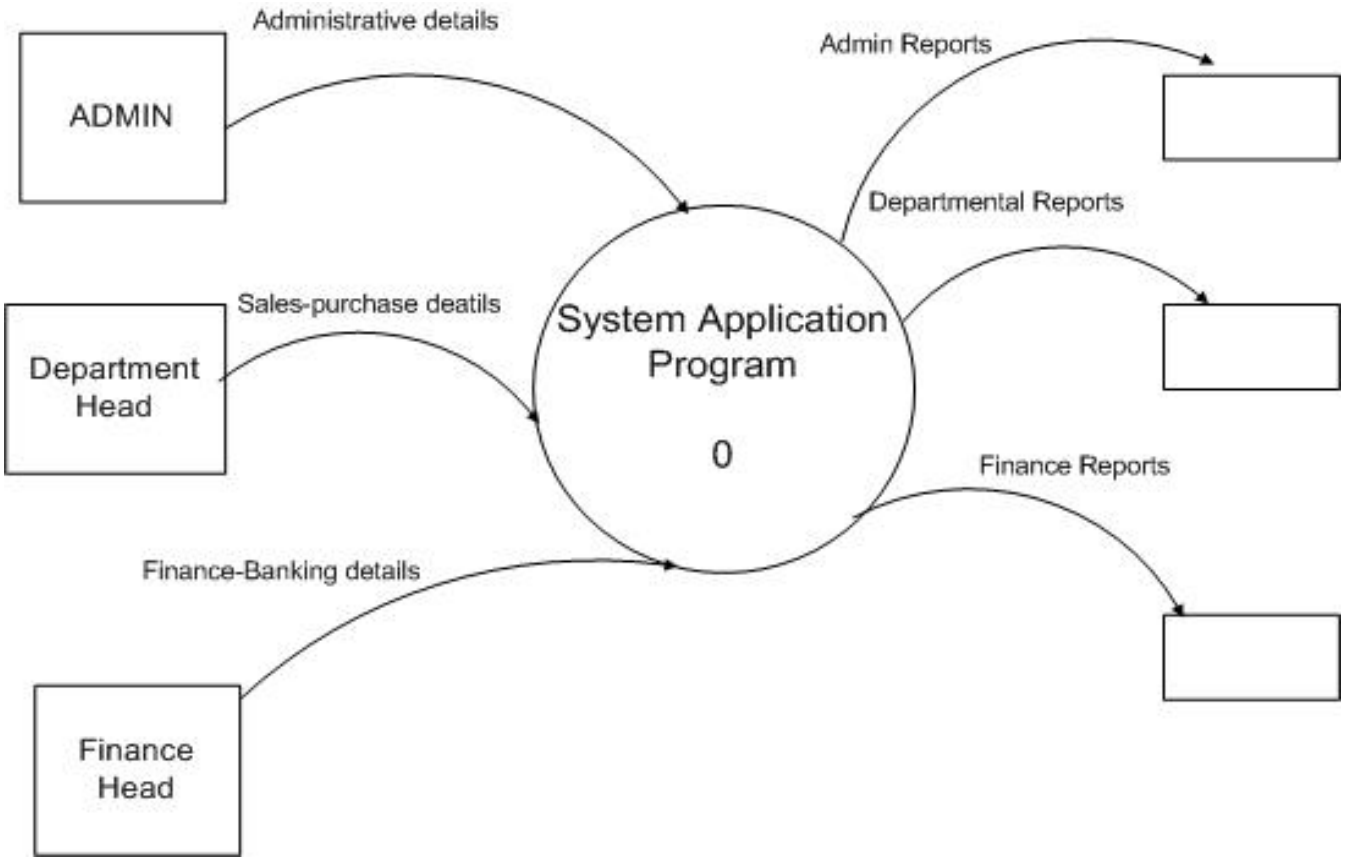
Table of Contents
Index
Appendices

The Appendices are not always considered part of the actual requirements specification and are not always necessary. They may include:

(a) Sample I/O formats, descriptions of cost analysis studies, results of user surveys
(b) Supporting or background information that can help the readers of the SRS
(c) A description of the problems to be solved by the software
(d) Special packaging instructions for the code and the media to meet security, export, initial loading, or other requirements.

When Appendices are included, the SRS should explicitly state whether or not the Appendices are to be considered part of the requirements.

