

**NEAR EAST UNIVERSITY**



**Faculty of Economics and Administrative  
Sciences**

**Department of Computer Information Systems**

**PETROL STATION AUTOMATION SYSTEM**

**Graduation Project  
CIS – 400**

**Betül Beyza APAYDIN**

**Assist. Prof. Dr Yalçın AKÇALI**

**Nicosia - 2009**



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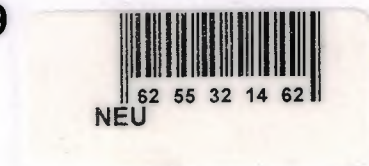
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## ACKNOWLEDGEMENTS

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*Finally, I would like to express my gratitude to Near East University for the scholarship that made the work possible.”*

## **ABSTRACT**

The Project is Petrol Station Automation System. This system is a simple and useful programme which is written for petrol stations with the help of this programme, limitless customer can be identified. Also, the changes of prices can be applied for customers immediately. This is a useful and special and handy programme. It is a little programme in which stock petrol, money input and outputs and employees can be followed.

Before I analyzed the Petrol Stations when I started this project. At the end of this analysis, I see to run into towards these problems. I think to find a best solutions these problems.

I choose this project because I saw that the petrol station operations in Turkey some petrol station are manuel and go very slow. Every petrol station available a pumper pointer. But also fit change the worker to write and to collect sells the petrol between the working hours. Also this form to make the mistakes and the account too few or too many probability to high. On the other hand, some firm to buy petrol after they will pay whole at the end of month. The petrol station to write notebook these firms payment information. This notebook to be lost or forget to register probability to high. The petrol station automation system, aims to provide easier works or processes for people who does petrol commercial job. This petrol station automation system is easy way for people.



# INTRODUCTION

In the easy years, when people make buying or selling, they have to hold all informations related with this process on the notebook. However they have to do all calculations as manuel. Because of this cause, many calculation errors or missing information is occurred. After this period it is started to keep the information in the computer. But now it is started to store these information in database by using programs. Everything includes in our program. Program kept customer information, stock information, selling and buying process, supplier information and also computing of these automatically then employee informations. I mean this program answered to every need of people.

Before I analyze this project and decision analysis is triggered by the candidate solution of the project, which is a solution to an opportunity that can be viewed as a chance to improve the organization it is created for even in the absence of an identified problem in the business's current system.

The petrol station system is performance, information and data, economics, control, efficiency, and service to customers and employees will improve.

## **For the Official User Type;**

The Main Process Performed in the Petrol Station Automation System:

- 1) Customer Process
- 2) Employee Process
- 3) Supplier Process
- 4) Buying Process
- 5) Selling Process
- 6) Stock Process
- 7) Reports
- 8) Application
- 9) Settings
- 10) Exit

The Subprocesses Performed by “Customer Process” process are:

- 1) Add
- 2) Delete
- 3) Update
- 4) Search

The Subprocesses Performed by “Customer Process Search” process are:

- 1) Searching by PlateID

The Subprocesses Performed by “Employee Process” process are:

- 1) Add
- 2) Delete
- 3) Update
- 4) Search

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- 1) Searching by Employee Name and Surname
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- 2) Delete
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- 5) Searching by Selling Petrol Type



The Subprocesses Performed by “Stock Process” process are:

- 1) Add
- 2) Delete
- 3) Update
- 4) Search

The Subprocesses Performed by “Application” process are:

- 1) Office Applications
- 2) Windows Applications
- 3) Games

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- 2) Reload Database
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The Subprocesses Performed by “Settings Hardware Settings” process are:

- 1) Mouse
- 2) Keyboard
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- 4) Volume Control

# DESIGN OF THE SYSTEM

## EXPLANATION

The minimum requirements of the system are as follows;

- Intel Pentium III Processor
- 500 MHz
- 128 MB of RAM
- 30 GB Harddisk
- 14" Monitor
- Microsoft 98
- CD-ROM

The recommended requirements of the system are as follow;

- Intel Core 2 Duo Processor
- 2.0 GHz
- 2 GB of RAM
- 250 GB Harddisk
- 17" Monitor
- DVD-RW
- Ethernet Card

I used Delphi programming language for writing this Project and Access database for keeping the data.

Besides, to be able to run this program, Delphi has Installshield Express Wizard that encodes the program and gives the execution of the program to the user.

# **PETROL STATION AUTOMATION SYSTEM**

## **1-) PROJECT IDENTIFICATION AND SELECTION**

### **Aim of The Project:**

Petrol Station Automation System aims to provide easier works or processes for people who does petrol commercial job. This automation system is easy and best way and to provide a much more comfortable inspection environment by obtaining the income, expenses and stock control. This system has some control mechanism during the process.

This system is usable, easiness and flexibility that the new system wishes to bring the users and corrections.

### **Project Boundries:**

- 1) The Profit center as a whole can experience improved performance because less human error is possible as a result of the now automated system. More focus can be placed on sales and marketing to fuel customers as well as other job functions not related to the billing of accounts and the management of the fuel price.
- 2) The employee cards to hold employee information, who and when the employees sell the customer.
- 3) Using the database this system will improve the storage of the data and allow for many convenient ways to retrieve data and transform it into meaningful information. Utilizing the system to monitor profit margin and remaining up to date with the competitive fuel station can help to increase profits therefore improving economics.
- 4) Designing the petrol station with a password protection mechanism and a web interface with built in validation enhances control of data and security. The system also maintains an elevated level of service to customers by providing an easy to understand printed billing statement and the availability of customer history records. The records may be useful to customers and aid the Fuel center in negotiating competitive fuel discounts. Automation contributes to better efficiency along with the web interface design of the system. This design improves communication of data by reducing the wait time for sales and discount reports.



### **The Resource Limits:**

The budget of the petrol station is very limited because it is a petrol station support by the petrol station owners. However the system will be expensive and some of the users in the petrol station may be sent to computer courses.

## **2-) PROJECT INITIATION AND PLANNING**

### **Technical Feasibility**

This system is technically feasible because the solution is technically practical in that it does not require a great deal of resources unavailable to the Fuel Island profit center. No additional hardware is needed. The center currently uses a back office computer running the Window XP platform to store the customer data in Microsoft Excel spreadsheet format. Microsoft Word is used to generate billing statements. A web browser is installed and a high speed Internet connection available. As the developer of the system I have the technical expertise to complete the project given the knowledge I have acquired during the database systems course along with knowledge of web development acquired outside of university course work. Technical feasibility examines if the solution is technically practical and if the developer has the technical expertise to design and build the solution.

### **Operational Feasibility**

This system is operational feasible because it fulfills the user's current requirement such as adding, deleting, and modifying all aspects of customer information, generating daily sales and profit reports, and generating customer billing statements and receivable notices. The system will change the user's environment because it will waste less paper, add organization, and speed data retrieval time. As of this point in the development process the users feel the system will have a positive impact on their organization. More feedback will be acquired throughout development and as a prototype is developed and tested.

Operational feasibility reveals how the solution will fulfill the user's current requirements for the job function, how the solution will positively change the user's work environment, and how users feel about the solution.

## **Economical Feasibility**

The system is economical feasible because as mentioned before no additional hardware is needed. The software Caging will be installed to provide the like environment. All of these software applications are open source and can be obtained at no charge.

Economical feasibility determines if the solution is cost-effective and schedule feasibility assesses if the solution can be designed and implemented within an acceptable time period.

## **Schedule Feasibility**

When evaluating schedule feasibility and considering the amount of work required bringing the project to completion I am confident the solution can be designed and implemented within the allotted time. A Gantt chart is included at the end of this document describing the details of the projected completion time frame.

## **Risk Feasibility**

The risk feasibility measures the probability of a successful implementation using the technology I am confident the project will be completed favorably because I have worked on the development of a team database project using similar technology. Also following diligently to the approach put forth in the petrol projects course offers an enhanced chance of successful completion.

This system's risk feasibility measures the probability of a successful implementation using the technology and approach put forth in the solution.

## **3-) ANALYSIS**

### **The Requirements Determination:**

The requirements made by the users are follows:

- To increase the speed of operations
- To prevent the loss of data
- To prevent the data duplications
- To provide easy and quick data access
- To prevent the chaos caused by the increasing number of customers

- To restrict data access with the means of the system security (password entry)

### **The Existing System's Capabilities:**

- The petrol station work a manual system. All of the documents are held in hand.
- First of all, customers pays the petrol fee unless she/he is not buying. There is a pay-office official for this process.
- The next process is every petrol station available a pumper pointer. But also fit change the worker write and to collect sells the petrol between the working hours. Also this form to make the mistakes and the account too few or too many probability to high.
- The last process is some firms to buy petrol after they will pay whole at the end of month. The petrol station's employees to write a notebook these firms payment information. This notebook to be lost or forget to register probability to high.

### **New System Providences:**

- The new system will only be accessed by the authorized users. This will provide more secured and accurant operations. The employees' individual information will only entered or changed by the registration official. The other users in the system will only be able to see this information.
- All data will be kept in computers, therefore problems of storing customers information will be solved. Also the data for each customers will be kept indivually, members of a family will be separated in the system.
- The employees to write a computer the fit start and finish hours. And the computer to compute between the start and finish hours whole sells petrols. Then the computer to show the result.
- Every customers to buy petrol when the petrol station will give a bill and same time this information to write a customer's account. Also at the end of month, customer will pay whole payment to show total of results also computer.
- The new system will be reflecting the price changes to customers, detailed stock operations and to be classify according to kind of operations, recording the buying and selling operations and their reports, showing the level of the tone of



petrol and open oil as a graphics, to see the entire current movements of the customer in only one form, to report the entire record movements between the 2 dates, to recording of the petrol prices an easy set up practical study and to detailed usage file which explains the usage of the programme step by step of this system.

## **REQUIREMENT STRUCTURING**

### **THE PROCESSES:**

**Password Entry:** There are only one type of users in this system users. These users can access the system with own password and usernames. For this, first of all, the new users should be registered to the system with the registration password and employee number given by the manager.

- 1. Customer Process:** We enter for the first time add a new customer specific information and the customer will buy how many litres and pay the money. Delete necessary customer information. The other hand, update the customer information. The last one searching a customer by plateID.
- 2. Employee Process:** We enter for the first time add a new employee information, salary information, beginning date of the job and every days start and finish the job time. Delete necessary employee information. The other hand, update the employee information. The last one searching a employee by a name and surname, searching by employeeID, searching by employee salary.
- 3. Supplier Process:** We enter for the first time add a new supplier information, salary information. Delete necessary supplier information. The other hand, update the supplier information. The last one searching a supplier by a company name and searching by a supplierID.

- 4. Buying Process:** We enter for the first time add to buying a new petrol type in a depot. Delete necessary buying information. The other hand, update to buying information. The last one searching buying a by supplierID, searching buying by a payment type, searching by a buying date and searching by buying petrol type.
- 5. Selling Process:** We enter for the first time add to selling a petrol type in a pumper. Delete necessary selling information. The other hand, update to selling information. The last one searching selling a by pumper no, searching by a plateID, searching selling date and searching by a selling petrol type.
- 6. Stock Process:** This process controlling the inventory. We enter for the first time add to buying a new petrol type in a depot and delete to selling a petrol type in a pumper. Update stock information. Searching stock by a petrol type.
- 7. Reports:** This process is reporting all of the others processes information.
- 8. Application:** This process three parts of system applications. Office applications are such as word, excel and power point. Windows applications are such as notepad, wordpad, calculate and internet explorer. Games are such as solitaire, pinball and hearts.
- 9. Settings:** This process two parts of system settings. Program settings make company database, reload database, company information and set date and time. Hardware settings make mouse, keyboard, printer and volume control.
- 10.Exit:** The last process is exit the program.



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The Project is Petrol Station Automation System. This system is a simple and useful programme which is written for petrol stations with the help of this programme, limitless customer can be identified. Also, the changes of prices can be applied for customers immediately. This is a useful and special and handy programme. It is a little programme in which stock petrol, money input and outputs and employees can be followed.

Before I analyzed the Petrol Stations when I started this project. At the end of this analysis, I see to run into towards these problems. I think to find a best solutions these problems.

I choose this project because I saw that the petrol station operations in Turkey some petrol station are manuel and go very slow. Every petrol station available a pumper pointer. But also fit change the worker to write and to collect sells the petrol between the working hours. Also this form to make the mistakes and the account too few or too many probability to high. On the other hand, some firm to buy petrol after they will pay whole at the end of month. The petrol station to write notebook these firms payment information. This notebook to be lost or forget to register probability to high. The petrol station automation system, aims to provide easier works or processes for people who does petrol commercial job. This petrol station automation system is easy way for people.

# INTRODUCTION

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## **For the Official User Type;**

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- 1) Customer Process
- 2) Employee Process
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The Subprocesses Performed by “Employee Process Search” process are:

- 1) Searching by Employee Name and Surname
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- 2) Keyboard
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- 4) Volume Control

# DESIGN OF ANALOG SYSTEMS



## EXPLANATION

The minimum requirements of the system are as follows;

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- 500 MHz
- 128 MB of RAM
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### **The Resource Limits:**

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## **2-) PROJECT INITIATION AND PLANNING**

### **Technical Feasibility**

This system is technically feasible because the solution is technically practical in that it does not require a great deal of resources unavailable to the Fuel Island profit center. No additional hardware is needed. The center currently uses a back office computer running the Window XP platform to store the customer data in Microsoft Excel spreadsheet format. Microsoft Word is used to generate billing statements. A web browser is installed and a high speed Internet connection available. As the developer of the system I have the technical expertise to complete the project given the knowledge I have acquired during the database systems course along with knowledge of web development acquired outside of university course work. Technical feasibility examines if the solution is technically practical and if the developer has the technical expertise to design and build the solution.

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- The new system will be reflecting the price changes to customers, detailed stock operations and to be classify according to kind of operations, recording the buying and selling operations and their reports, showing the level of the tone of

petrol and open oil as a graphics, to see the entire current movements of the customer in only one form, to report the entire record movements between the 2 dates, to recording of the petrol prices an easy set up practical study and to detailed usage file which explains the usage of the programme step by step of this system.

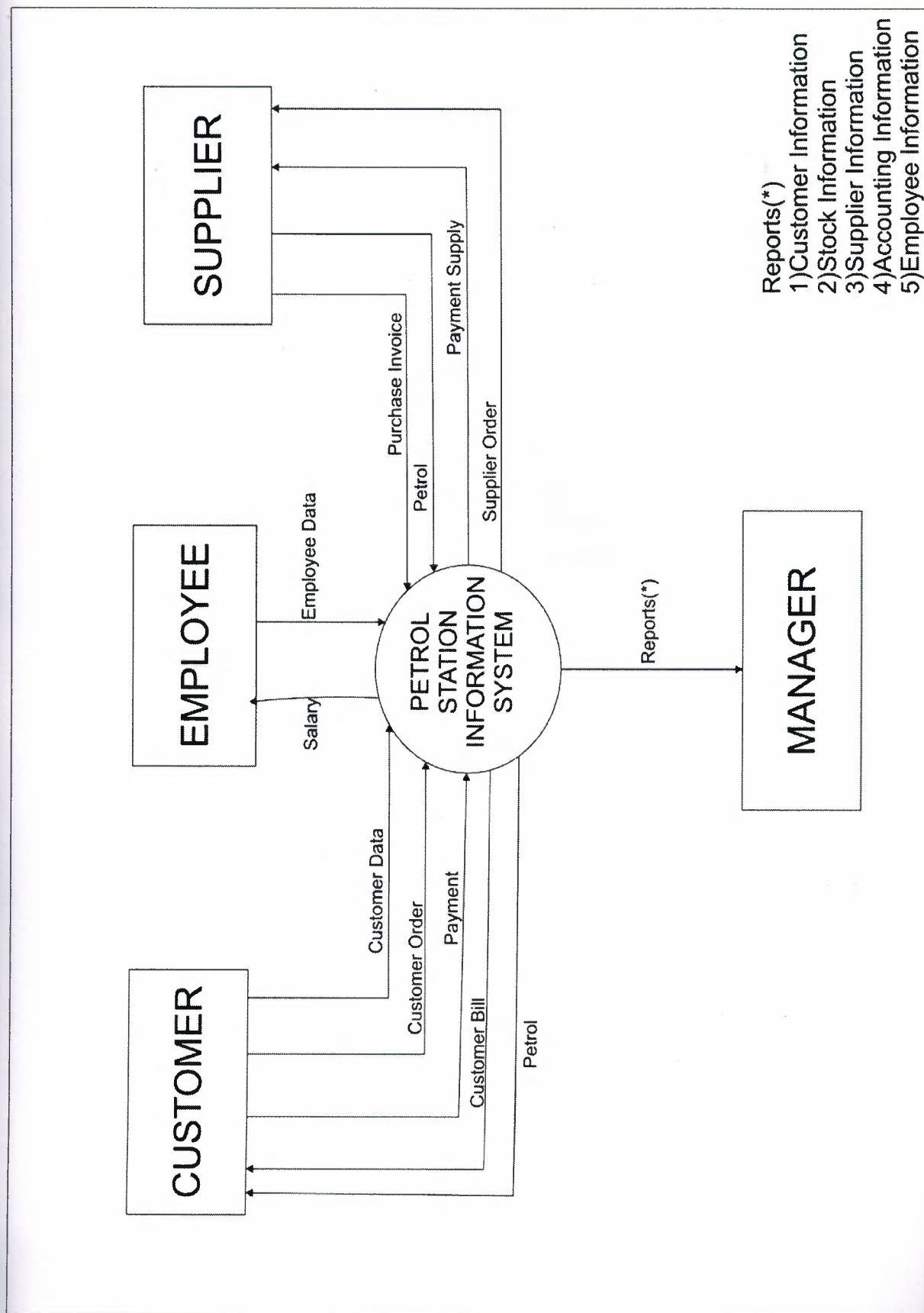
## **REQUIREMENT STRUCTURING**

### **THE PROCESSES:**

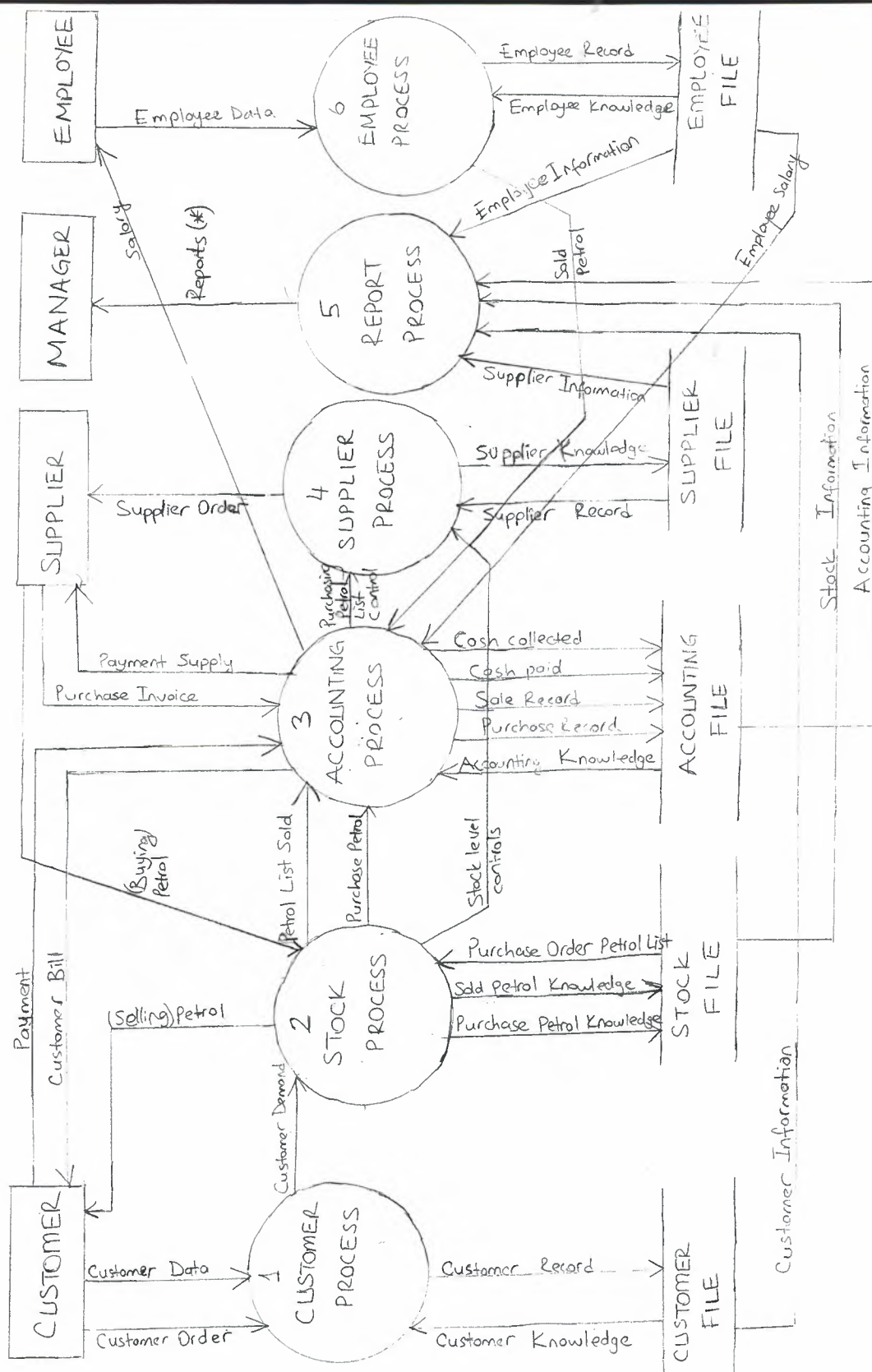
**Password Entry:** There are only one type of users in this system users. These users can access the system with own password and usernames. For this, first of all, the new users should be registered to the system with the registration password and employee number given by the manager.

- 1. Customer Process:** We enter for the first time add a new customer specific information and the customer will buy how many litres and pay the money. Delete necessary customer information. The other hand, update the customer information. The last one searching a customer by plateID.
- 2. Employee Process:** We enter for the first time add a new employee information, salary information, beginning date of the job and every days start and finish the job time. Delete necessary employee information. The other hand, update the employee information. The last one searching a employee by a name and surname, searching by employeeID, searching by employee salary.
- 3. Supplier Process:** We enter for the first time add a new supplier information, salary information. Delete necessary supplier information. The other hand, update the supplier information. The last one searching a supplier by a company name and searching by a supplierID.