# DATA-FLOW DIAGRAM LEVEL-0



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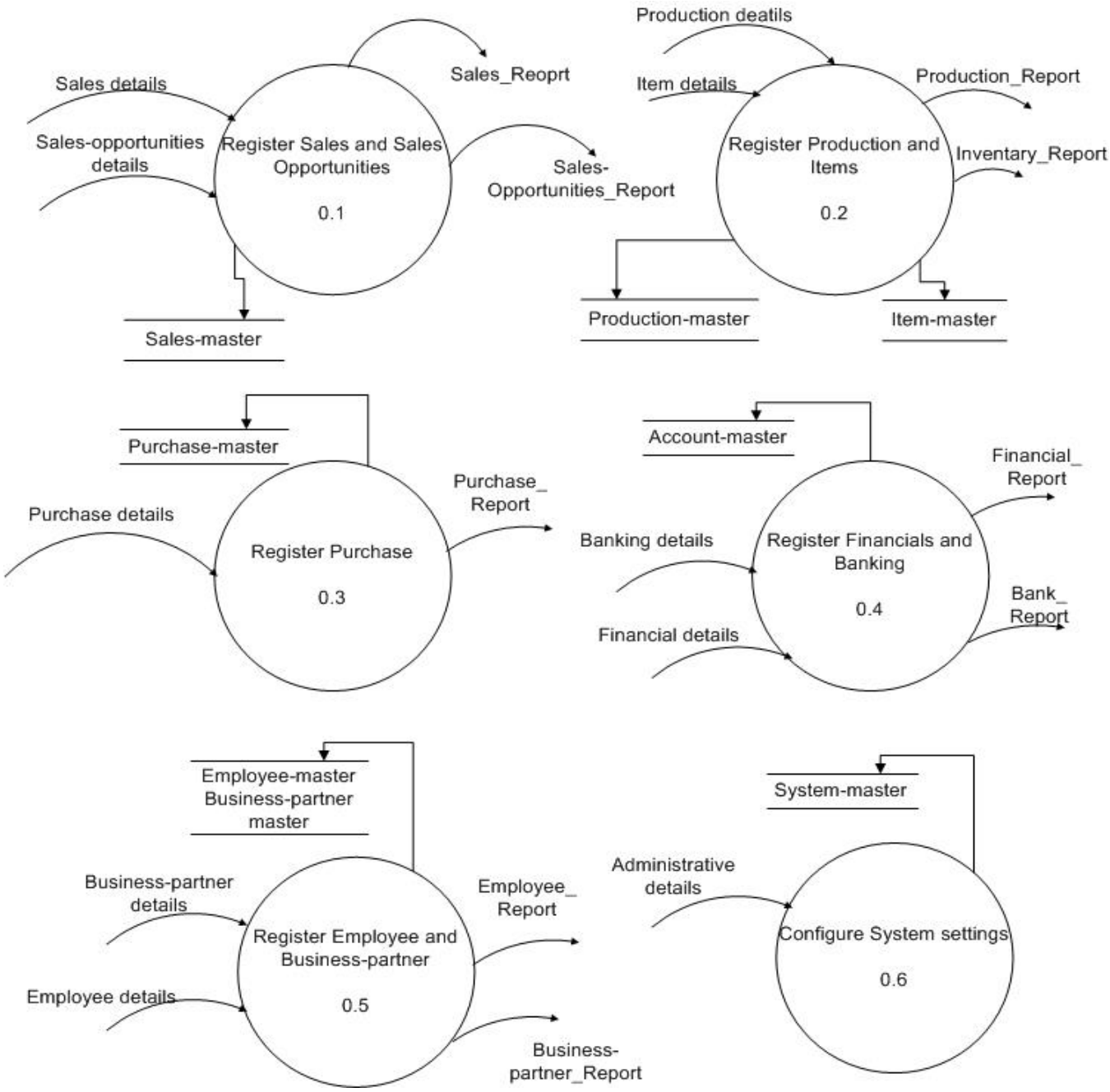

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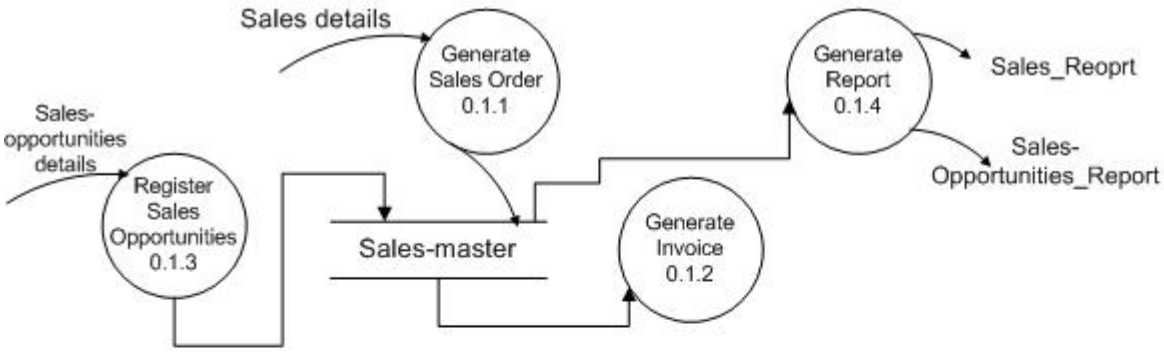


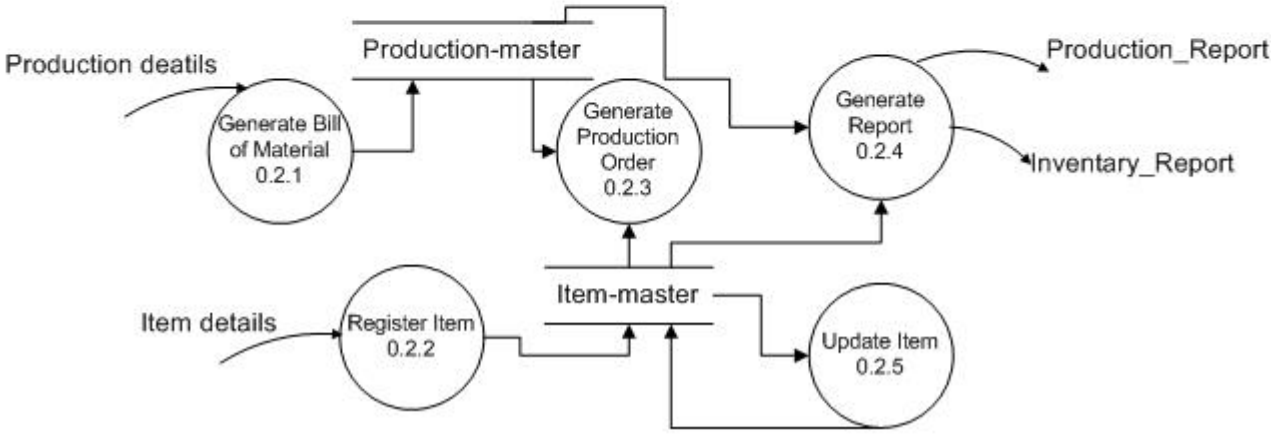


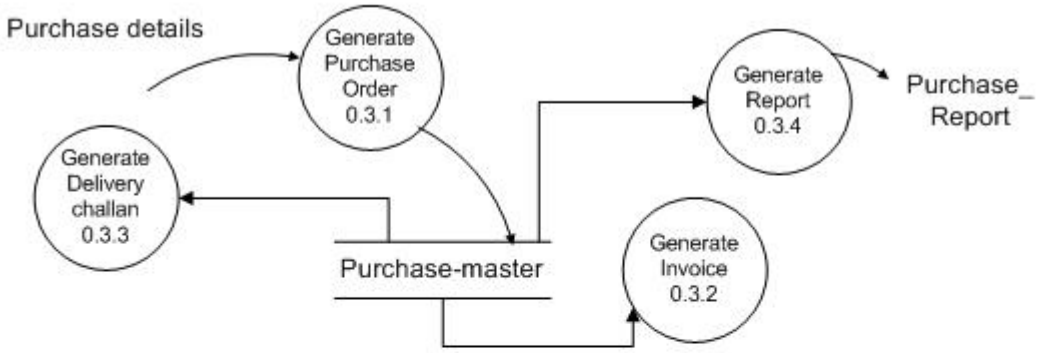


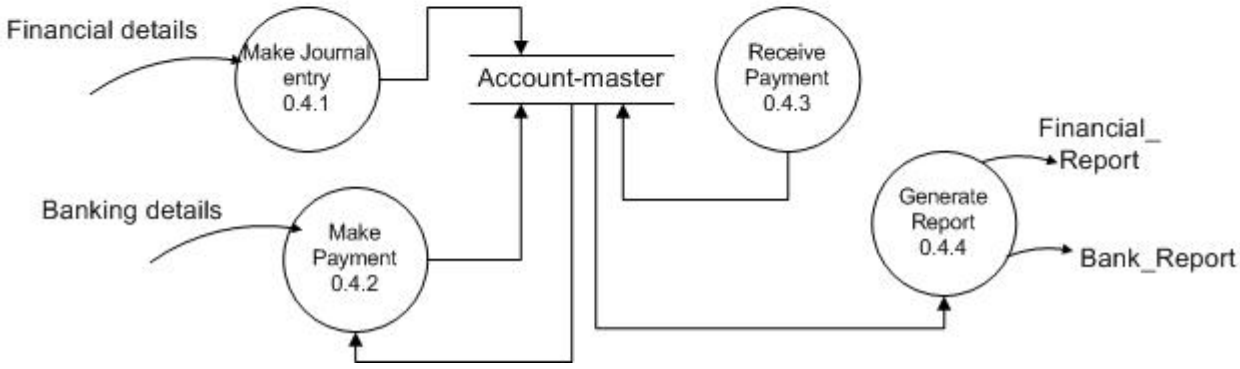

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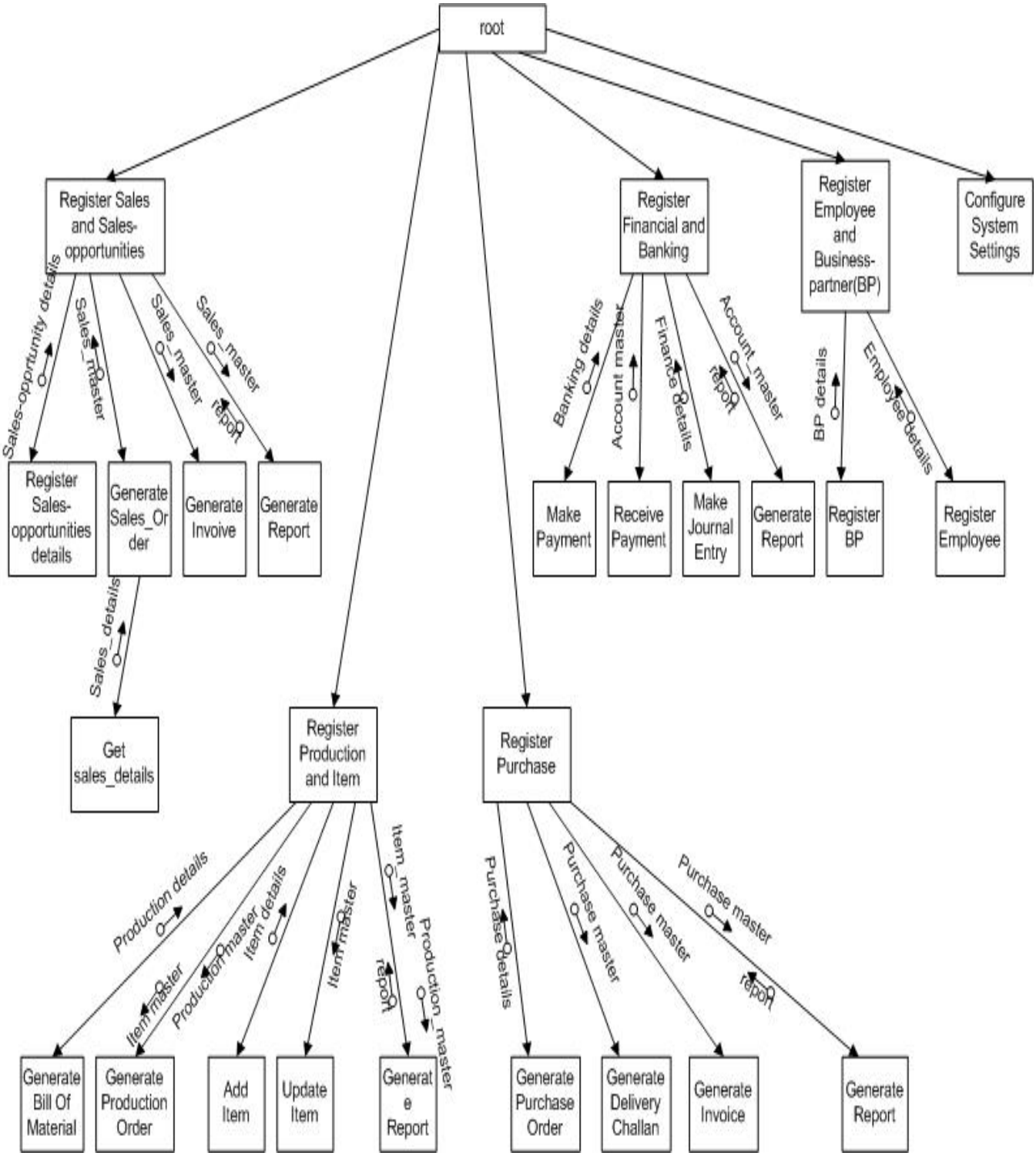