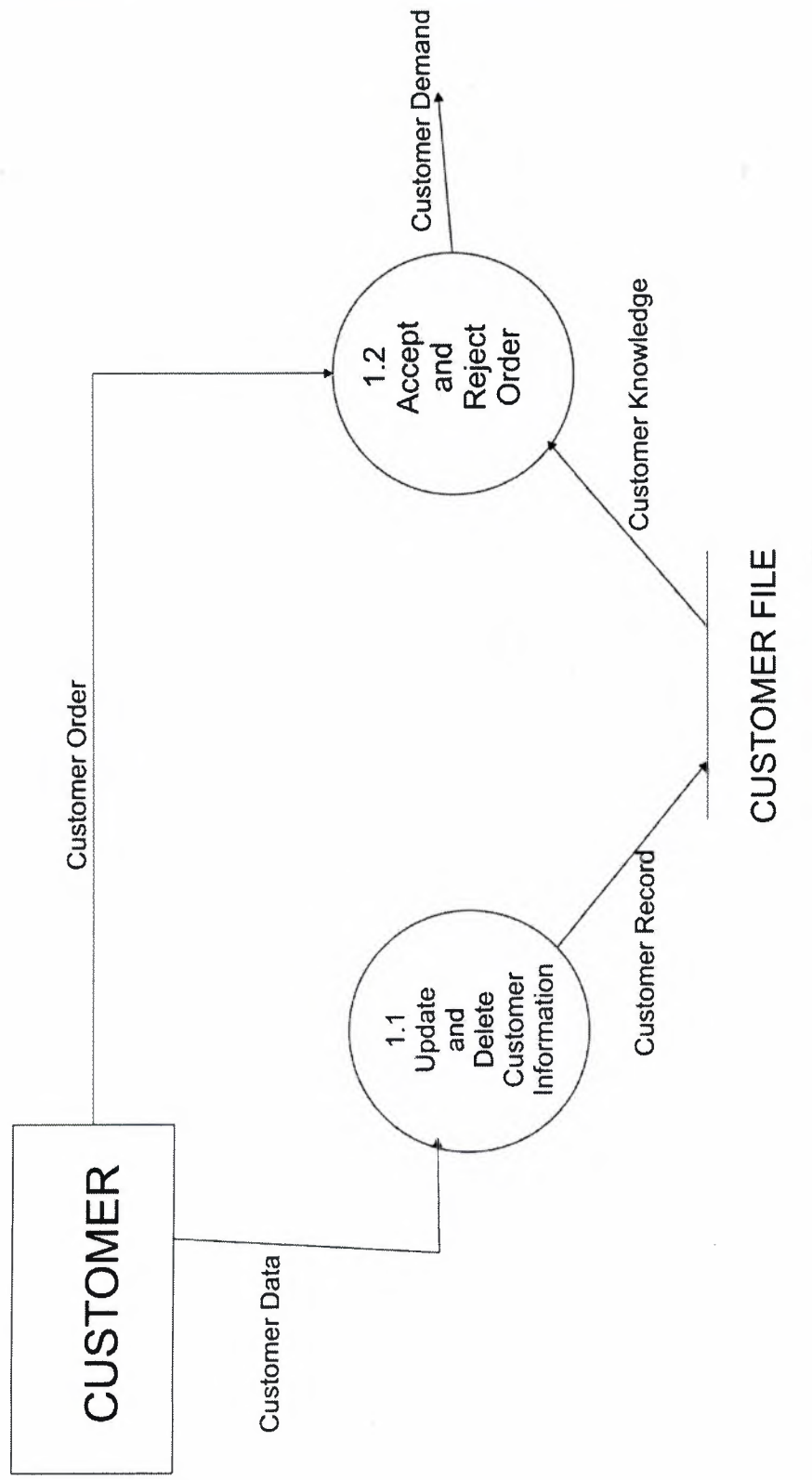
- 4. Buying Process:** We enter for the first time add to buying a new petrol type in a depot. Delete necessary buying information. The other hand, update to buying information. The last one searching buying a by supplierID, searching buying by a payment type, searching by a buying date and searching by buying petrol type.
- 5. Selling Process:** We enter for the first time add to selling a petrol type in a pumper. Delete necessary selling information. The other hand, update to selling information. The last one searching selling a by pumper no, searching by a plateID, searching selling date and searching by a selling petrol type.
- 6. Stock Process:** This process controlling the inventory. We enter for the first time add to buying a new petrol type in a depot and delete to selling a petrol type in a pumper. Update stock information. Searching stock by a petrol type.
- 7. Reports:** This process is reporting all of the others processes information.
- 8. Application:** This process three parts of system applications. Office applications are such as word, excel and power point. Windows applications are such as notepad, wordpad, calculate and internet explorer. Games are such as solitaire, pinball and hearts.
- 9. Settings:** This process two parts of system settings. Program settings make company database, reload database, company information and set date and time. Hardware settings make mouse, keyboard, printer and volume control.
- 10.Exit:** The last process is exit the program.



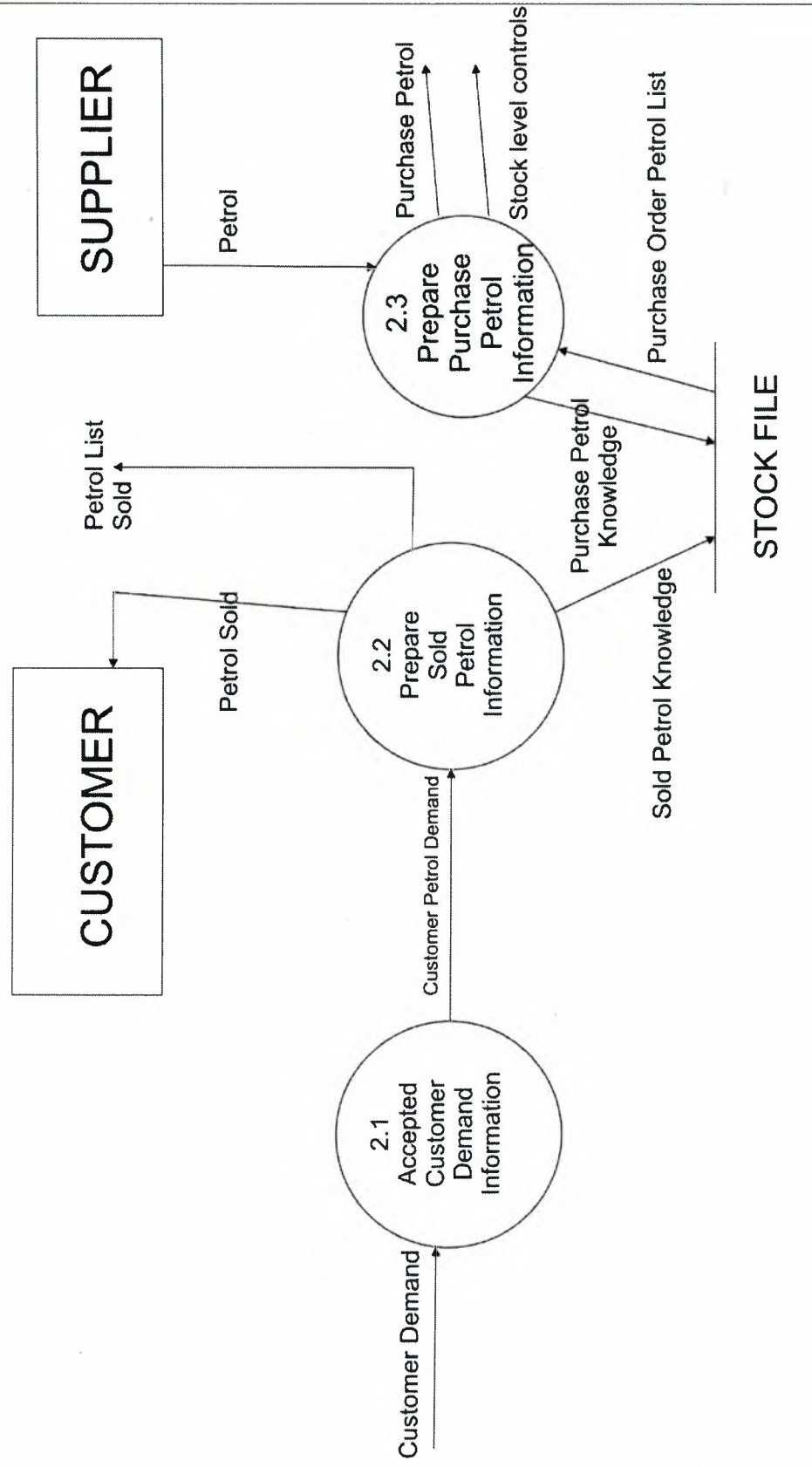




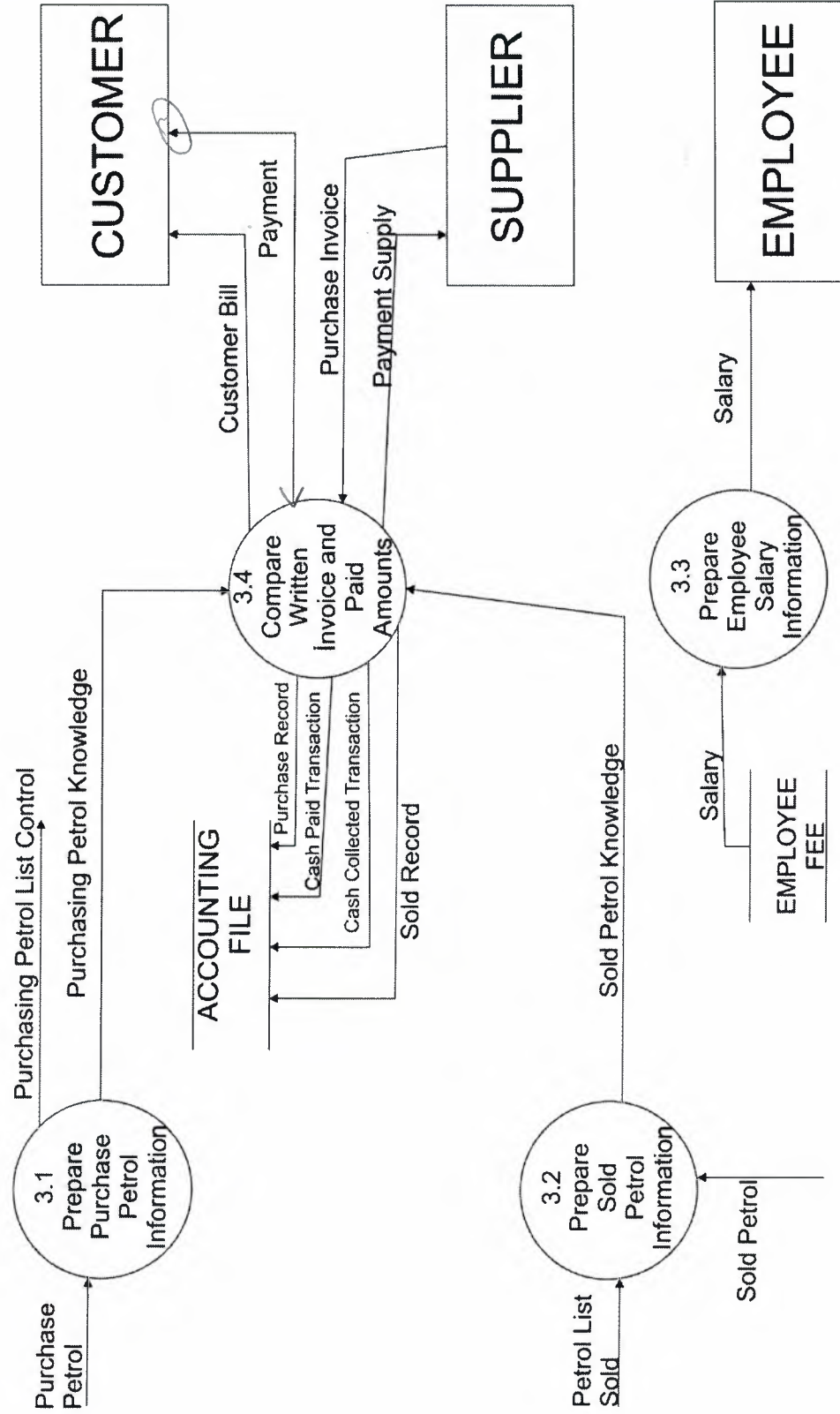
## DETAIL (Level-1) DFD For PROCESS1 (CUSTOMER PROCESS)



## DETAIL (Level-1) DFD For PROCESS 2 (STOCK PROCESS)

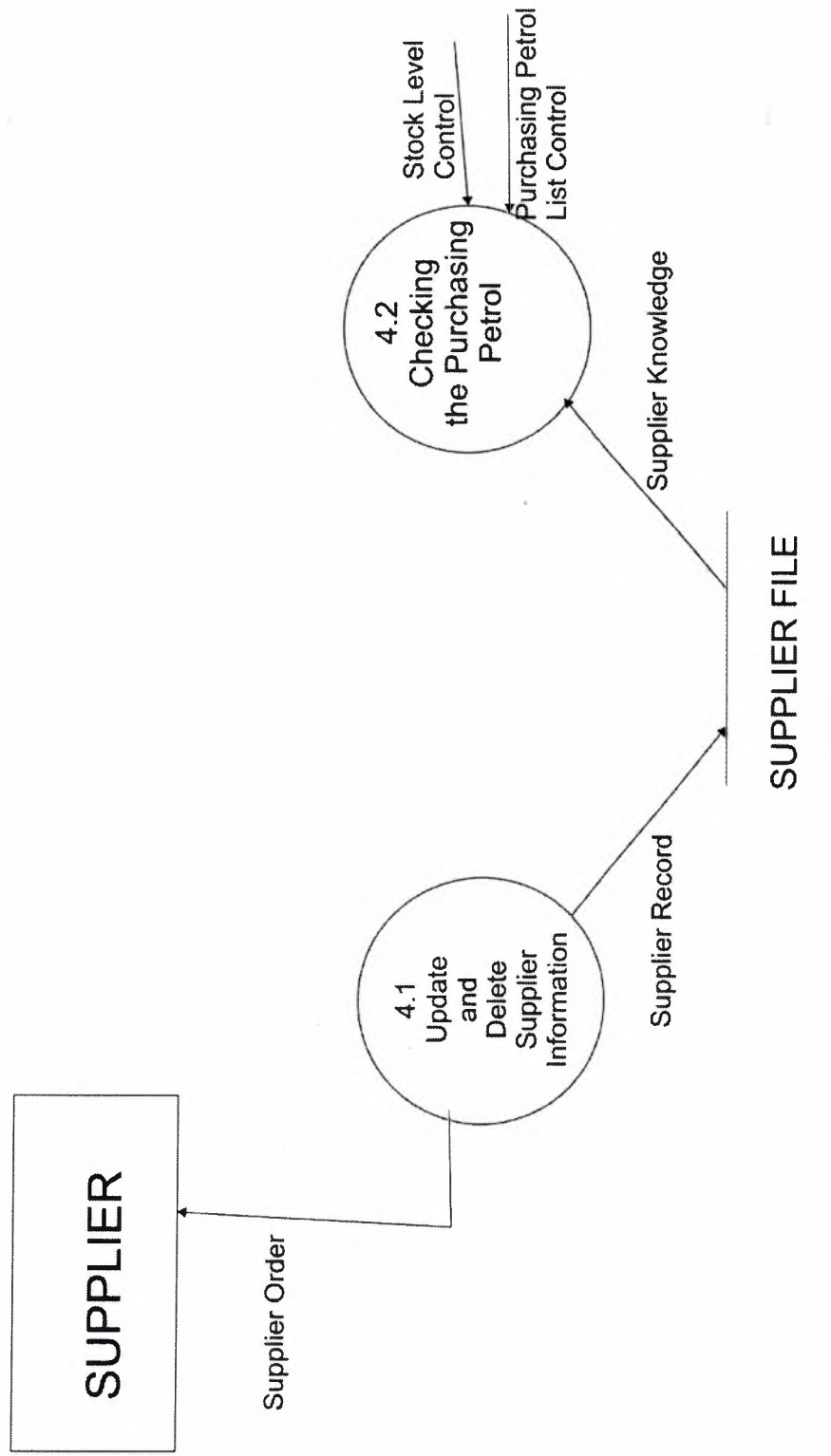


# DETAIL (Level-1) DFD For PROCESS 3 (ACCOUNTING PROCESS)

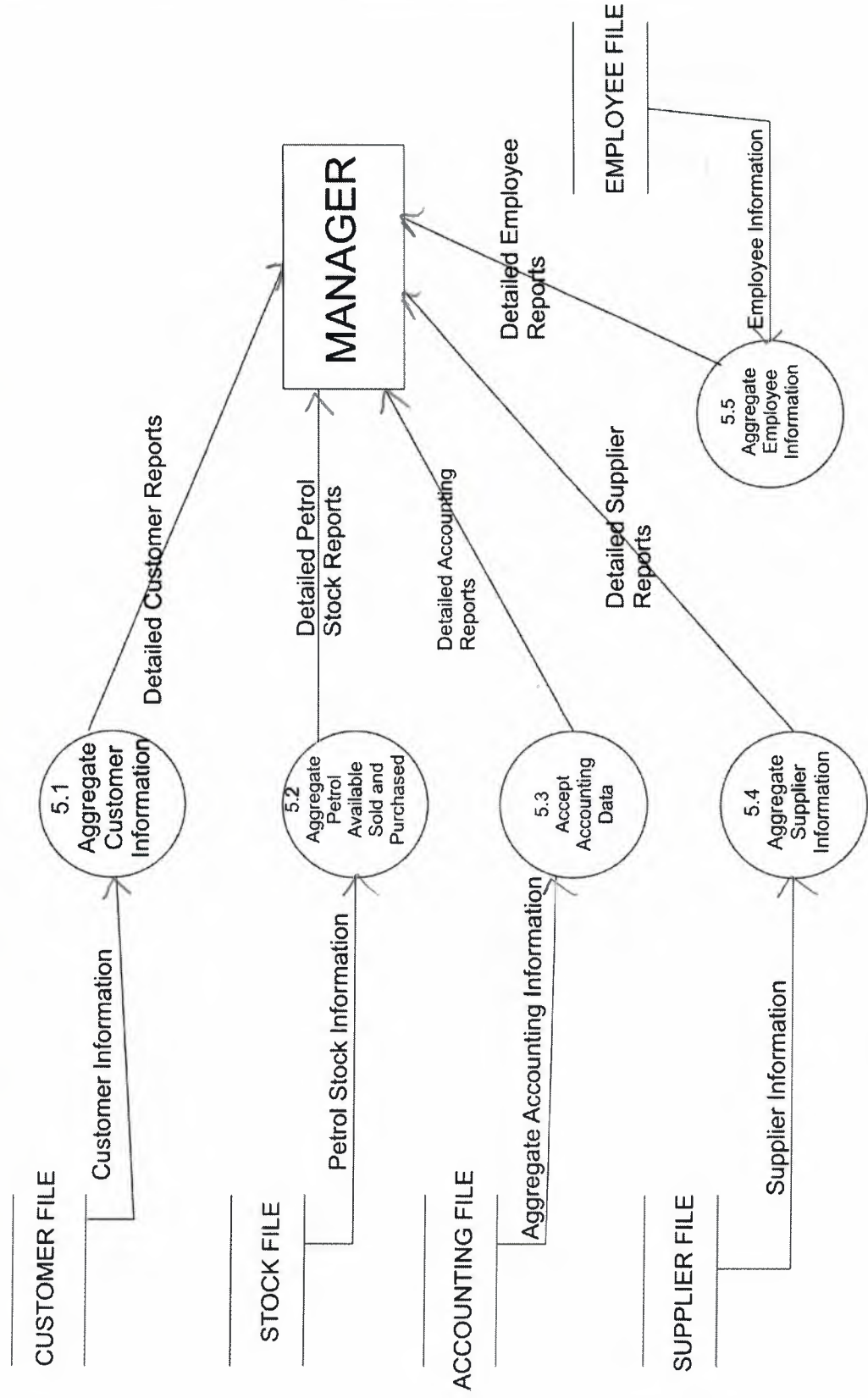




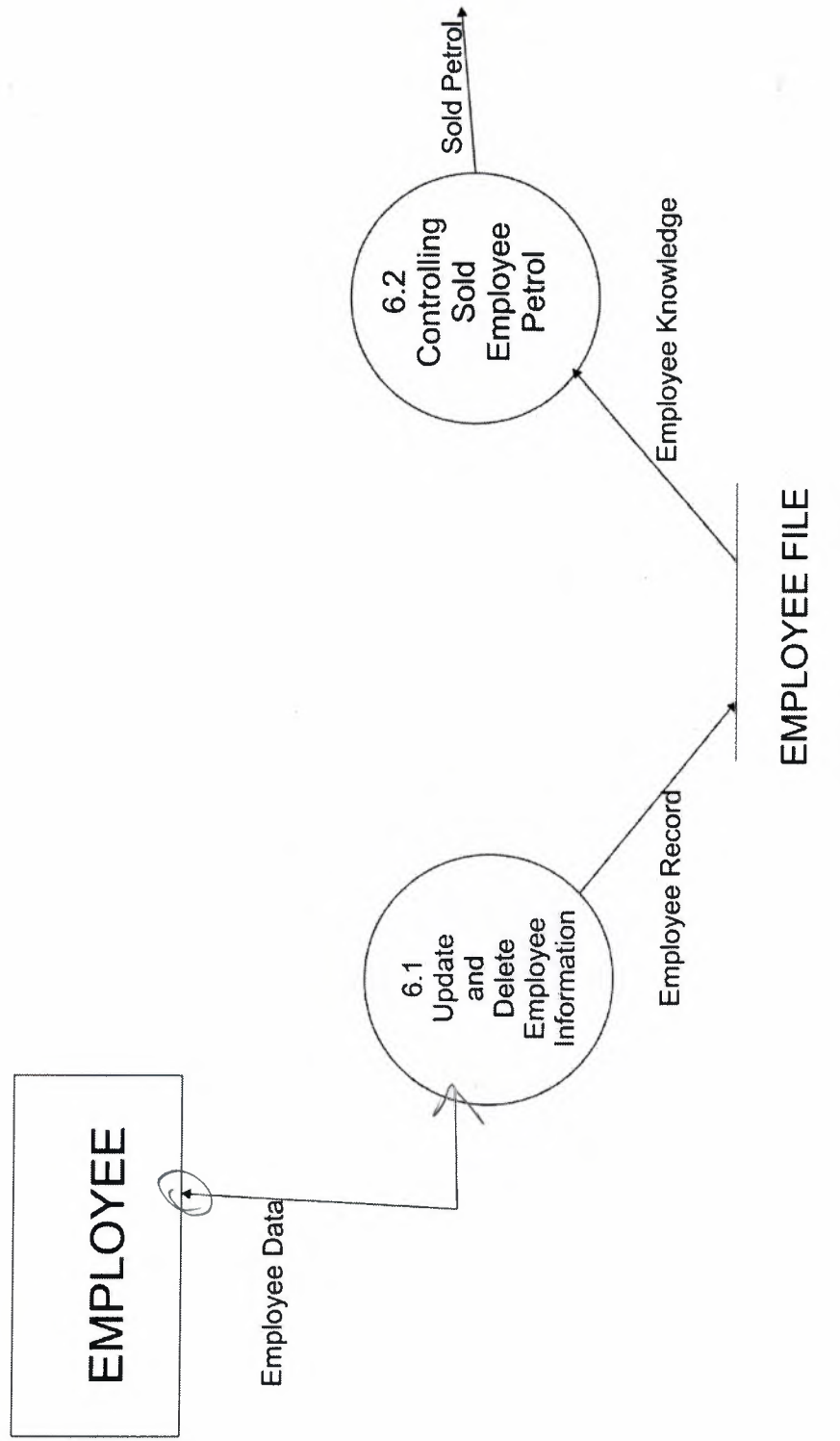
## DETAIL (Level-1) DFD For PROCESS 4 (SUPPLIER PROCESS)