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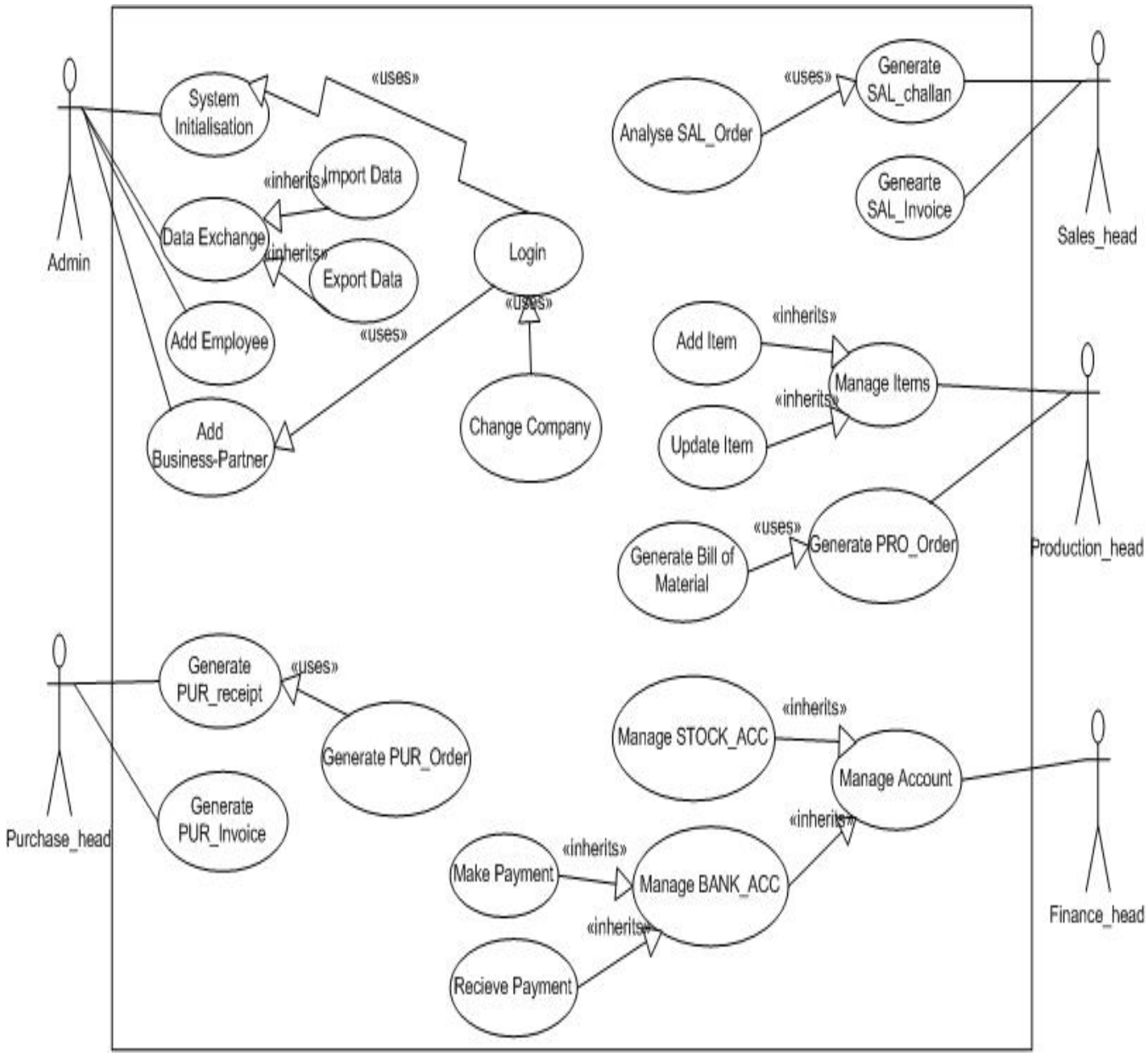
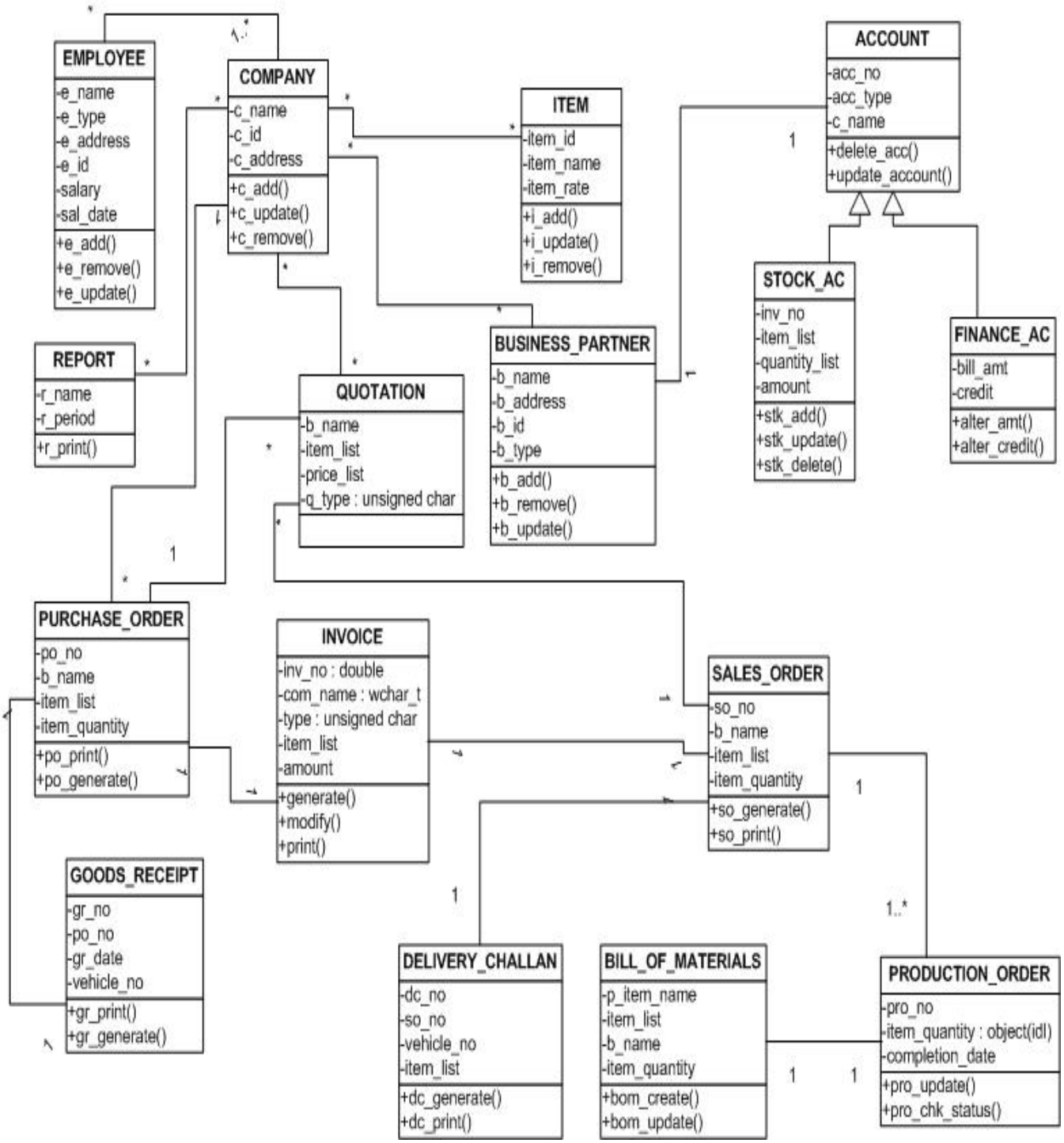


# CLASS DIAGRAM



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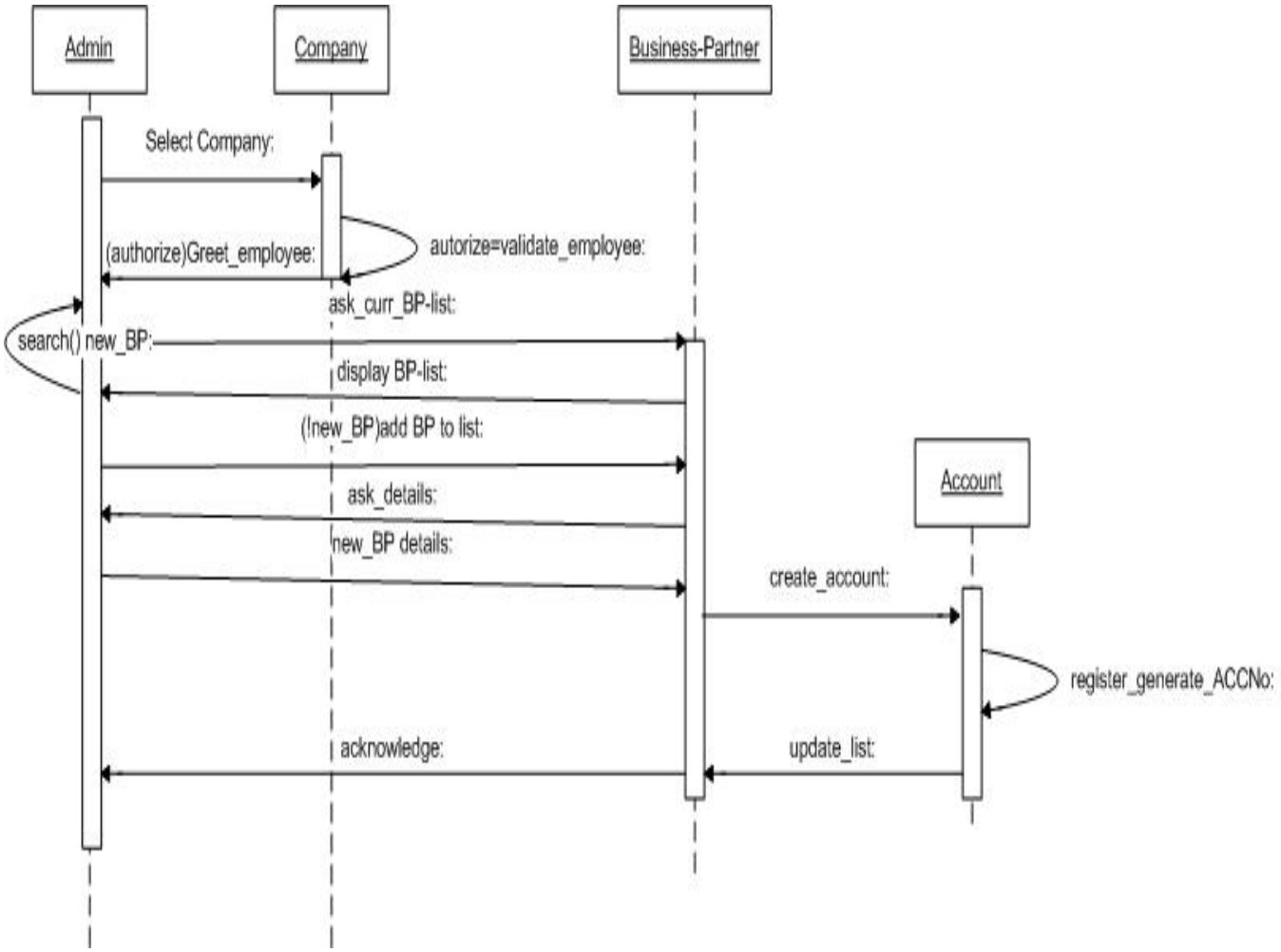