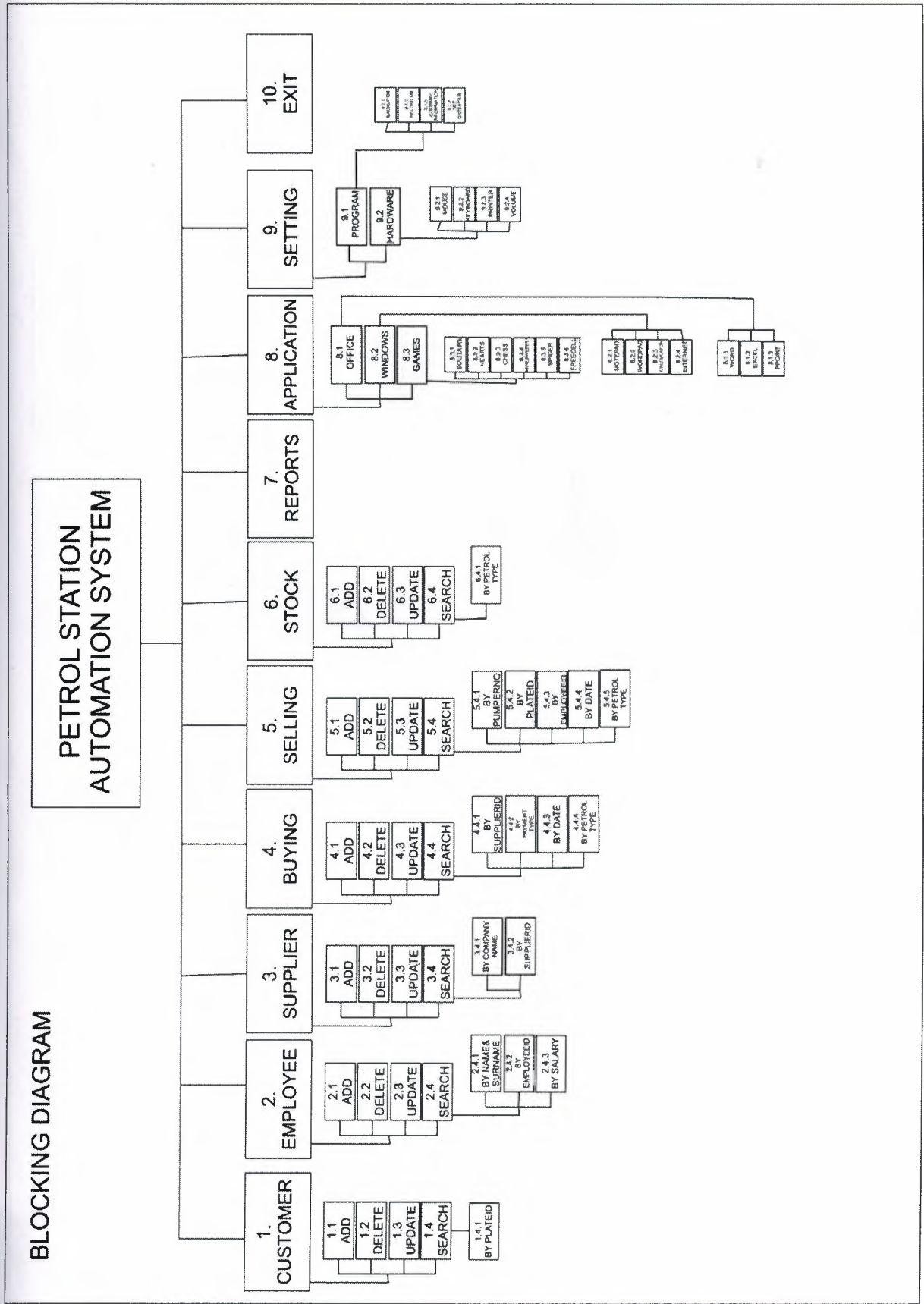


# DETAIL (Level-1) DFD For PROCESS 5 (REPORT PROCESS)

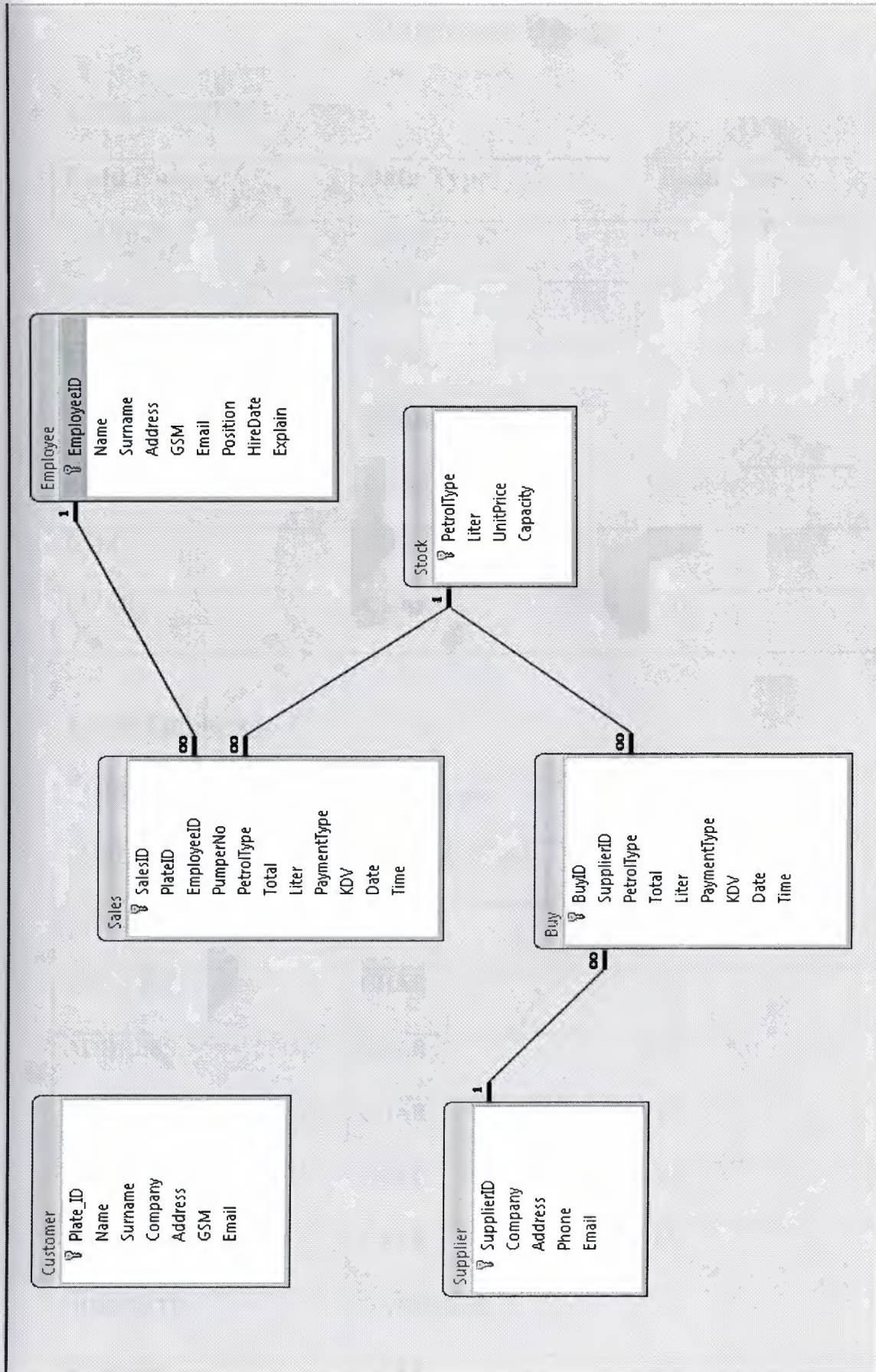


## DETAIL (Level-1) DFD For PROCESS 6 (EMPLOYEE PROCESS)











## Database Design

**Table Customer:**

Field Name	Data Type	Field Size
PLATE_ID	CHAR	9
NAME	CHAR	30
SURNAME	CHAR	20
COMPANY	CHAR	50
ADDRESS	CHAR	50
GSM	CHAR	15
EMAIL	CHAR	30

**Table Employee:**

Field Name	Data Type	Field Size
EMPLOYEE_ID	AUTONUMBER	
NAME	CHAR	30
SURNAME	CHAR	20
ADDRESS	CHAR	50
GSM	CHAR	15
EMAIL	CHAR	30
POSITION	CHAR	15
HIREDATE	DATE/TIME	
EXPLAIN	CHAR	50

**Table Supplier:**

Field Name	Data Type	Field Size
SUPPLIER_ID	AUTONUMBER	
COMPANY	CHAR	30
ADDRESS	CHAR	50
PHONE	CHAR	15
EMAIL	CHAR	30

**Table Buy:**

Field Name	Data Type	Field Size
BUY_ID	AUTONUMBER	
SUPPLIER_ID	NUMBER	
PETROLTYPE	CHAR	15
TOTAL	CURRENCY	
LITER	NUMBER	6
PAYMENTTYPE	CHAR	15
KDV	NUMBER	10
DATE	DATE/TIME	
TIME	DATE/TIME	

**Table Sales:**

Field Name	Data Type	Field Size
SALESID	AUTONUMBER	
PLATEID	CHAR	9
EMPLOYEEID	NUMBER	
PUMPERNO	NUMBER	
PETROLTYPE	CHAR	15
TOTAL	CURRENCY	
LITER	NUMBER	6
PAYMENTTYPE	CHAR	15
KDV	NUMBER	10
DATE	DATE/TIME	
TIME	DATE/TIME	

**Table Stock:**

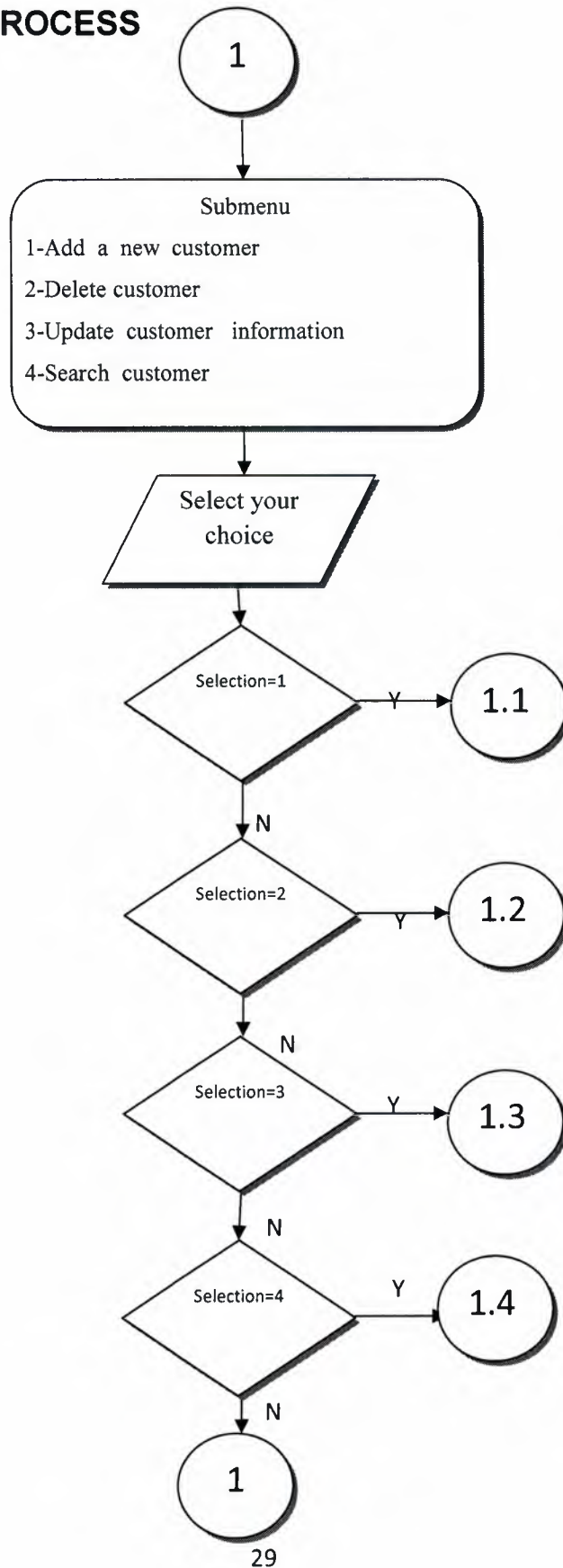
Field Name	Data Type	Field Size
PETROLTYPE	CHAR	15
LITER	NUMBER	
UNITPRICE	CURRENCY	
CAPACITY	NUMBER	

# USER MANUEL

Onke hie achla ma  
Sare'banus.

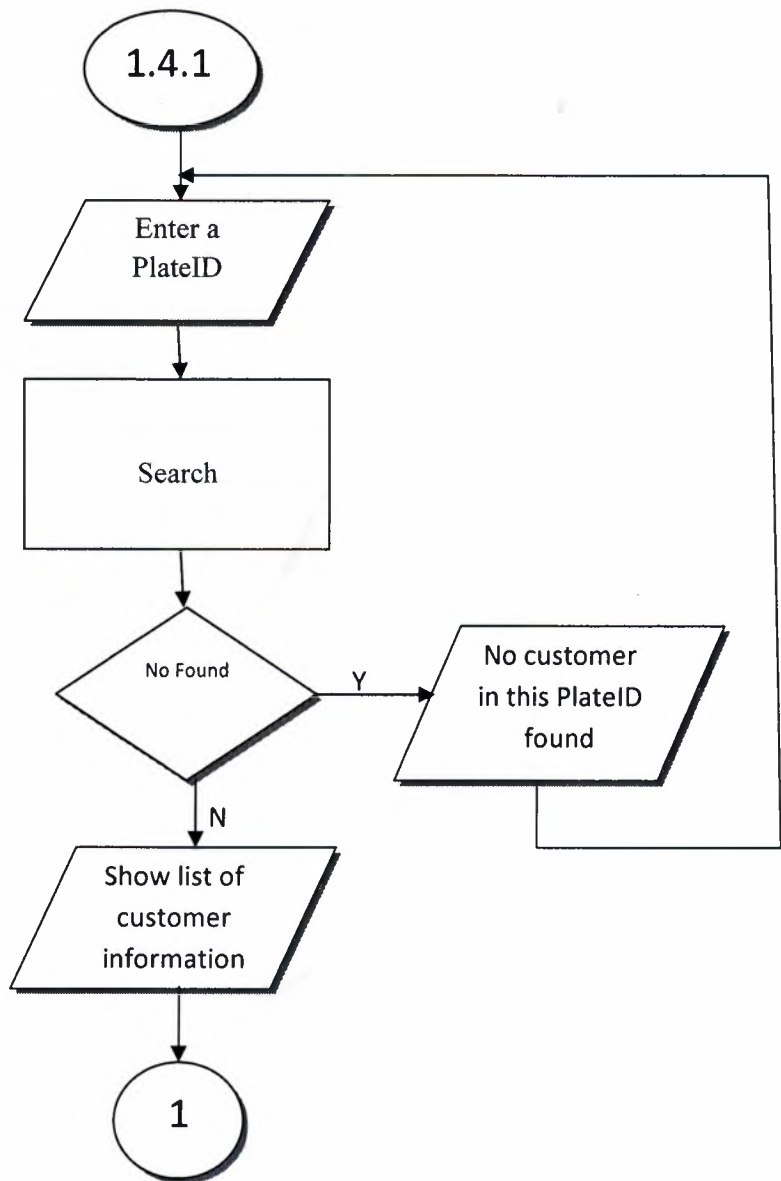
## FLOWCHART

### CUSTOMER PROCESS

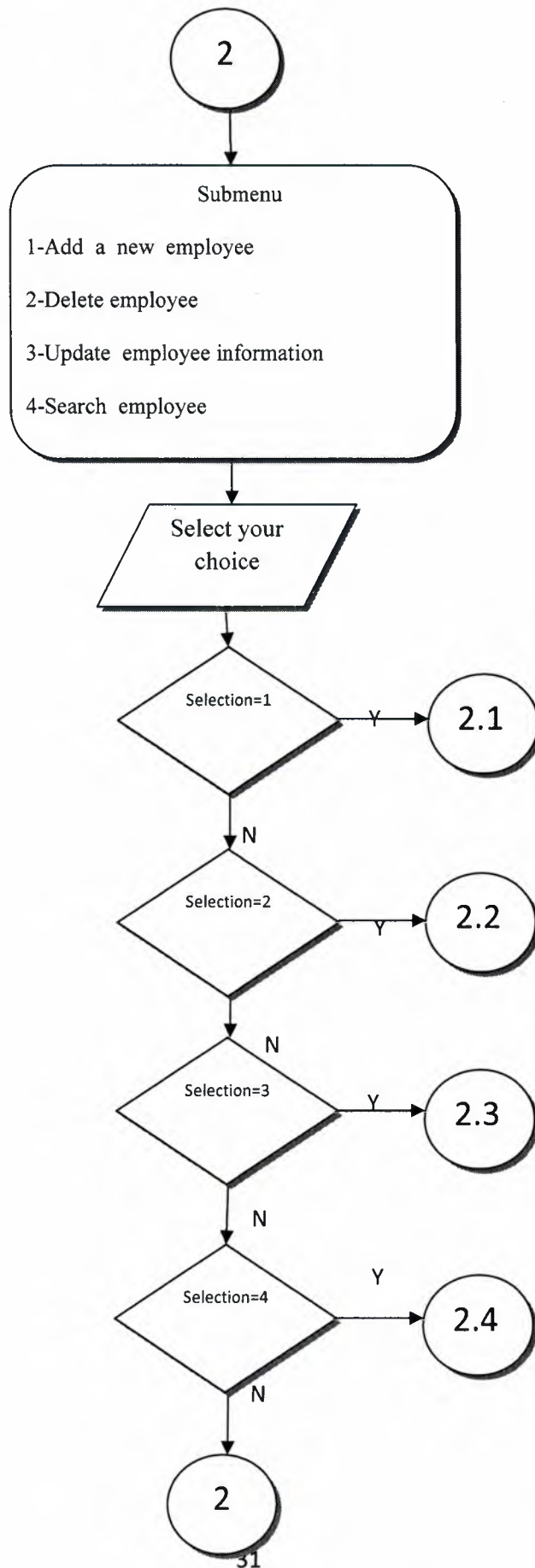




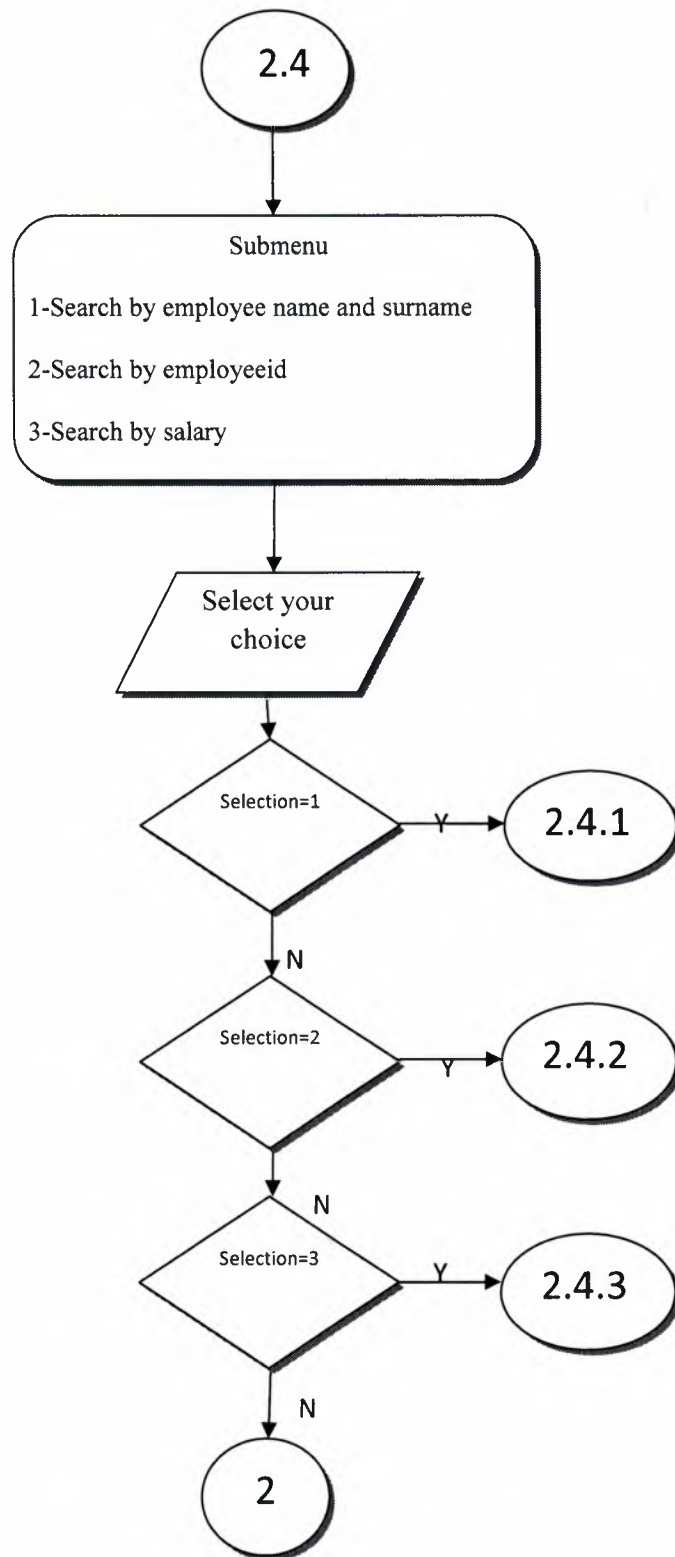
# SEARCHING CUSTOMER INFORMATION BY PlateID