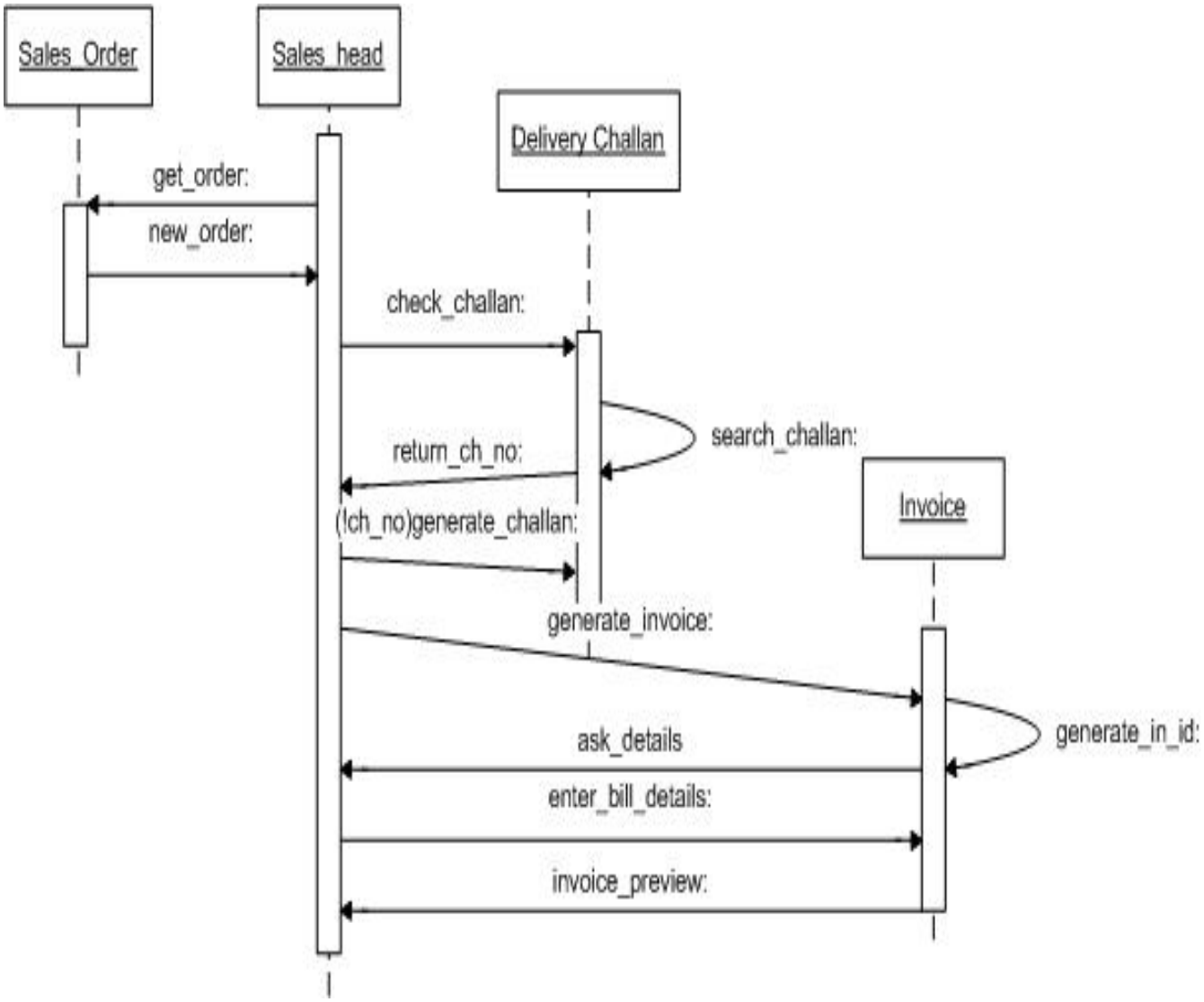
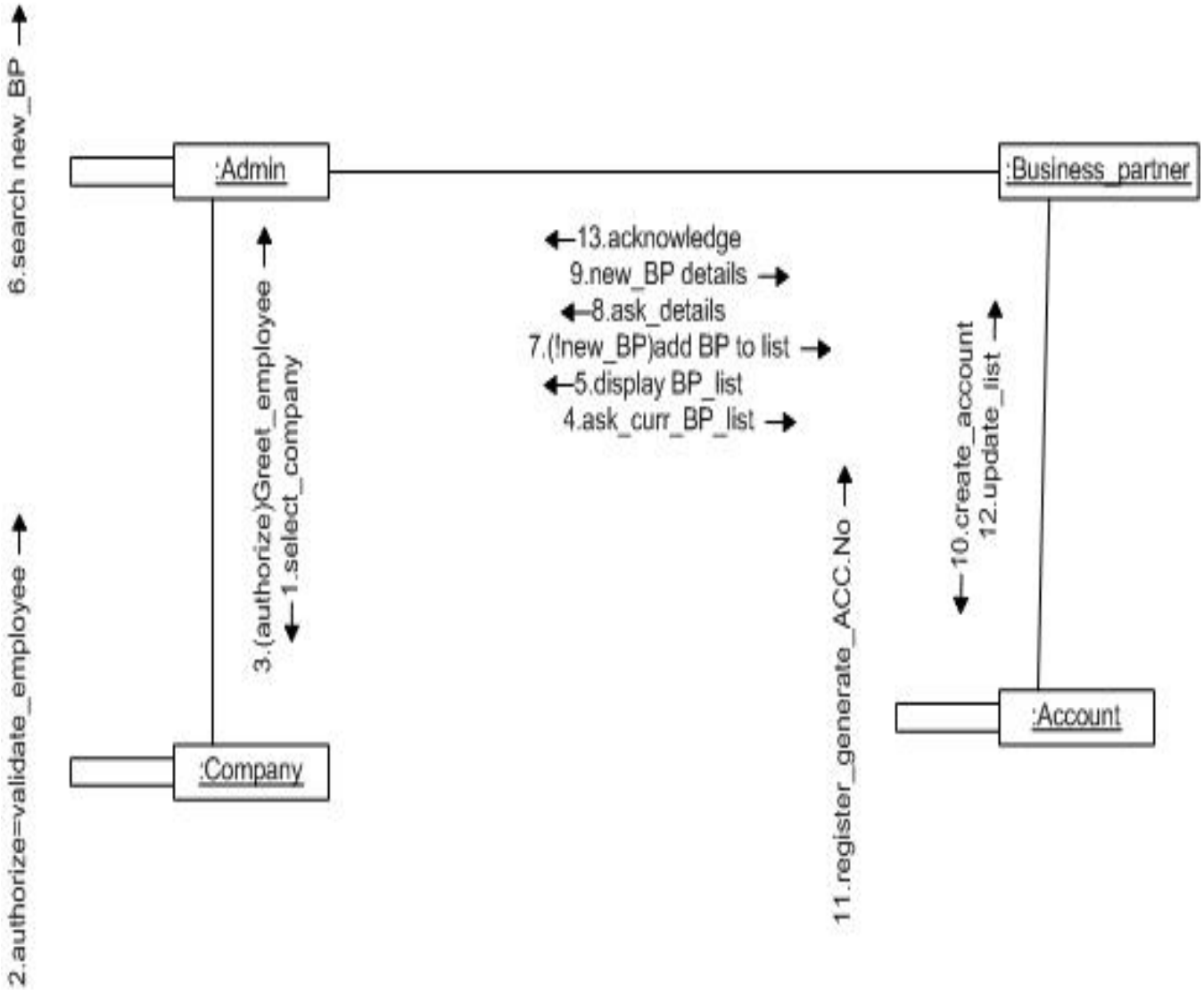


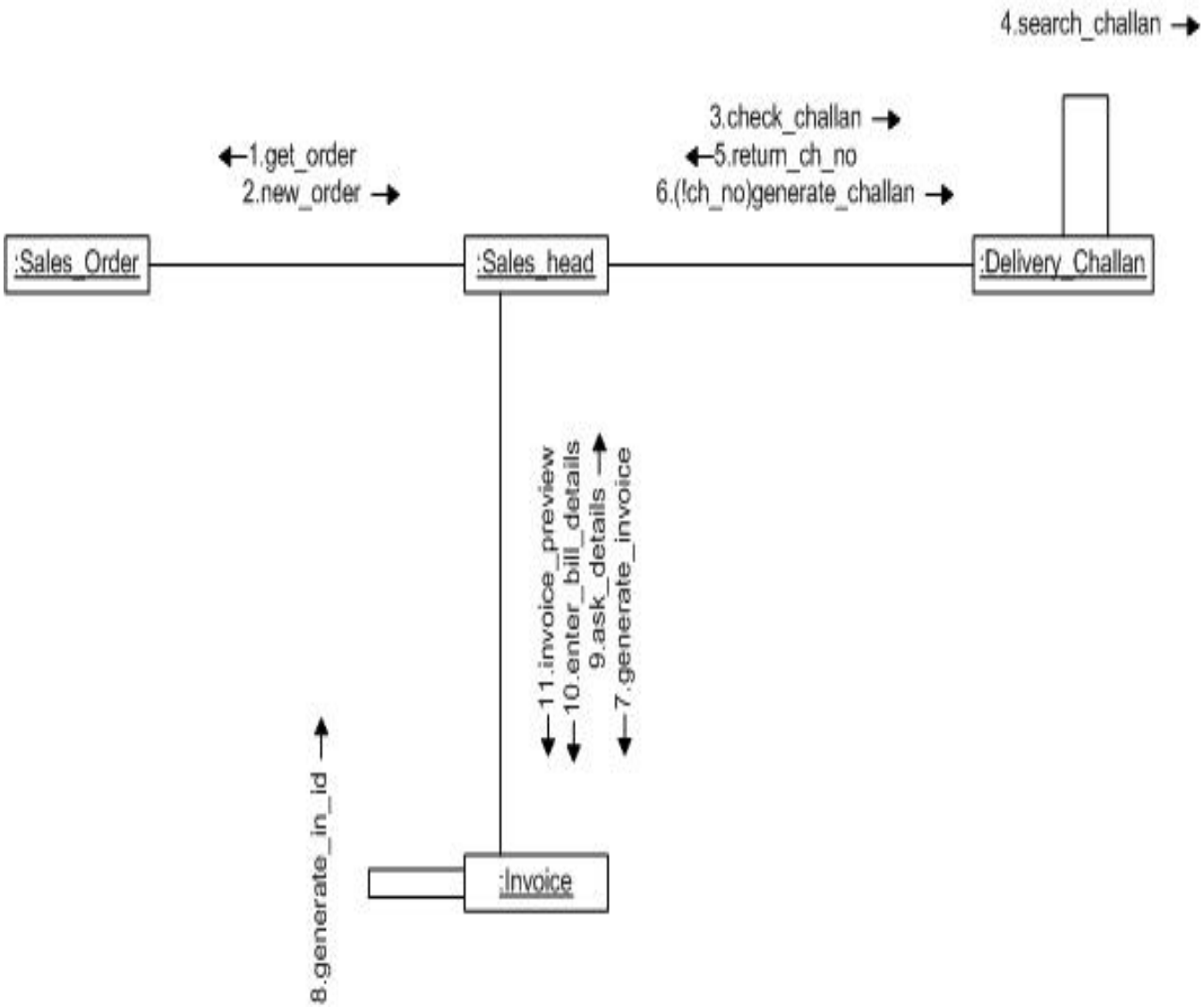
## SEQUENCE DIAGRAM FOR 'Generate SAL_Invoice'