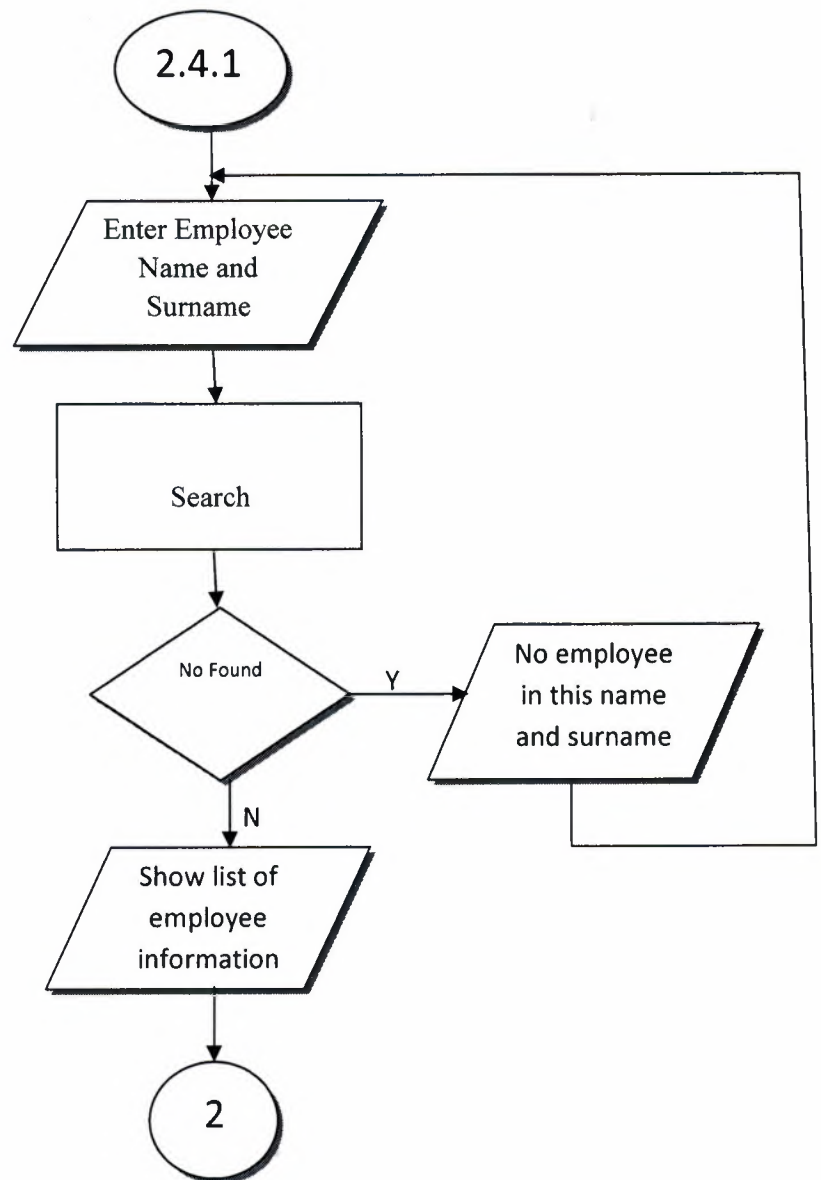
## EMPLOYEE INFORMATION



# SEARCHING EMPLOYEE INFORMATION

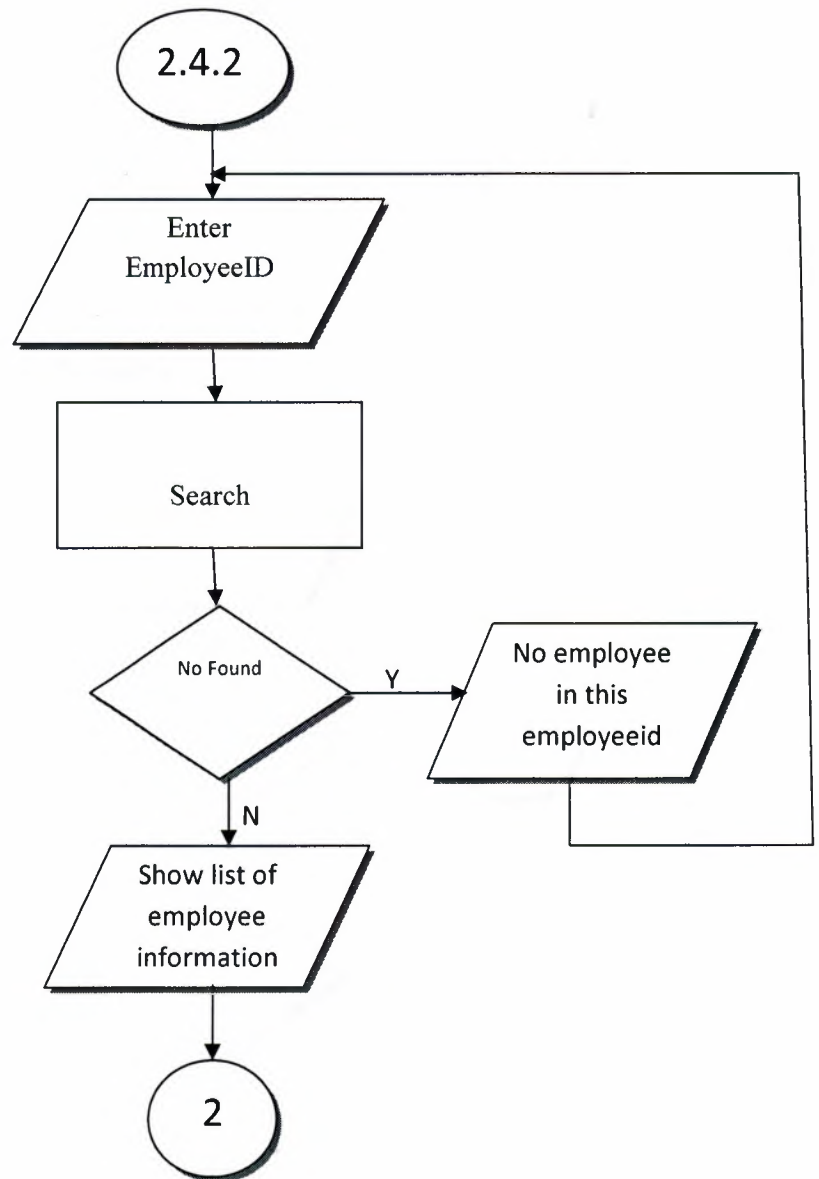


## SEARCHING EMPLOYEE INFORMATION BY Name and Surname

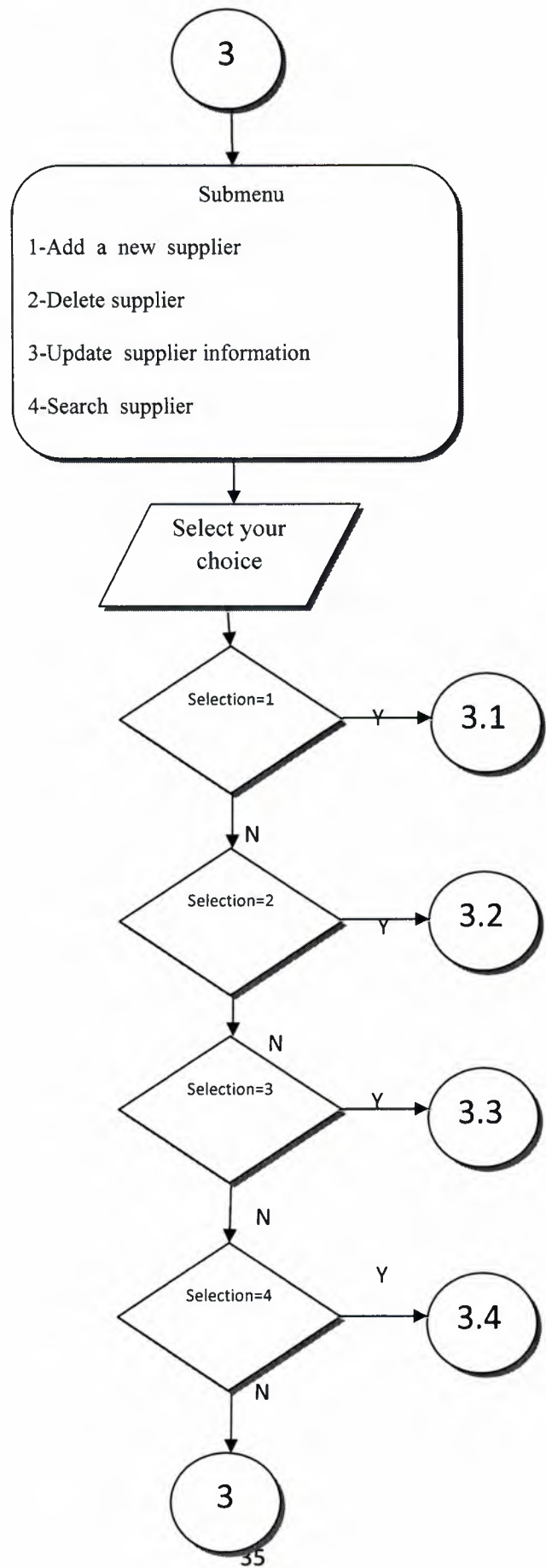




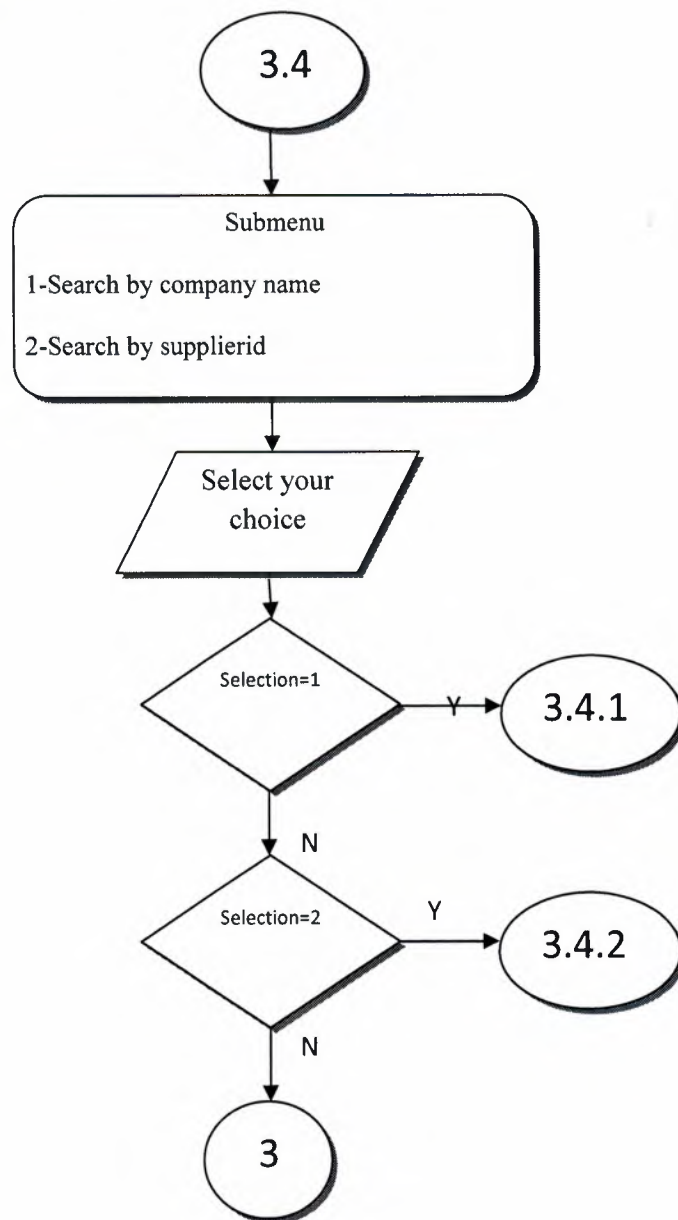
## SEARCHING EMPLOYEE INFORMATION BY EmployeeID



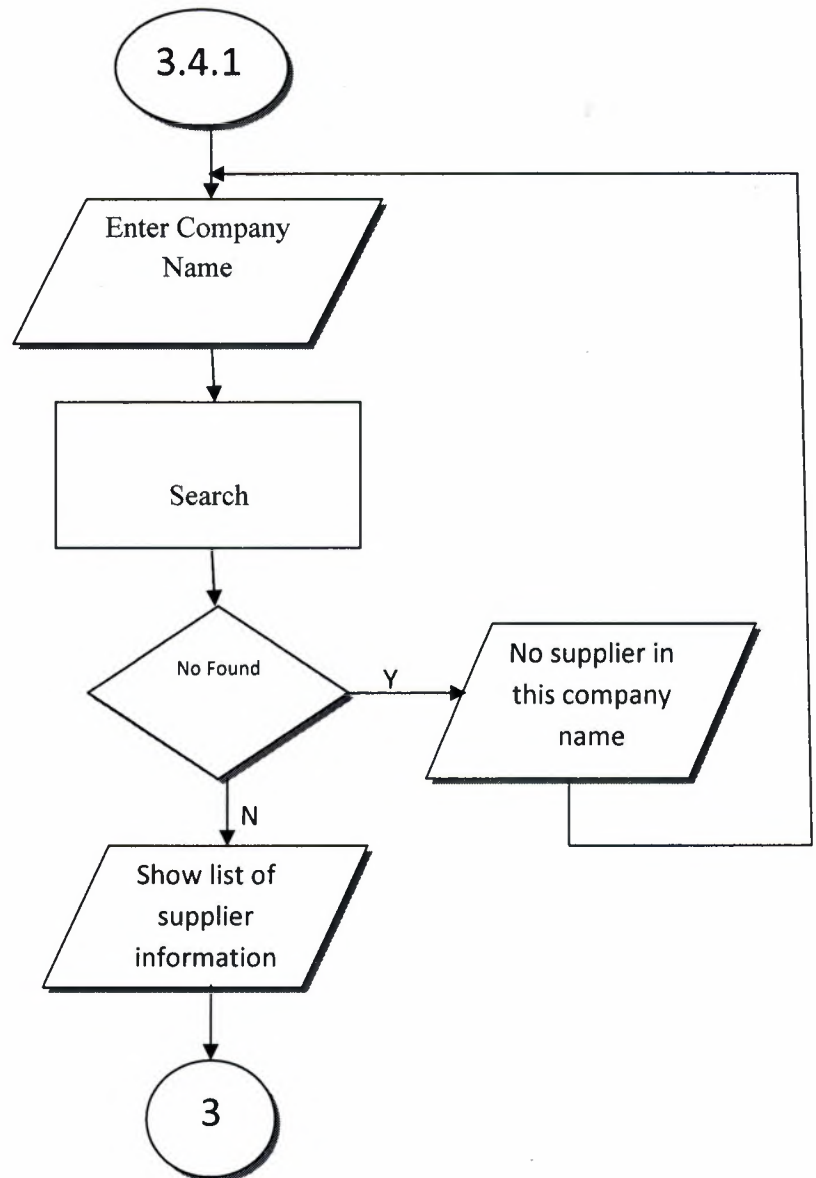
# SUPPLIER PROCESS



## SEARCHING SUPPLIER INFORMATION

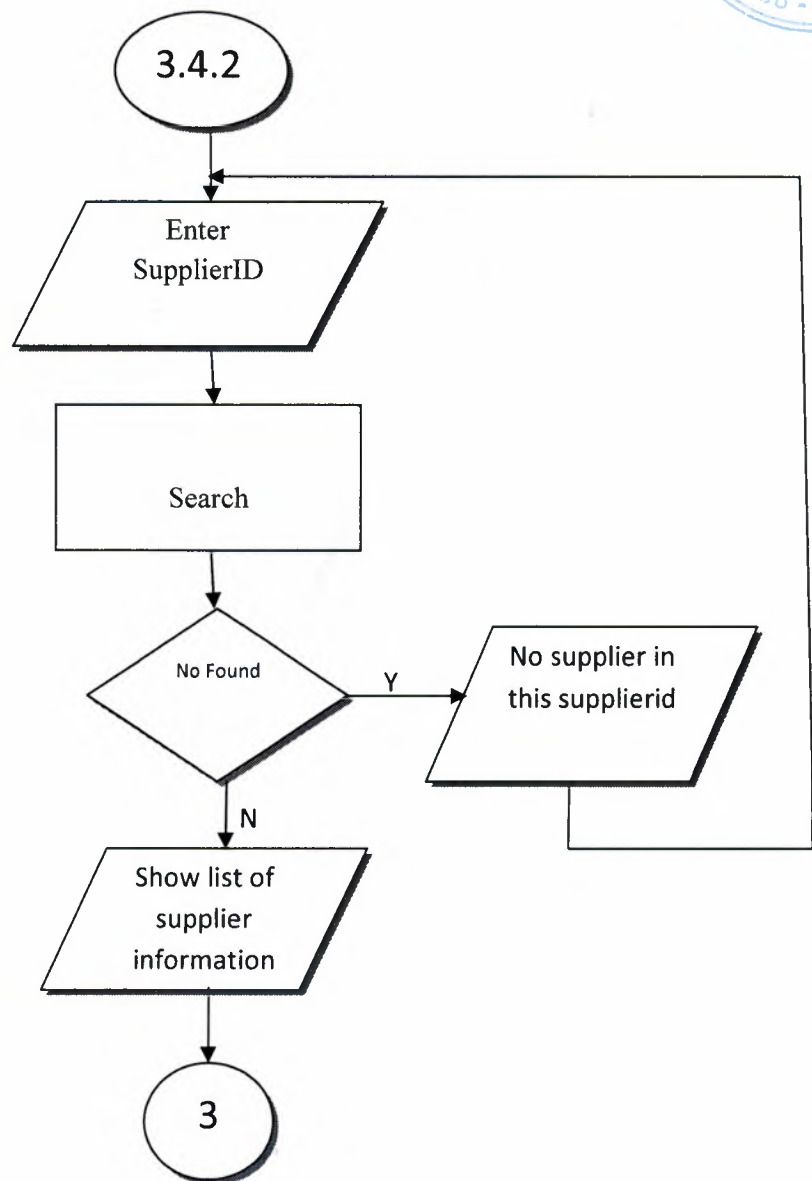


## SEARCHING SUPPLIER INFORMATION BY Company Name

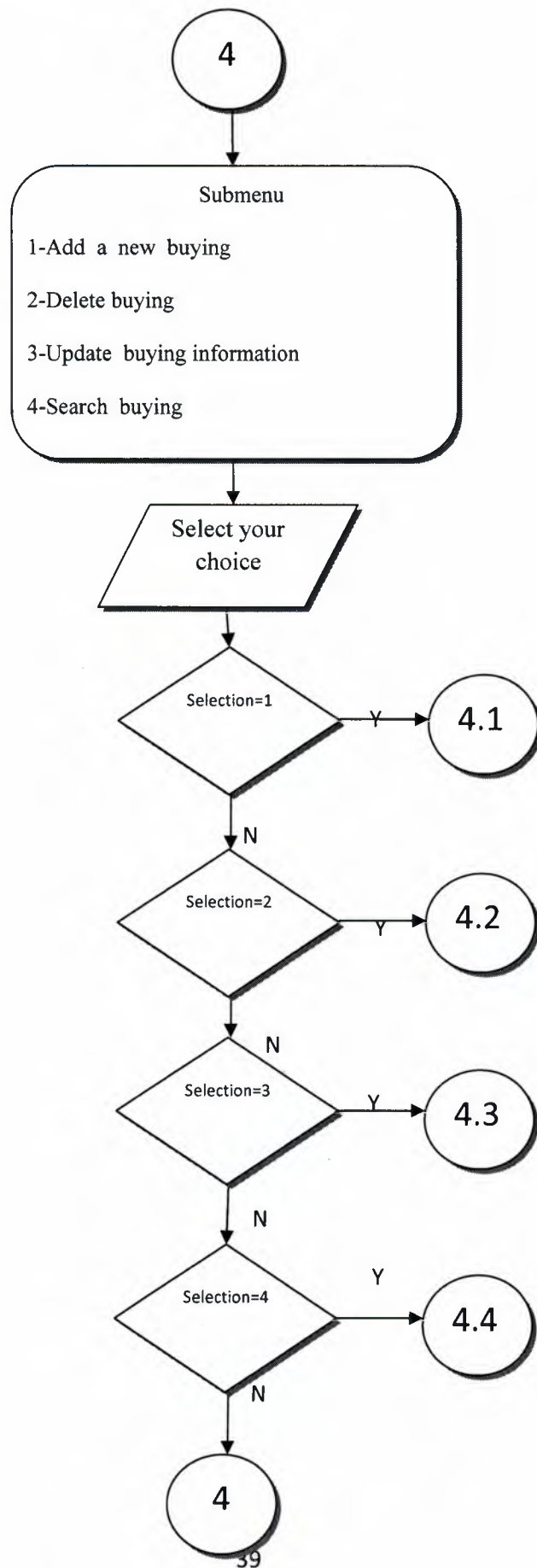




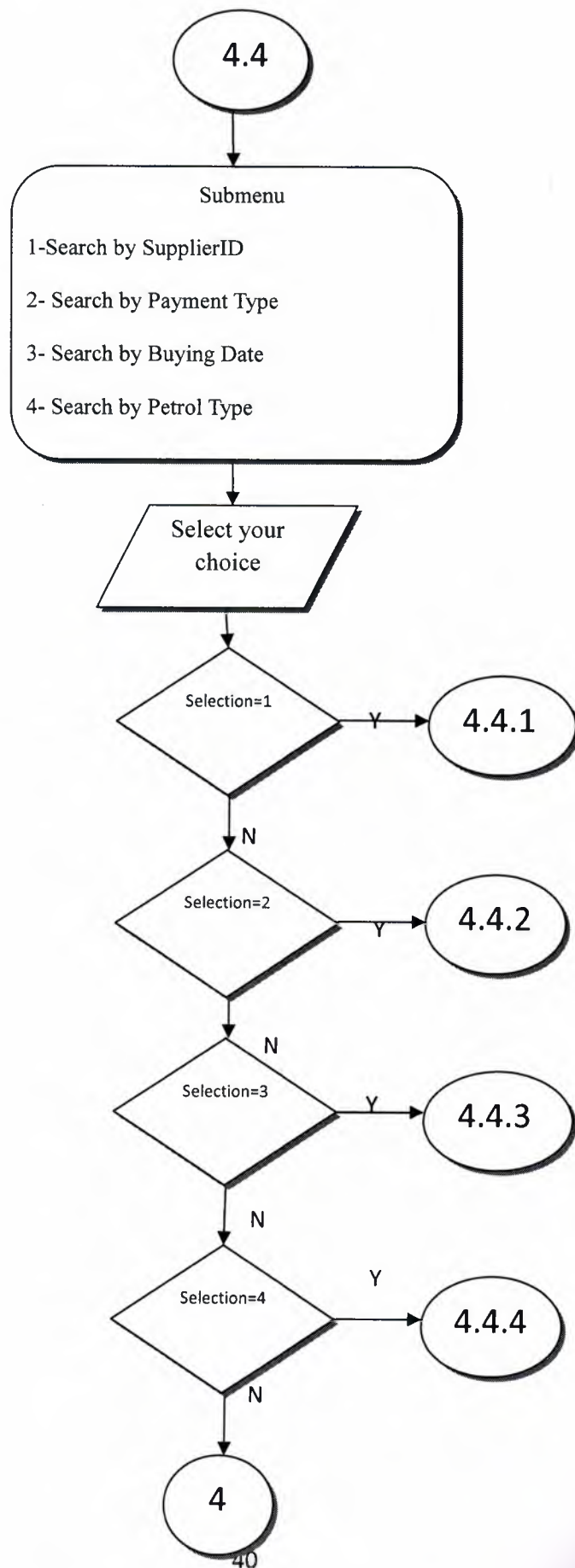
## SEARCHING SUPPLIER INFORMATION BY SupplierID



## BUYING PROCESS



## SEARCH BUYING INFORMATION



**NEAR EAST UNIVERSITY**



**Faculty of Economics and Administrative  
Sciences**

**Department of Computer Information Systems**

**PETROL STATION AUTOMATION SYSTEM**

**Graduation Project  
CIS – 400**

**Betül Beyza APAYDIN**

**Assist. Prof. Dr Yalçın AKÇALI**

**Nicosia - 2009**





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## ACKNOWLEDGEMENTS

*“First, I would like to thank my instructor Yrd.Doç.Dr. Yalçın AKÇALI and Miss Yrd.Doç.Dr. Nadire ÇAVUŞ for their invaluable advice and belief in my work and myself over the course of this Graduation Project. They helped and motivated to me every time.*

*Second, I thank my family for their constant encouragement and support during the preparation of this project and my family for their psychological support in all parts of life by providing me comfort and necessary conditions to develop myself and educate in high level*

*Third, I would also like to thank all my friends for their advice and support.*

*Finally, I would like to express my gratitude to Near East University for the scholarship that made the work possible.”*

## **ABSTRACT**

The Project is Petrol Station Automation System. This system is a simple and useful programme which is written for petrol stations with the help of this programme, limitless customer can be identified. Also, the changes of prices can be applied for customers immediately. This is a useful and special and handy programme. It is a little programme in which stock petrol, money input and outputs and employees can be followed.

Before I analyzed the Petrol Stations when I started this project. At the end of this analysis, I see to run into towards these problems. I think to find a best solutions these problems.

I choose this project because I saw that the petrol station operations in Turkey some petrol station are manuel and go very slow. Every petrol station available a pumper pointer. But also fit change the worker to write and to collect sells the petrol between the working hours. Also this form to make the mistakes and the account too few or too many probability to high. On the other hand, some firm to buy petrol after they will pay whole at the end of month. The petrol station to write notebook these firms payment information. This notebook to be lost or forget to register probability to high. The petrol station automation system, aims to provide easier works or processes for people who does petrol commercial job. This petrol station automation system is easy way for people.

# INTRODUCTION

In the easy years, when people make buying or selling, they have to hold all informations related with this process on the notebook. However they have to do all calculations as manuel. Because of this cause, many calculation errors or missing information is occurred. After this period it is started to keep the information in the computer. But now it is started to store these information in database by using programs. Everything includes in our program. Program kept customer information, stock information, selling and buying process, supplier information and also computing of these automatically then employee informations. I mean this program answered to every need of people.

Before I analyze this project and decision analysis is triggered by the candidate solution of the project, which is a solution to an opportunity that can be viewed as a chance to improve the organization it is created for even in the absence of an identified problem in the business's current system.

The petrol station system is performance, information and data, economics, control, efficiency, and service to customers and employees will improve.



## **For the Official User Type;**

The Main Process Performed in the Petrol Station Automation System:

- 1) Customer Process
- 2) Employee Process
- 3) Supplier Process
- 4) Buying Process
- 5) Selling Process
- 6) Stock Process
- 7) Reports
- 8) Application
- 9) Settings
- 10) Exit

The Subprocesses Performed by “Customer Process” process are:

- 1) Add
- 2) Delete
- 3) Update
- 4) Search

The Subprocesses Performed by “Customer Process Search” process are:

- 1) Searching by PlateID

The Subprocesses Performed by “Employee Process” process are:

- 1) Add
- 2) Delete
- 3) Update
- 4) Search

The Subprocesses Performed by “Employee Process Search” process are:

- 1) Searching by Employee Name and Surname
- 2) Searching by EmployeeID
- 3) Searching by Salary

The Subprocesses Performed by “Supplier Process” process are:

- 1) Add
- 2) Delete
- 3) Update
- 4) Search

The Subprocesses Performed by “Customer Process Search” process are:

- 1) Searching by Company Name
- 2) Searching by SupplierID

The Subprocesses Performed by “Buying Process” process are:

- 1) Add
- 2) Delete
- 3) Update
- 4) Search

The Subprocesses Performed by “Buying Process Search” process are:

- 1) Searching by SupplierID
- 2) Searching by Payment Type
- 3) Searching by Buying Date
- 4) Searching by Buy Petrol Type

The Subprocesses Performed by “Selling Process” process are:

- 1) Add
- 2) Delete
- 3) Update
- 4) Search

The Subprocesses Performed by “Selling Process Search” process are:

- 1) Searching by Pumper No
- 2) Searching by PlateID
- 3) Searching by EmployeeID
- 4) Searching by Selling Date
- 5) Searching by Selling Petrol Type

The Subprocesses Performed by “Stock Process” process are:

- 1) Add
- 2) Delete
- 3) Update
- 4) Search

The Subprocesses Performed by “Application” process are:

- 1) Office Applications
- 2) Windows Applications
- 3) Games

The Subprocesses Performed by “Application Office Applications” process are:

- 1) Word
- 2) Excel
- 3) Powerpoint

The Subprocesses Performed by “Application Windows Applications” process are:

- 1) Notepad
- 2) Wordpad
- 3) Calculator
- 4) Internet Explorer

The Subprocesses Performed by “Application Games” process are:

- 1) Solitaire
- 2) Mshearts
- 3) Chess
- 4) Minesweeper
- 5) Spider
- 6) Freecell

The Subprocesses Performed by “Settings” process are:

- 1) Program Settings
- 2) Hardware Settings

The Subprocesses Performed by “Settings Program Settings” process are:

- 1) Backup Database
- 2) Reload Database
- 3) Company Information
- 4) Set Date & Time

The Subprocesses Performed by “Settings Hardware Settings” process are:

- 1) Mouse
- 2) Keyboard
- 3) Printer
- 4) Volume Control

# DESIGN OF THE SYSTEM



## EXPLANATION

The minimum requirements of the system are as follows;

- Intel Pentium III Processor
- 500 MHz
- 128 MB of RAM
- 30 GB Harddisk
- 14" Monitor
- Microsoft 98
- CD-ROM

The recommended requirements of the system are as follow;

- Intel Core 2 Duo Processor
- 2.0 GHz
- 2 GB of RAM
- 250 GB Harddisk
- 17" Monitor
- DVD-RW
- Ethernet Card

I used Delphi programming language for writing this Project and Access database for keeping the data.

Besides, to be able to run this program, Delphi has Installshield Express Wizard that encodes the program and gives the execution of the program to the user.

# **PETROL STATION AUTOMATION SYSTEM**

## **1-) PROJECT IDENTIFICATION AND SELECTION**

### **Aim of The Project:**

Petrol Station Automation System aims to provide easier works or processes for people who does petrol commercial job. This automation system is easy and best way and to provide a much more comfortable inspection environment by obtaining the income, expenses and stock control. This system has some control mechanism during the process.

This system is usable, easiness and flexibility that the new system wishes to bring the users and corrections.

### **Project Boundries:**

- 1) The Profit center as a whole can experience improved performance because less human error is possible as a result of the now automated system. More focus can be placed on sales and marketing to fuel customers as well as other job functions not related to the billing of accounts and the management of the fuel price.
- 2) The employee cards to hold employee information, who and when the employees sell the customer.
- 3) Using the database this system will improve the storage of the data and allow for many convenient ways to retrieve data and transform it into meaningful information. Utilizing the system to monitor profit margin and remaining up to date with the competitive fuel station can help to increase profits therefore improving economics.
- 4) Designing the petrol station with a password protection mechanism and a web interface with built in validation enhances control of data and security. The system also maintains an elevated level of service to customers by providing an easy to understand printed billing statement and the availability of customer history records. The records may be useful to customers and aid the Fuel center in negotiating competitive fuel discounts. Automation contributes to better efficiency along with the web interface design of the system. This design improves communication of data by reducing the wait time for sales and discount reports.

### **The Resource Limits:**

The budget of the petrol station is very limited because it is a petrol station support by the petrol station owners. However the system will be expensive and some of the users in the petrol station may be sent to computer courses.

## **2-) PROJECT INITIATION AND PLANNING**

### **Technical Feasibility**

This system is technically feasible because the solution is technically practical in that it does not require a great deal of resources unavailable to the Fuel Island profit center. No additional hardware is needed. The center currently uses a back office computer running the Window XP platform to store the customer data in Microsoft Excel spreadsheet format. Microsoft Word is used to generate billing statements. A web browser is installed and a high speed Internet connection available. As the developer of the system I have the technical expertise to complete the project given the knowledge I have acquired during the database systems course along with knowledge of web development acquired outside of university course work. Technical feasibility examines if the solution is technically practical and if the developer has the technical expertise to design and build the solution.

### **Operational Feasibility**

This system is operational feasible because it fulfills the user's current requirement such as adding, deleting, and modifying all aspects of customer information, generating daily sales and profit reports, and generating customer billing statements and receivable notices. The system will change the user's environment because it will waste less paper, add organization, and speed data retrieval time. As of this point in the development process the users feel the system will have a positive impact on their organization. More feedback will be acquired throughout development and as a prototype is developed and tested.

Operational feasibility reveals how the solution will fulfill the user's current requirements for the job function, how the solution will positively change the user's work environment, and how users feel about the solution.

## **Economical Feasibility**

The system is economical feasible because as mentioned before no additional hardware is needed. The software Caging will be installed to provide the like environment. All of these software applications are open source and can be obtained at no charge.

Economical feasibility determines if the solution is cost-effective and schedule feasibility assesses if the solution can be designed and implemented within an acceptable time period.

## **Schedule Feasibility**

When evaluating schedule feasibility and considering the amount of work required bringing the project to completion I am confident the solution can be designed and implemented within the allotted time. A Gantt chart is included at the end of this document describing the details of the projected completion time frame.

## **Risk Feasibility**

The risk feasibility measures the probability of a successful implementation using the technology I am confident the project will be completed favorably because I have worked on the development of a team database project using similar technology. Also following diligently to the approach put forth in the petrol projects course offers an enhanced chance of successful completion.

This system's risk feasibility measures the probability of a successful implementation using the technology and approach put forth in the solution.

## **3-) ANALYSIS**

### **The Requirements Determination:**

The requirements made by the users are follows:

- To increase the speed of operations
- To prevent the loss of data
- To prevent the data duplications
- To provide easy and quick data access
- To prevent the chaos caused by the increasing number of customers



- To restrict data access with the means of the system security (password entry)

### **The Existing System's Capabilities:**

- The petrol station work a manual system. All of the documents are held in hand.
- First of all, customers pays the petrol fee unless she/he is not buying. There is a pay-office official for this process.
- The next process is every petrol station available a pumper pointer. But also fit change the worker write and to collect sells the petrol between the working hours. Also this form to make the mistakes and the account too few or too many probability to high.
- The last process is some firms to buy petrol after they will pay whole at the end of month. The petrol station's employees to write a notebook these firms payment information. This notebook to be lost or forget to register probability to high.

### **New System Providences:**

- The new system will only be accessed by the authorized users. This will provide more secured and accurant operations. The employees' individual information will only entered or changed by the registration official. The other users in the system will only be able to see this information.
- All data will be kept in computers, therefore problems of storing customers information will be solved. Also the data for each customers will be kept indivually, members of a family will be separated in the system.
- The employees to write a computer the fit start and finish hours. And the computer to compute between the start and finish hours whole sells petrols. Then the computer to show the result.
- Every customers to buy petrol when the petrol station will give a bill and same time this information to write a customer's account. Also at the end of month, customer will pay whole payment to show total of results also computer.
- The new system will be reflecting the price changes to customers, detailed stock operations and to be classify according to kind of operations, recording the buying and selling operations and their reports, showing the level of the tone of



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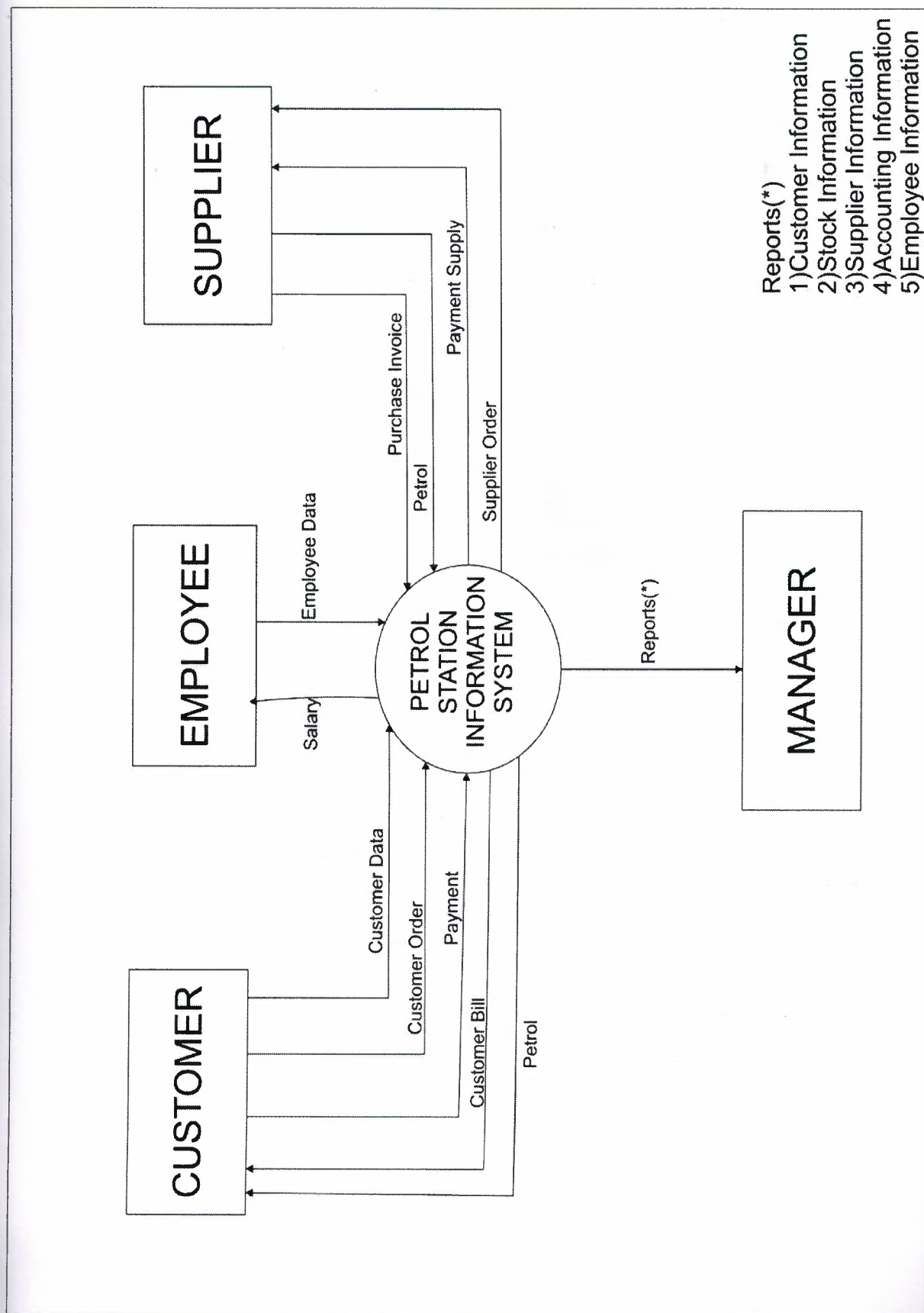
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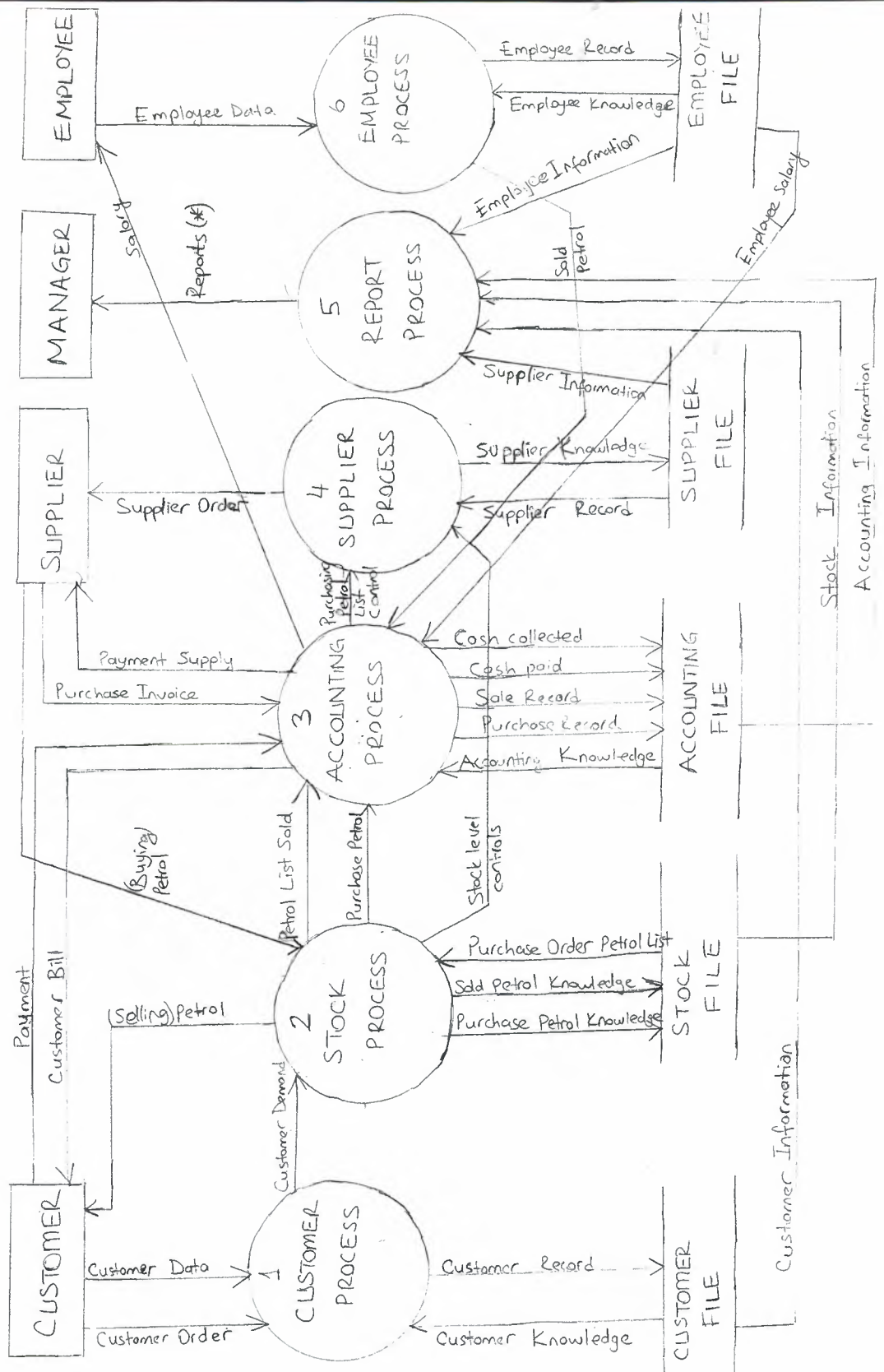
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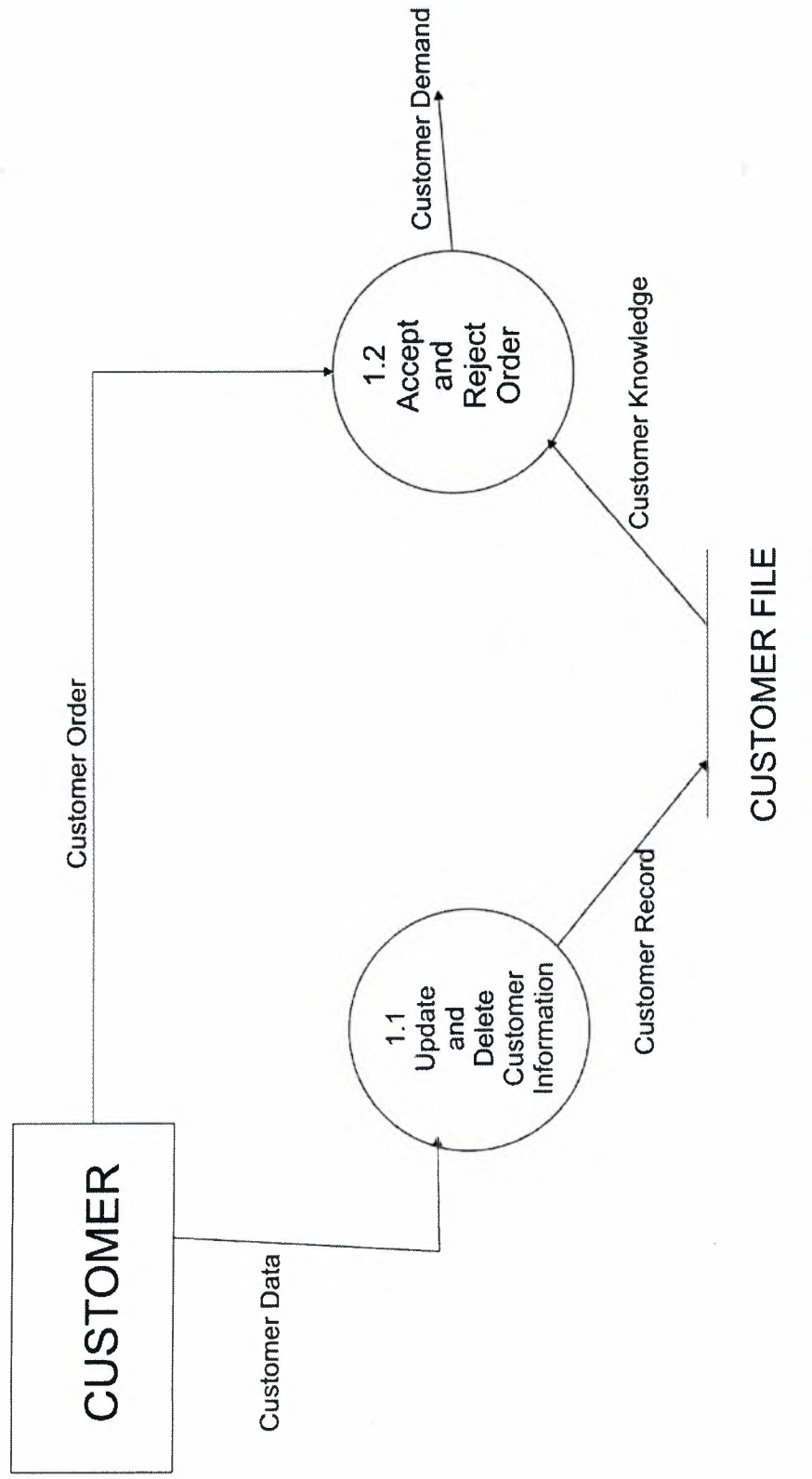
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- 2. Employee Process:** We enter for the first time add a new employee information, salary information, beginning date of the job and every days start and finish the job time. Delete necessary employee information. The other hand, update the employee information. The last one searching a employee by a name and surname, searching by employeeID, searching by employee salary.
- 3. Supplier Process:** We enter for the first time add a new supplier information, salary information. Delete necessary supplier information. The other hand, update the supplier information. The last one searching a supplier by a company name and searching by a supplierID.

- 4. Buying Process:** We enter for the first time add to buying a new petrol type in a depot. Delete necessary buying information. The other hand, update to buying information. The last one searching buying a by supplierID, searching buying by a payment type, searching by a buying date and searching by buying petrol type.
- 5. Selling Process:** We enter for the first time add to selling a petrol type in a pumper. Delete necessary selling information. The other hand, update to selling information. The last one searching selling a by pumper no, searching by a plateID, searching selling date and searching by a selling petrol type.
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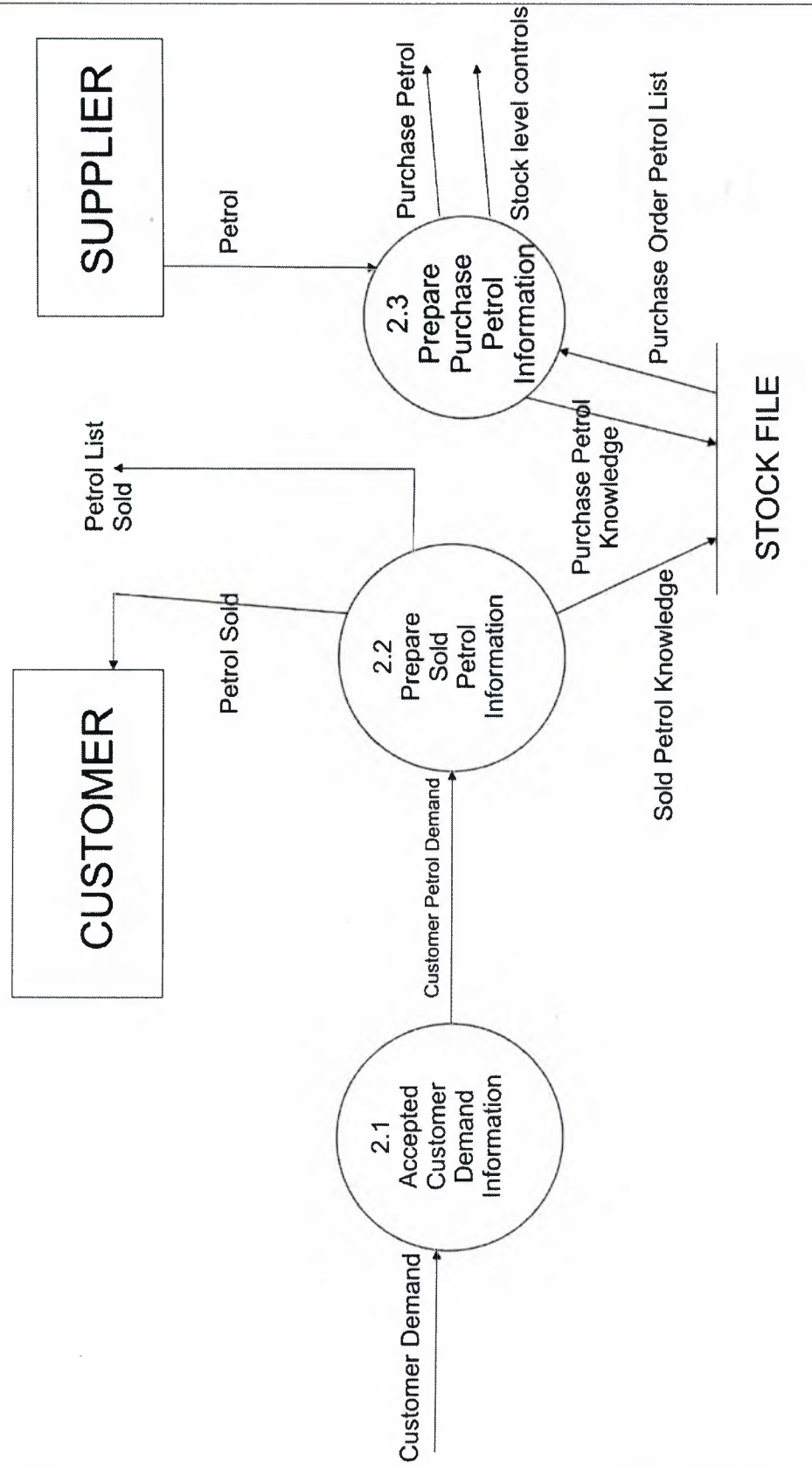