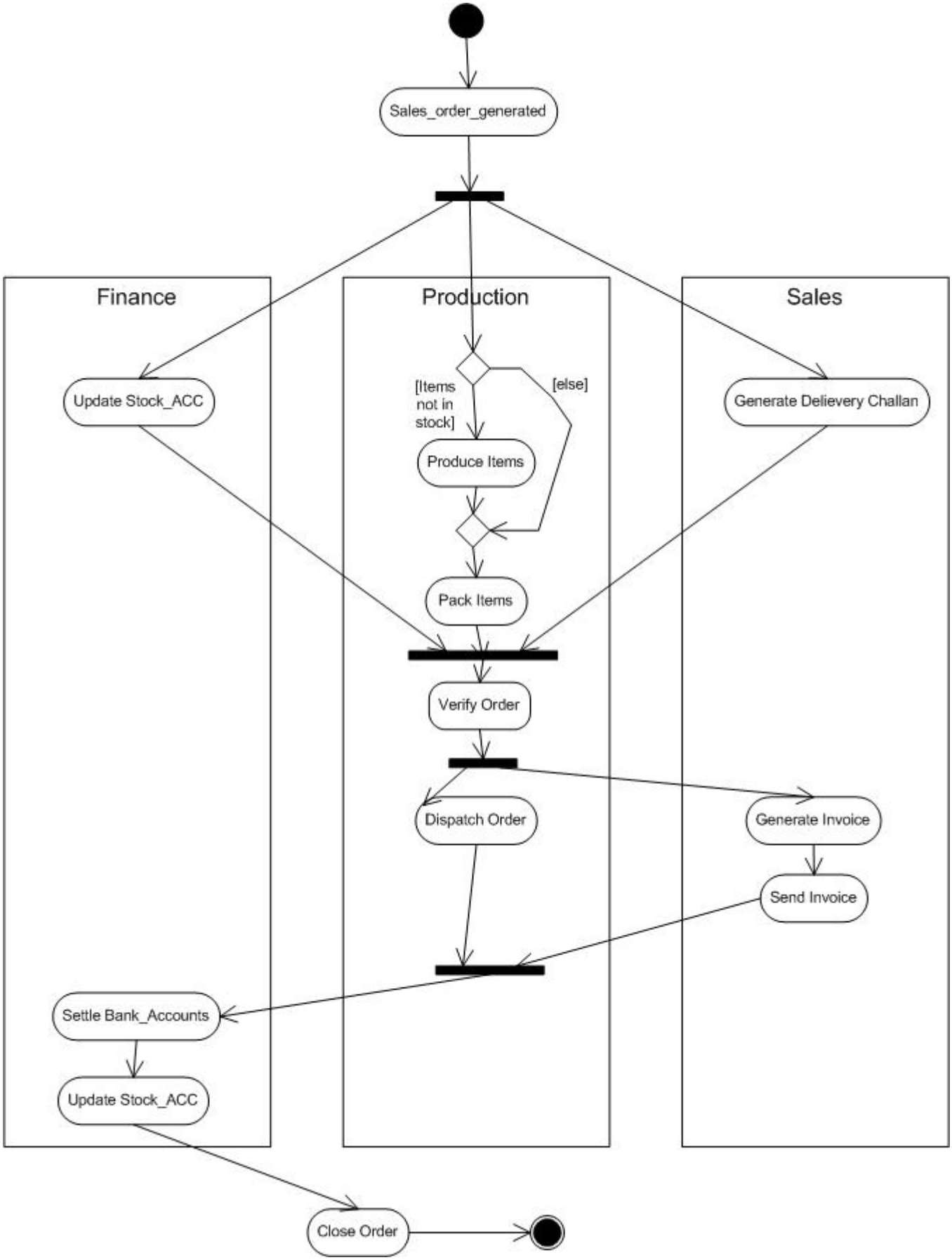
## COLLABORATION DIAGRAM FOR 'Add Business-Partner'



## COLLABORATION DIAGRAM FOR 'Generate SAL_Invoice'



# ACTIVITY DIAGRAM



# STATECHART DIAGRAM