## DETAIL (Level-1) DFD For PROCESS1 (CUSTOMER PROCESS)

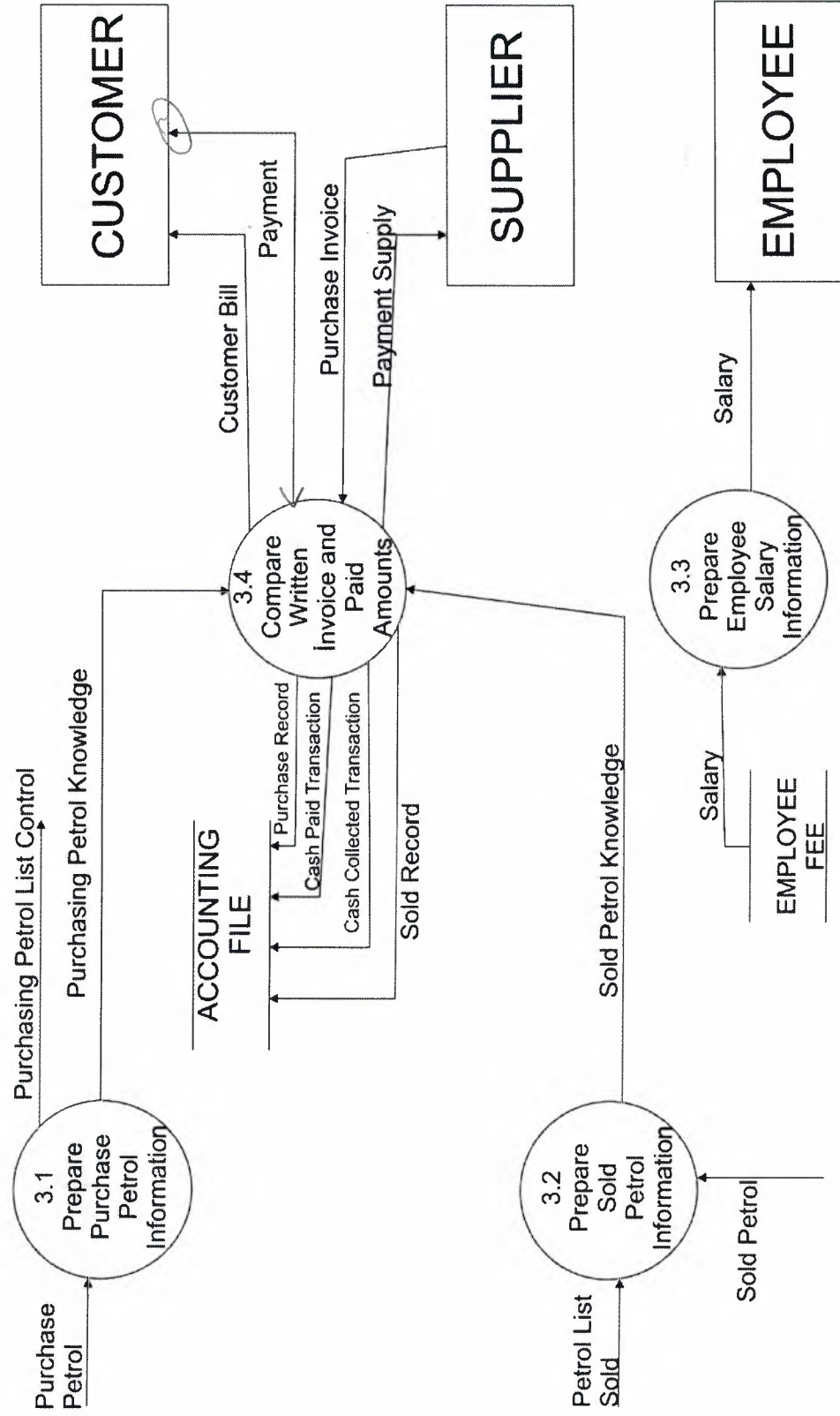




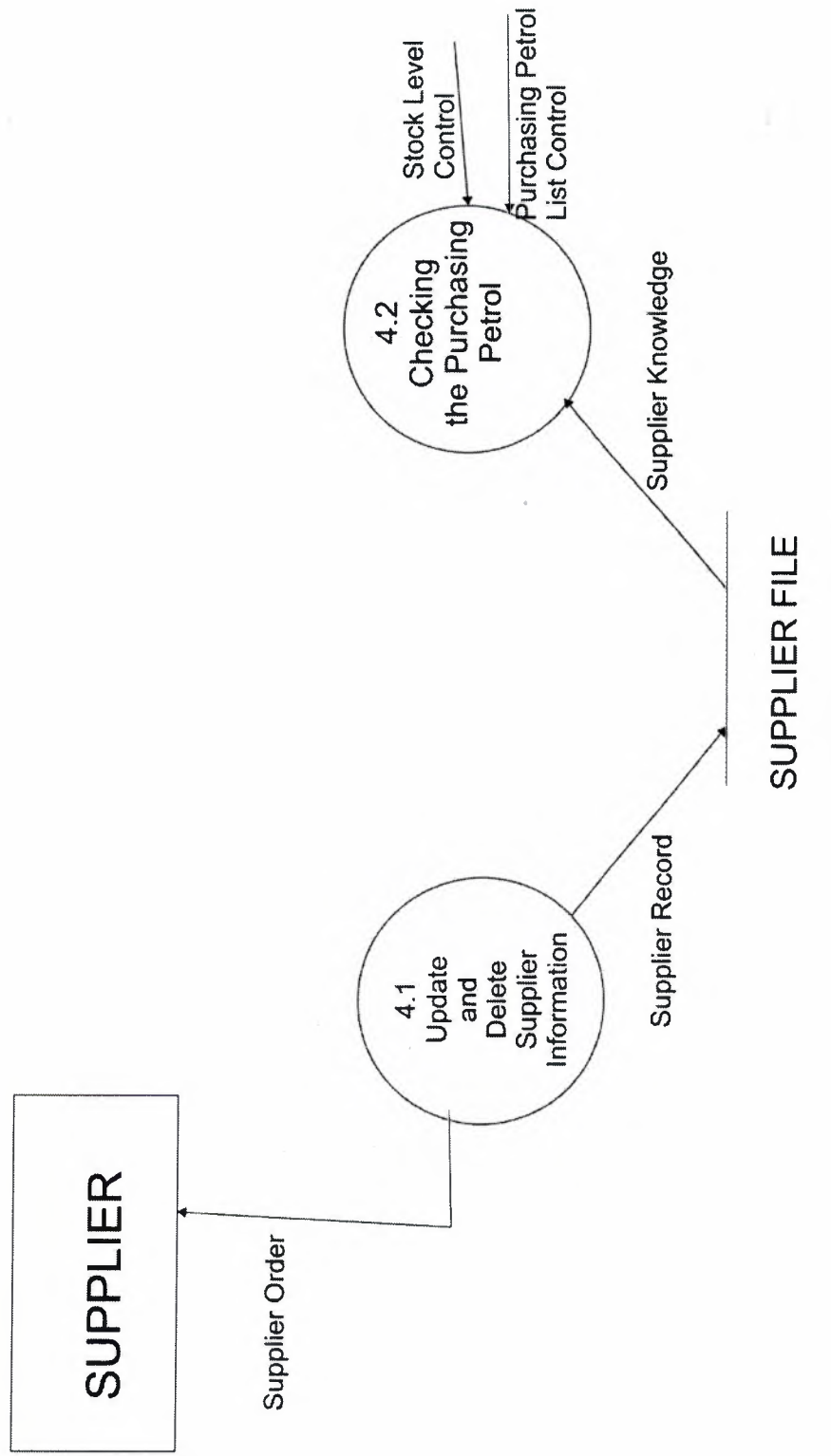
## DETAIL (Level-1) DFD For PROCESS 2 (STOCK PROCESS)



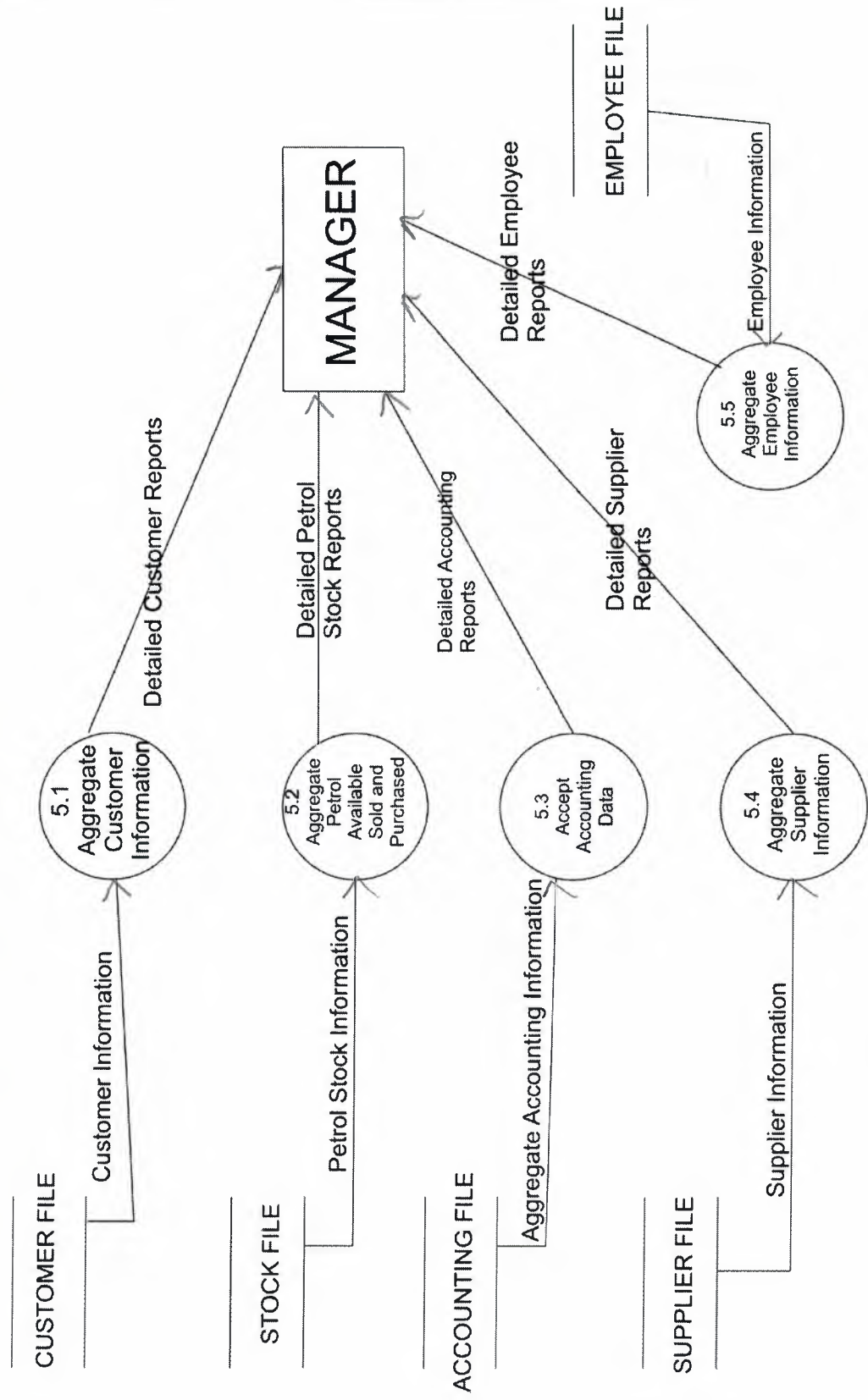
# DETAIL (Level-1) DFD For PROCESS 3 (ACCOUNTING PROCESS)



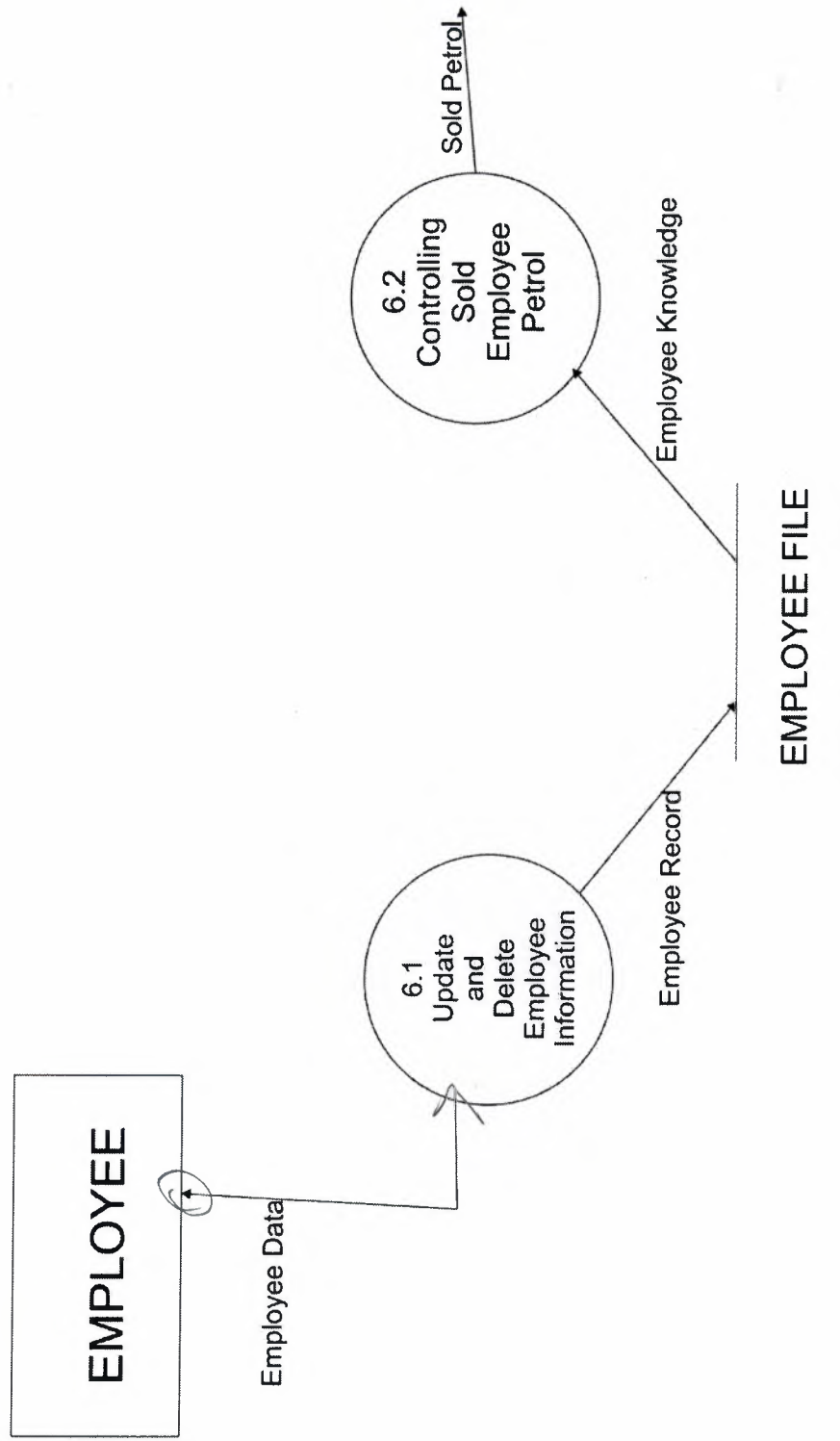
## DETAIL (Level-1) DFD For PROCESS 4 (SUPPLIER PROCESS)



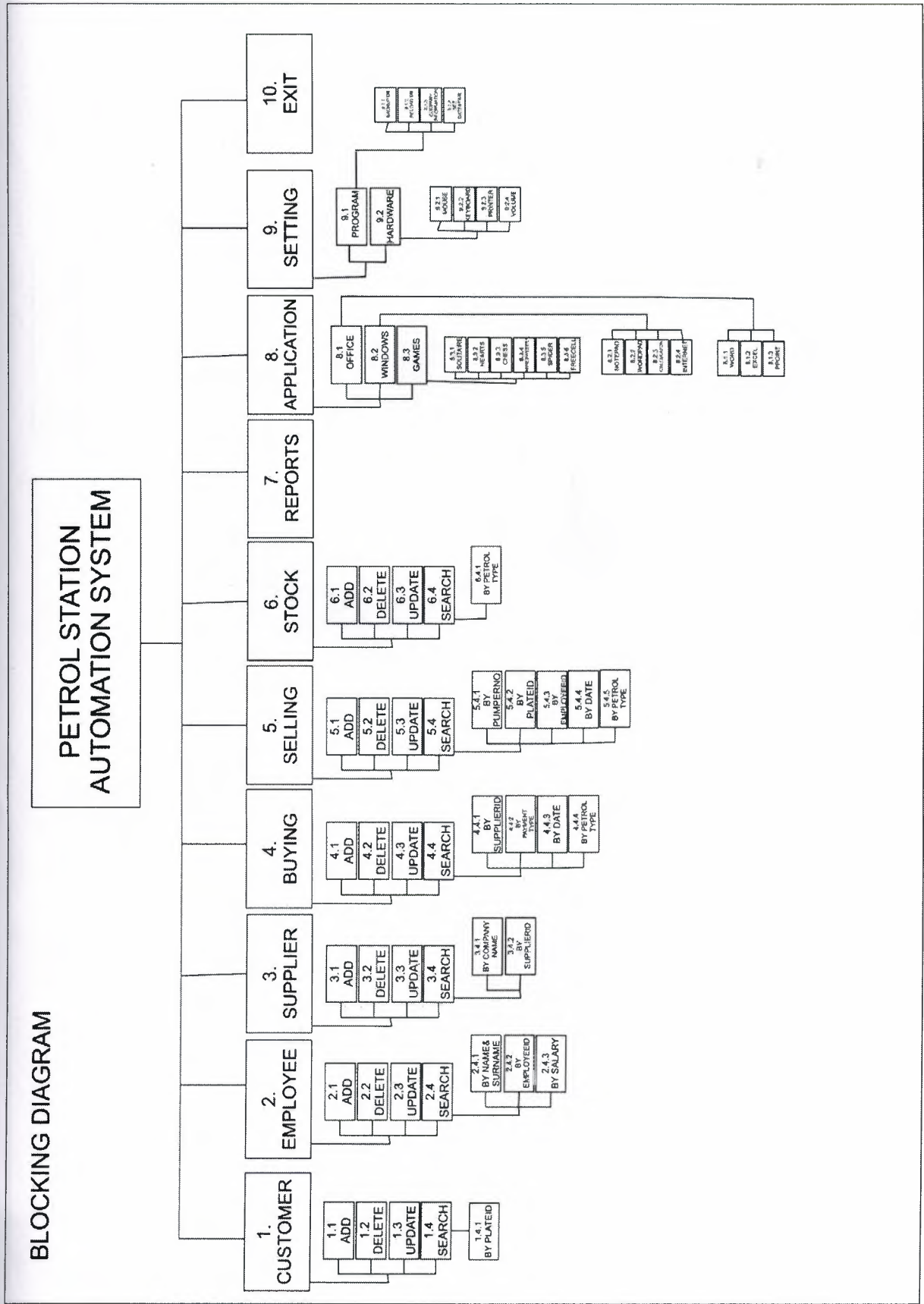
# DETAIL (Level-1) DFD For PROCESS 5 (REPORT PROCESS)

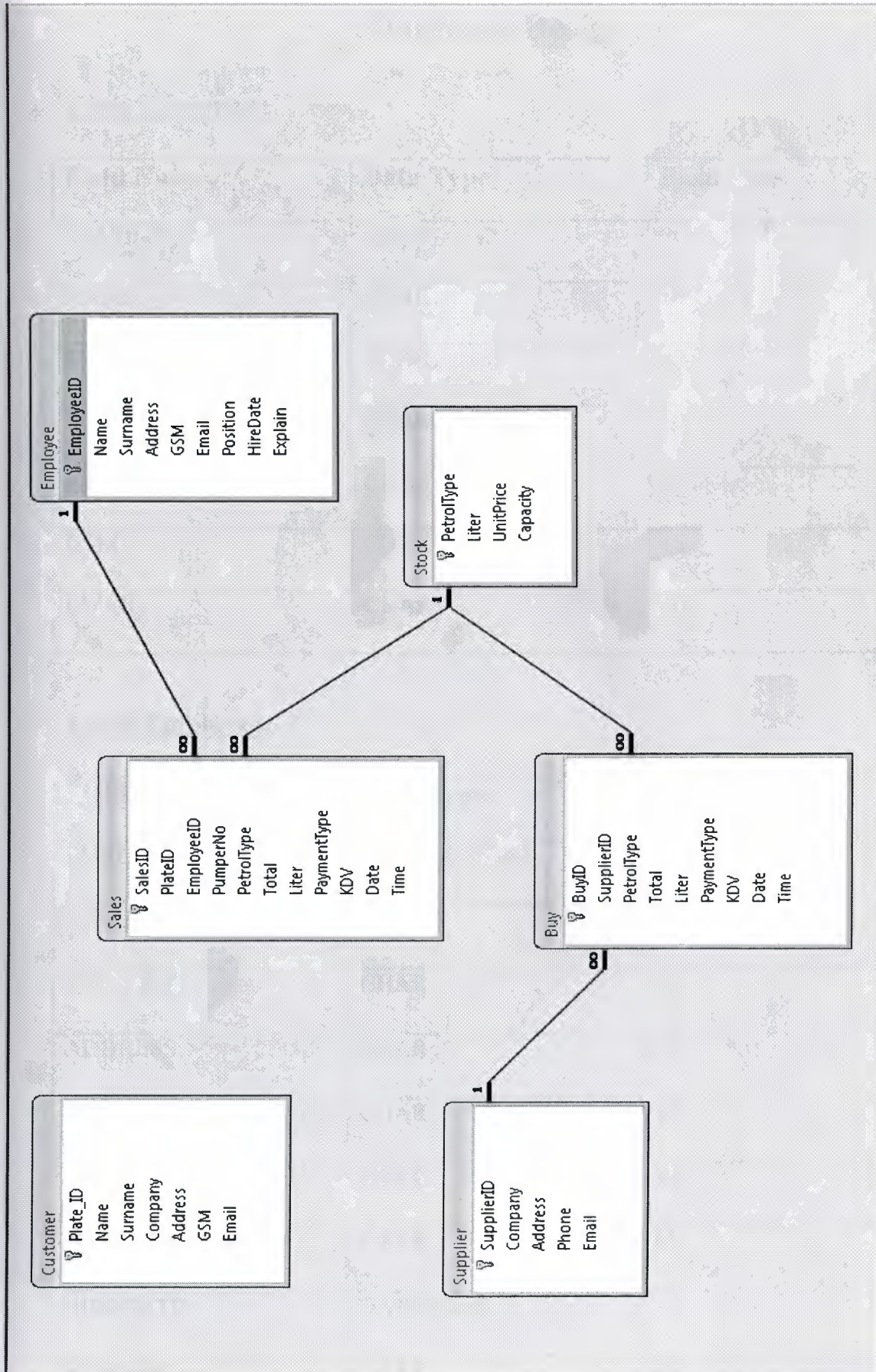


## DETAIL (Level-1) DFD For PROCESS 6 (EMPLOYEE PROCESS)











## Database Design

**Table Customer:**

Field Name	Data Type	Field Size
PLATE_ID	CHAR	9
NAME	CHAR	30
SURNAME	CHAR	20
COMPANY	CHAR	50
ADDRESS	CHAR	50
GSM	CHAR	15
EMAIL	CHAR	30

**Table Employee:**

Field Name	Data Type	Field Size
EMPLOYEE_ID	AUTONUMBER	
NAME	CHAR	30
SURNAME	CHAR	20
ADDRESS	CHAR	50
GSM	CHAR	15
EMAIL	CHAR	30
POSITION	CHAR	15
HIREDATE	DATE/TIME	
EXPLAIN	CHAR	50

**Table Supplier:**

Field Name	Data Type	Field Size
SUPPLIER_ID	AUTONUMBER	
COMPANY	CHAR	30
ADDRESS	CHAR	50
PHONE	CHAR	15
EMAIL	CHAR	30

**Table Buy:**

Field Name	Data Type	Field Size
BUY_ID	AUTONUMBER	
SUPPLIER_ID	NUMBER	
PETROLTYPE	CHAR	15
TOTAL	CURRENCY	
LITER	NUMBER	6
PAYMENTTYPE	CHAR	15
KDV	NUMBER	10
DATE	DATE/TIME	
TIME	DATE/TIME	

**Table Sales:**

Field Name	Data Type	Field Size
SALESID	AUTONUMBER	
PLATEID	CHAR	9
EMPLOYEEID	NUMBER	
PUMPERNO	NUMBER	
PETROLTYPE	CHAR	15
TOTAL	CURRENCY	
LITER	NUMBER	6
PAYMENTTYPE	CHAR	15
KDV	NUMBER	10
DATE	DATE/TIME	
TIME	DATE/TIME	

**Table Stock:**

Field Name	Data Type	Field Size
PETROLTYPE	CHAR	15
LITER	NUMBER	
UNITPRICE	CURRENCY	
CAPACITY	NUMBER	

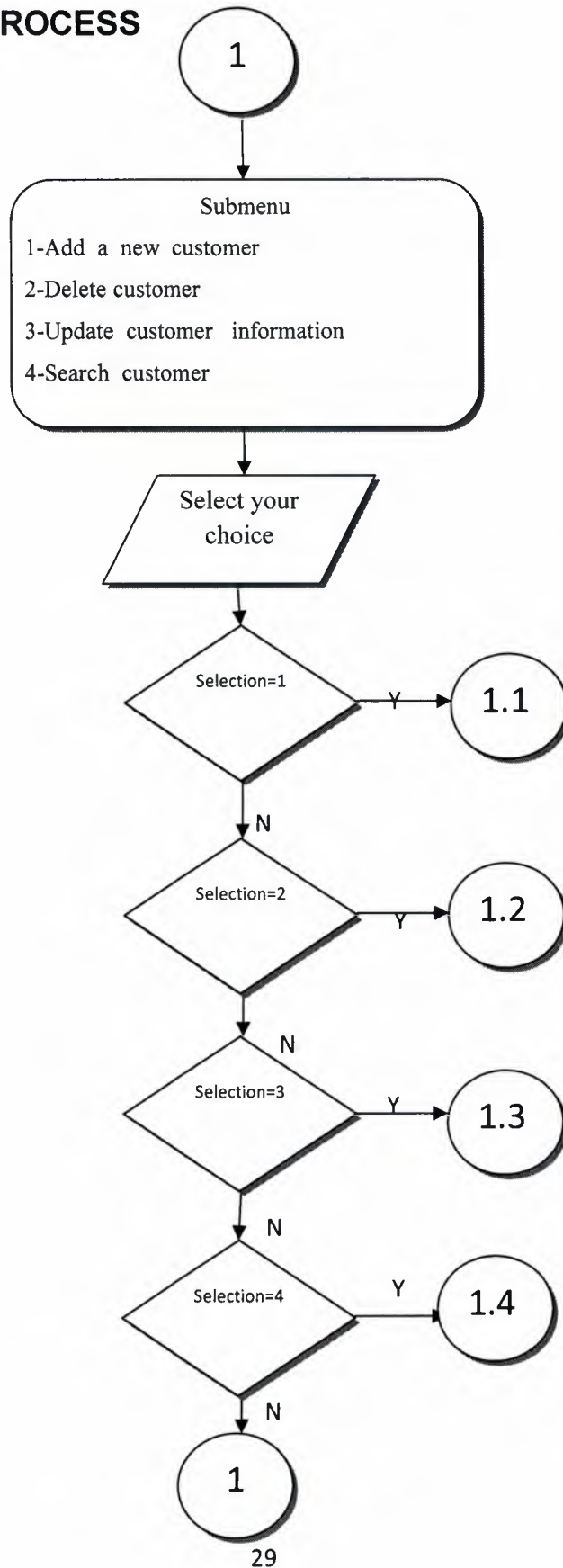


# USER MANUEL

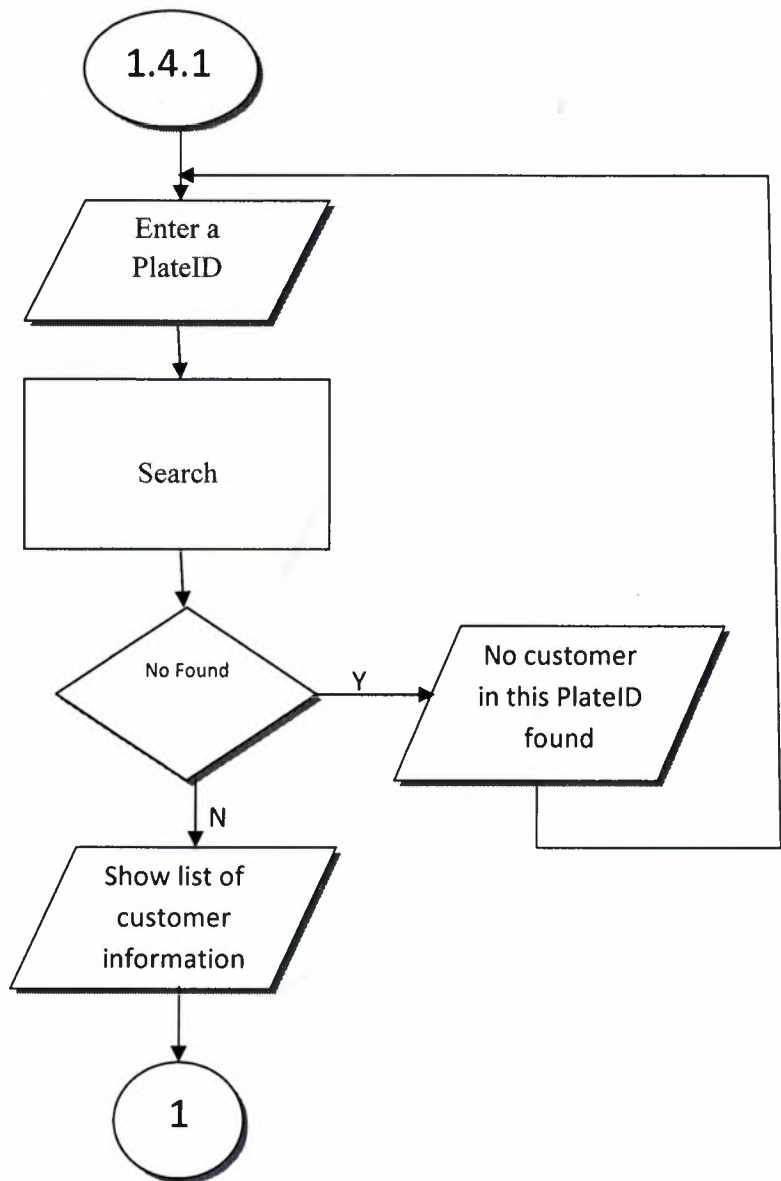
Onke hie achla ma  
Sare banas.

## FLOWCHART

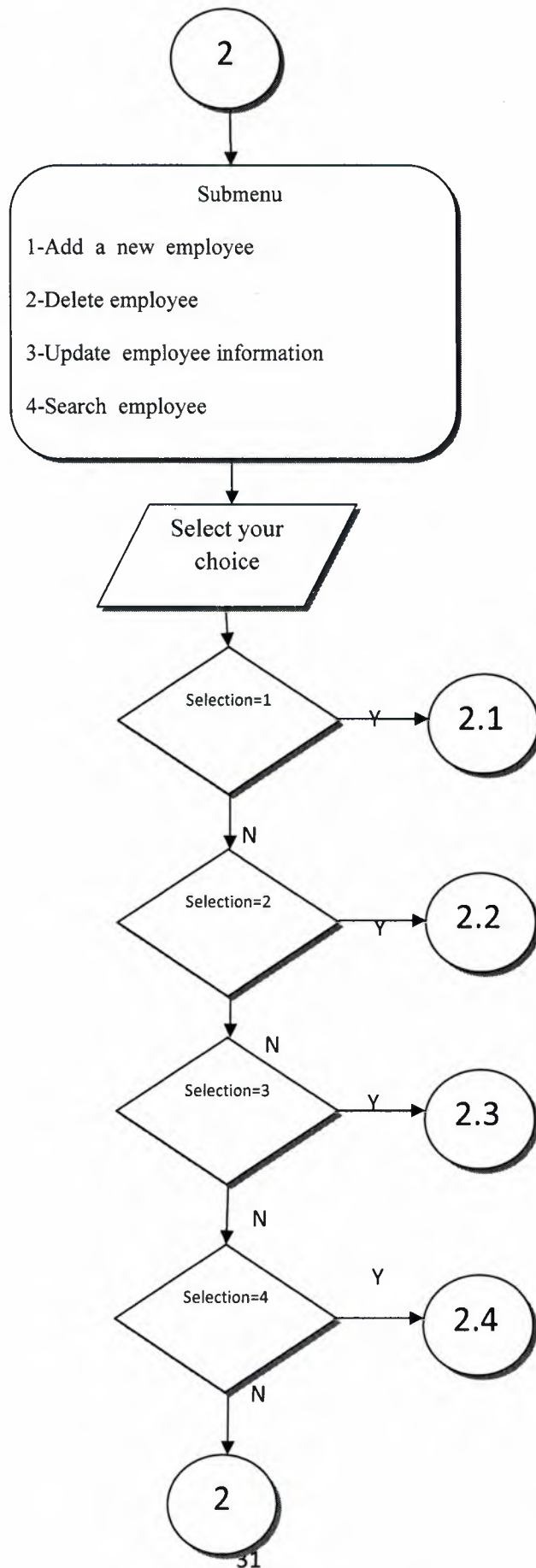
### CUSTOMER PROCESS



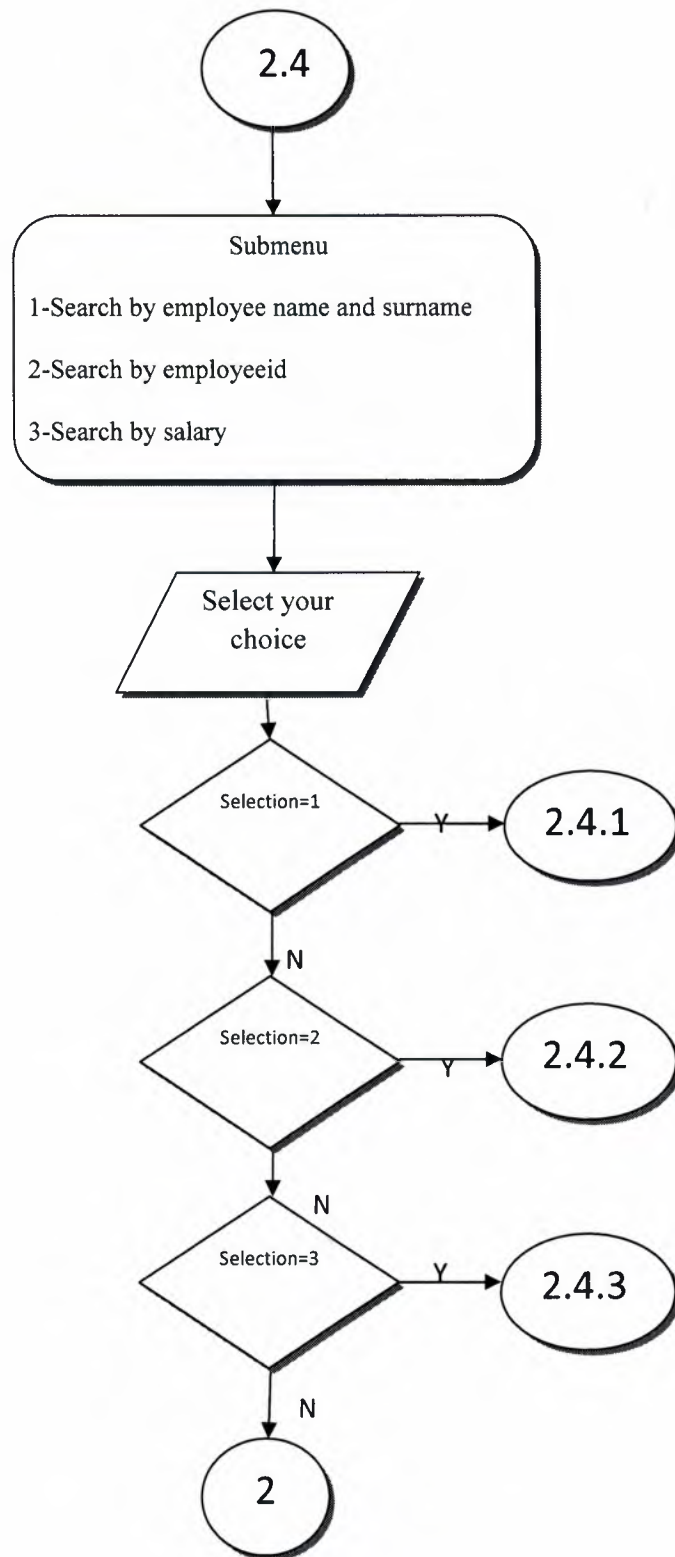
# SEARCHING CUSTOMER INFORMATION BY PlateID



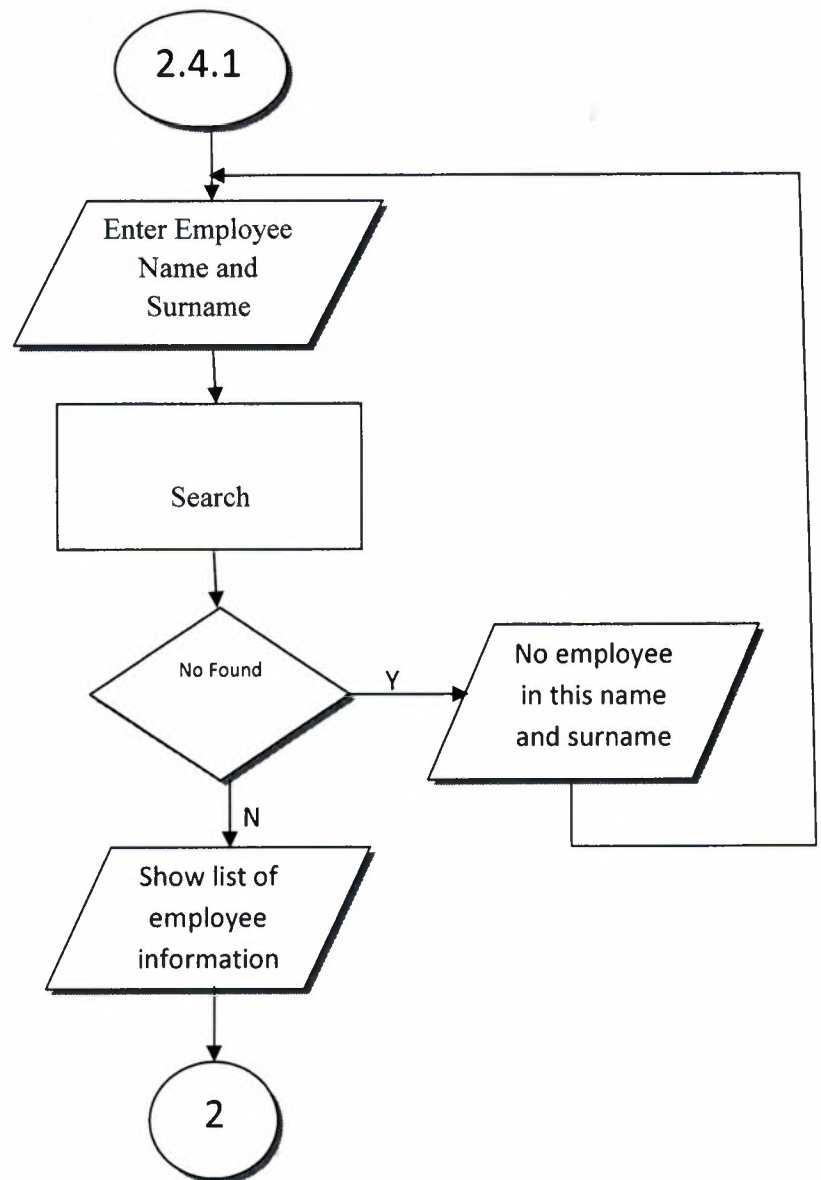
## EMPLOYEE INFORMATION



# SEARCHING EMPLOYEE INFORMATION

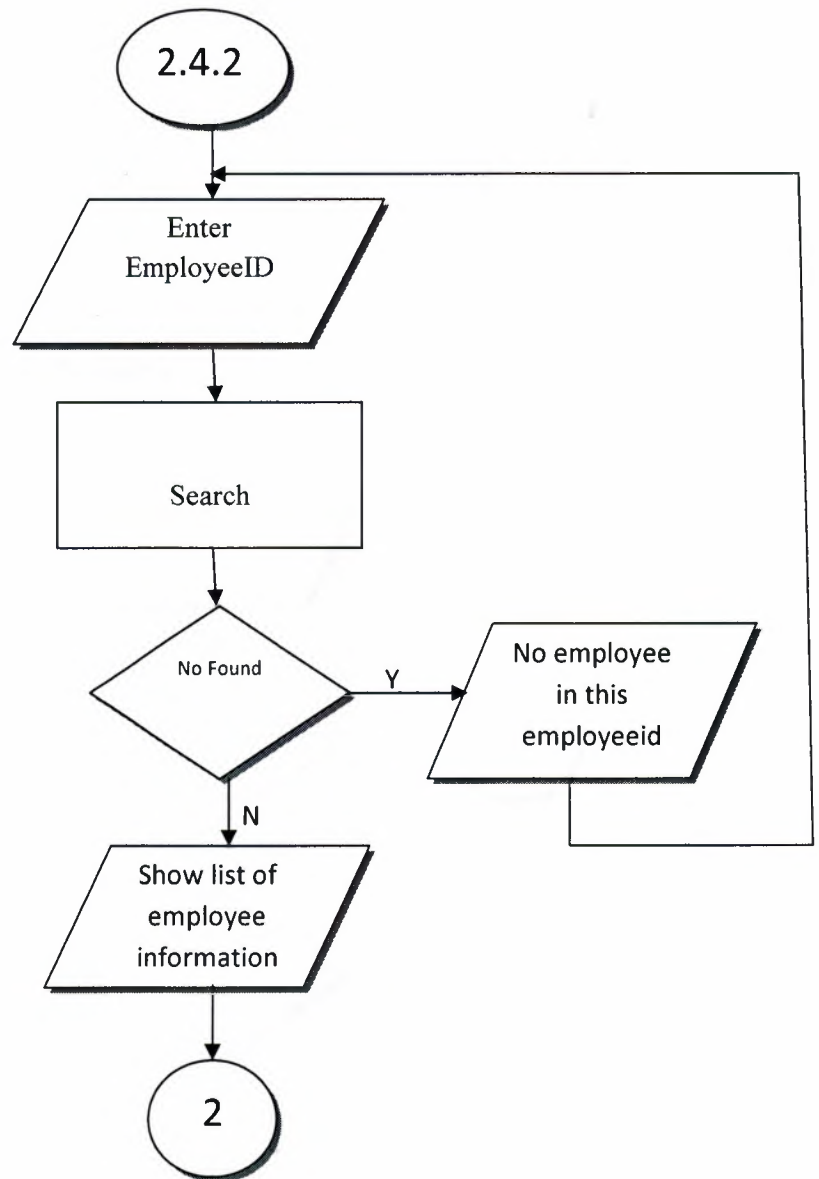


## SEARCHING EMPLOYEE INFORMATION BY Name and Surname

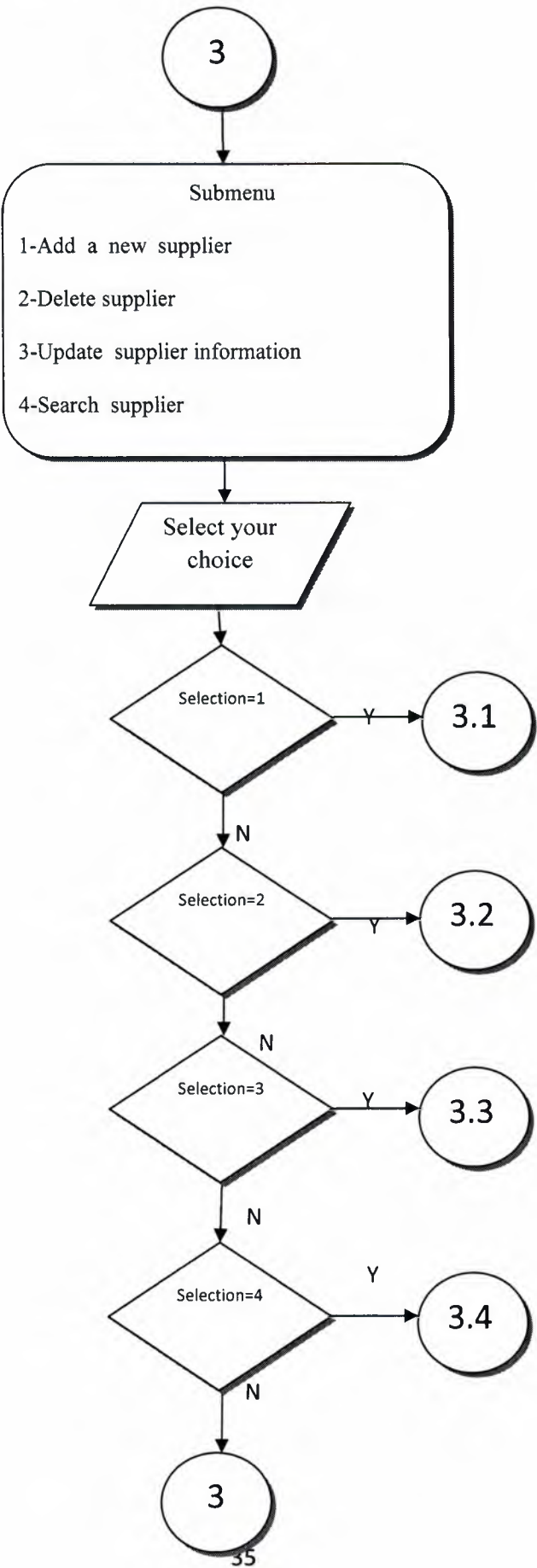




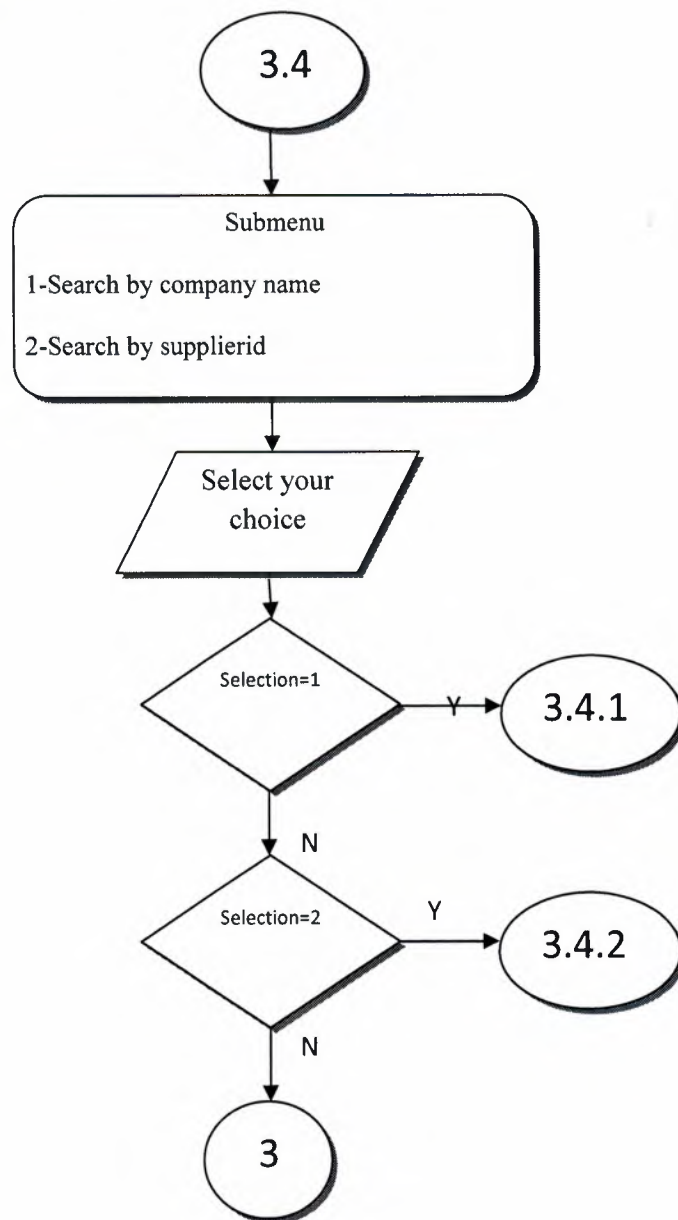
## SEARCHING EMPLOYEE INFORMATION BY EmployeeID



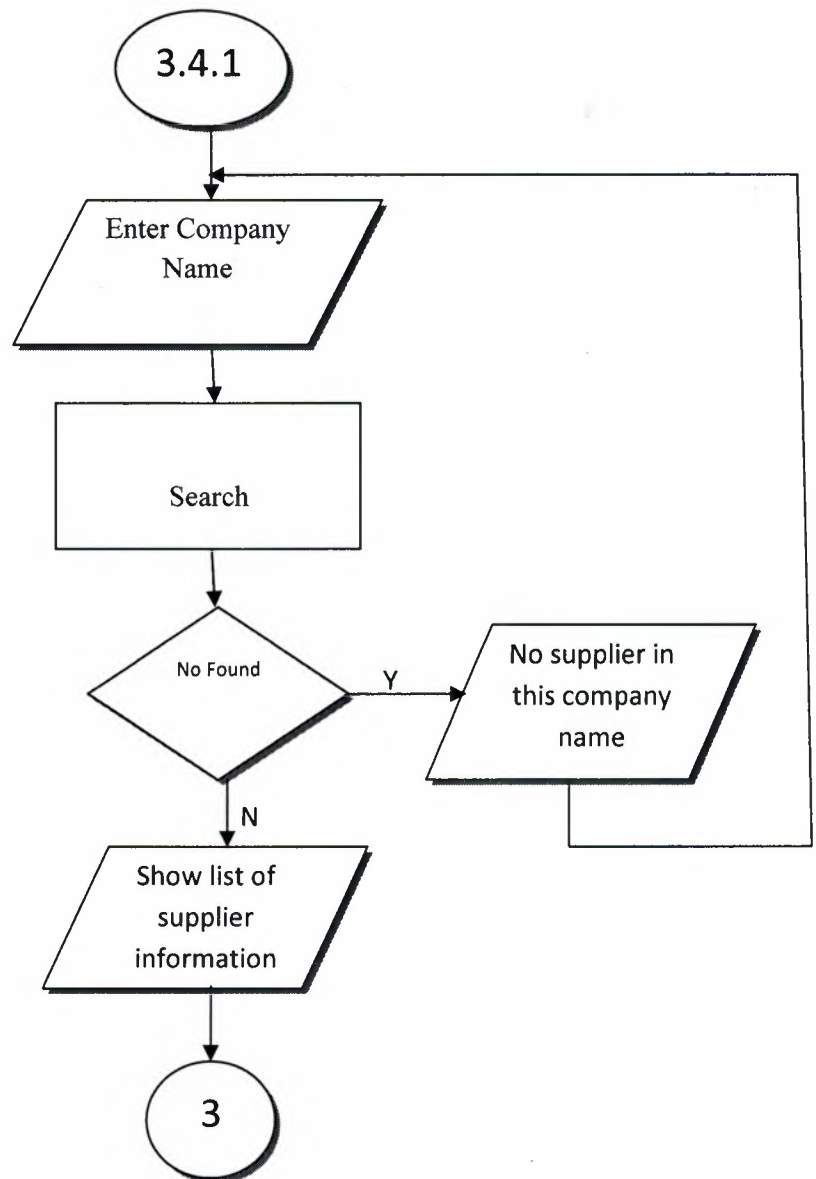
# SUPPLIER PROCESS



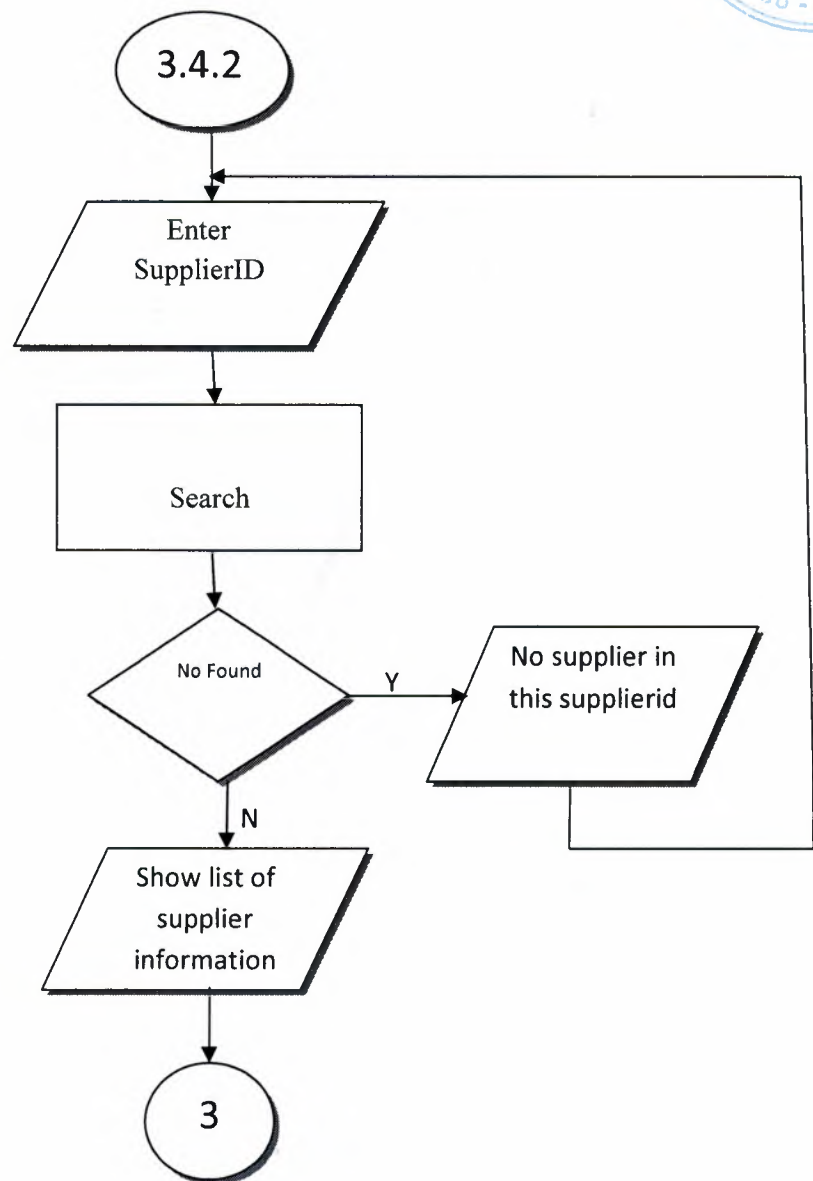
## SEARCHING SUPPLIER INFORMATION



## SEARCHING SUPPLIER INFORMATION BY Company Name

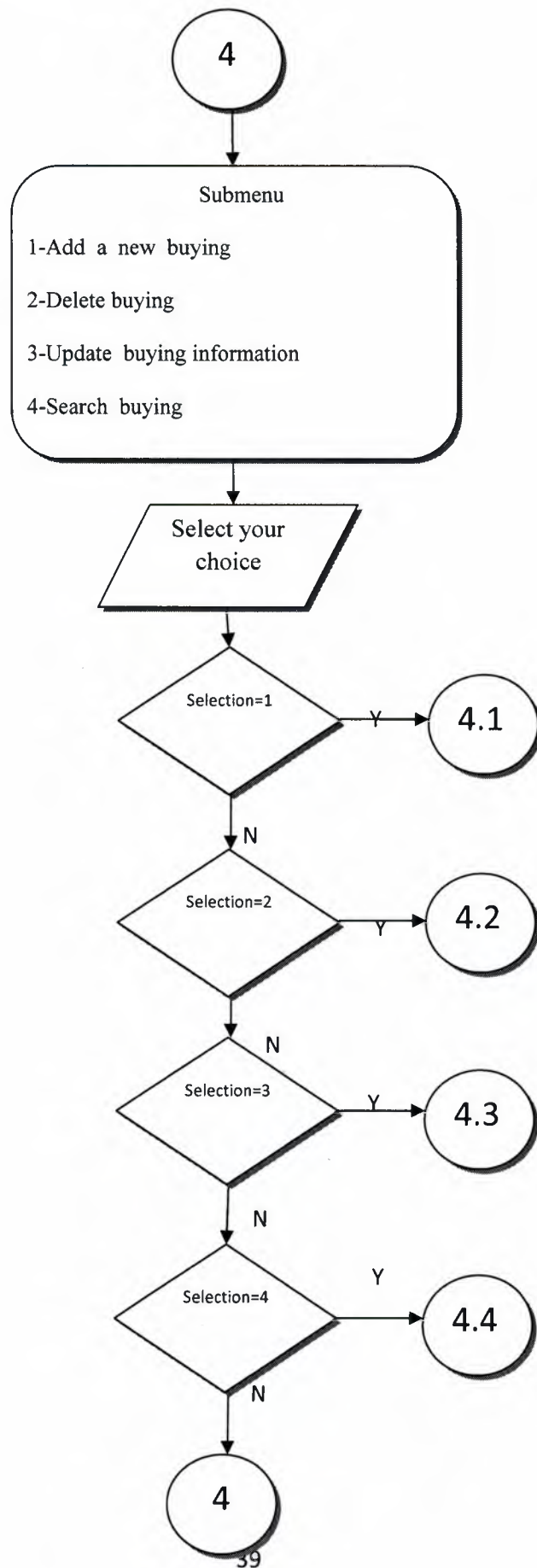


## SEARCHING SUPPLIER INFORMATION BY SupplierID

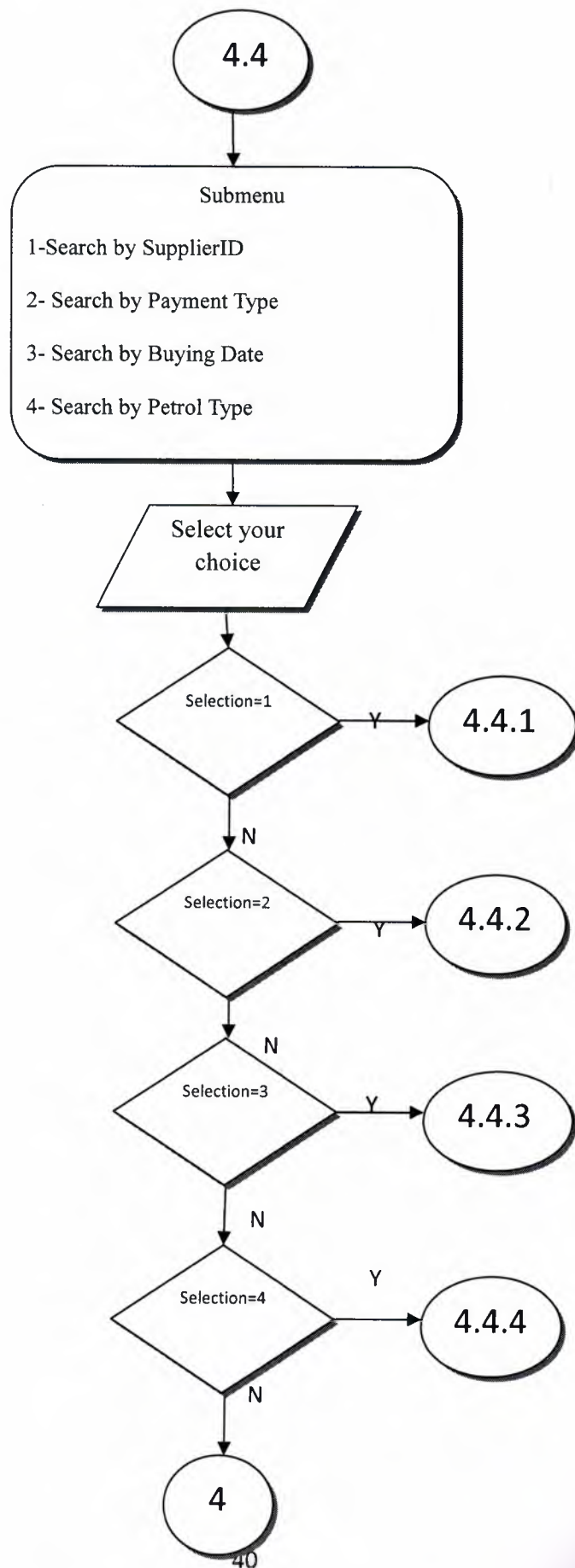




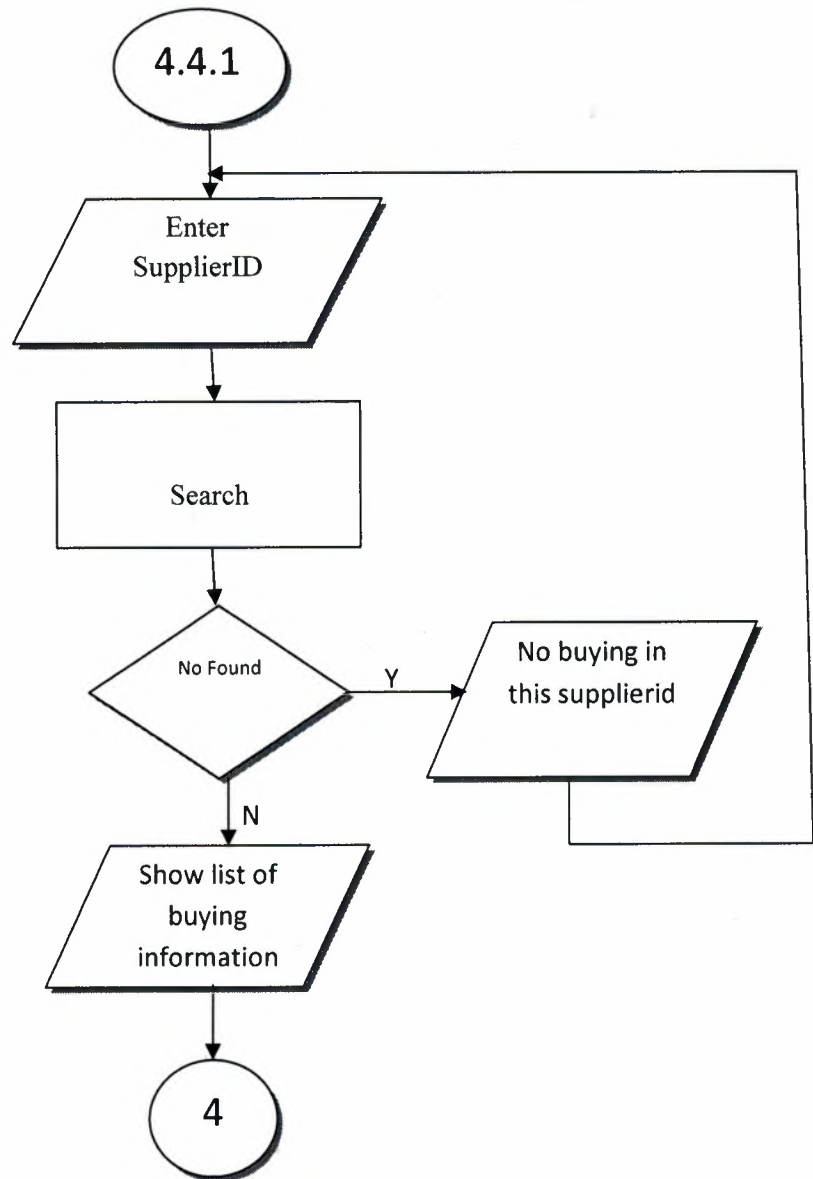
## BUYING PROCESS



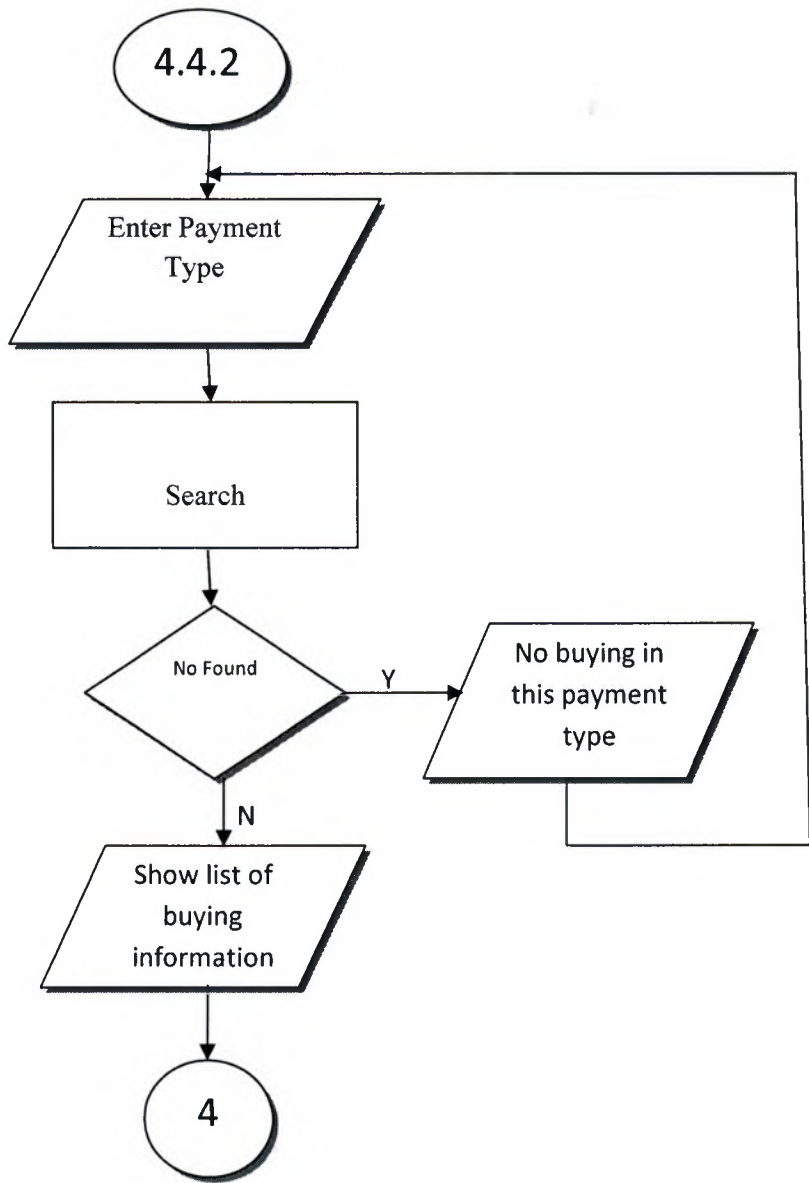
## SEARCH BUYING INFORMATION



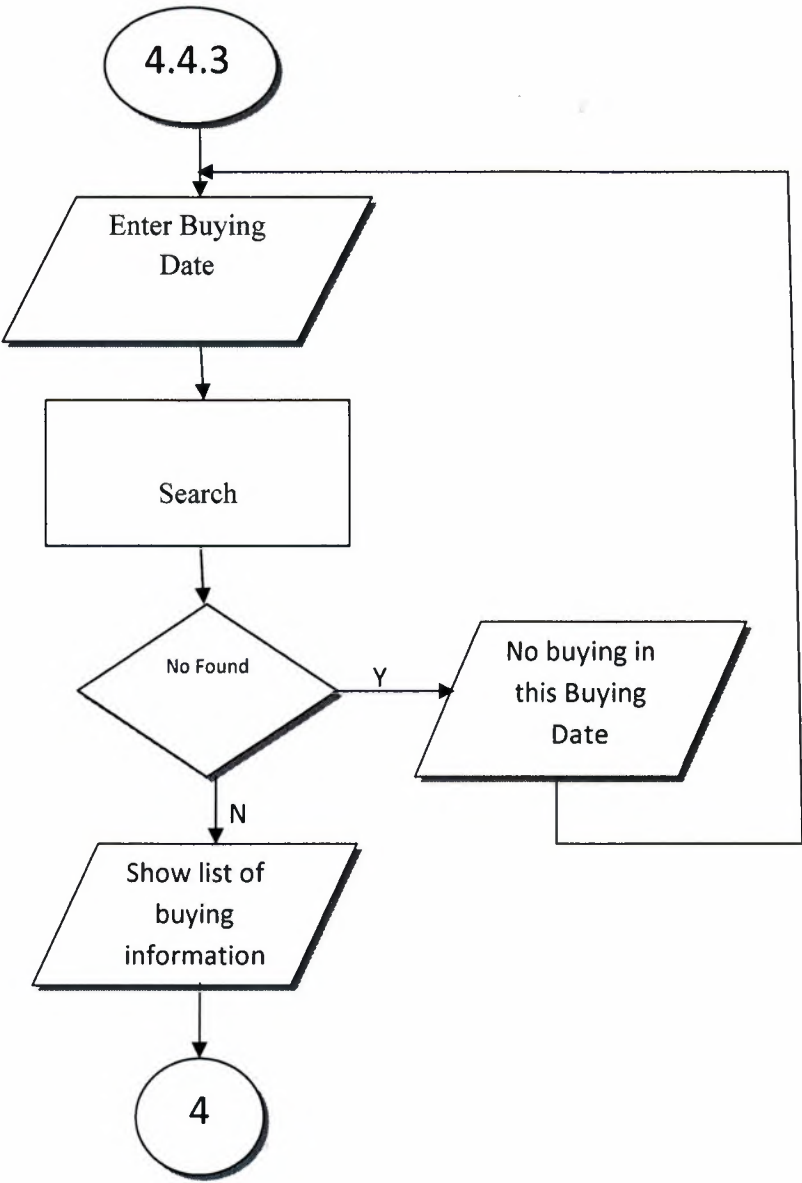
## SEARCHING BUYING INFORMATION BY SupplierID



SEARCHING BUYING INFORMATION BY Buying Payment Type

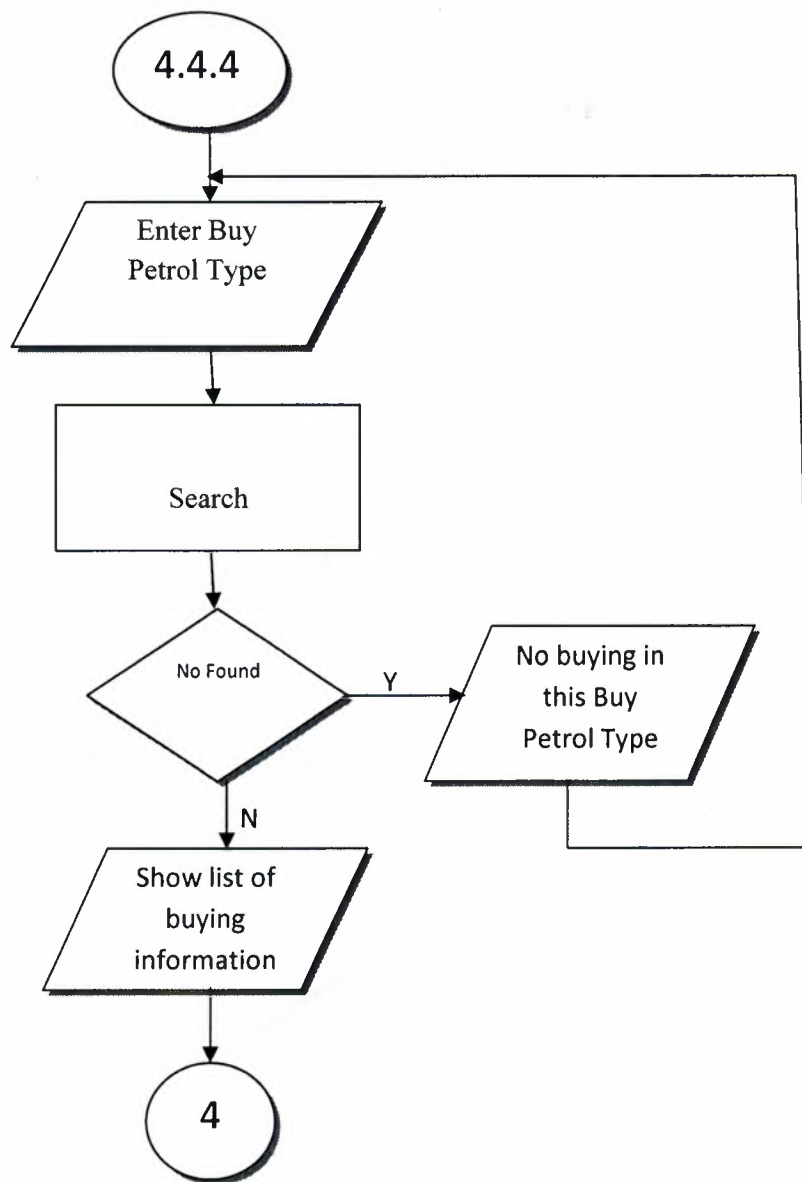


**SEARCHING BUYING INFORMATION BY Buying Date**

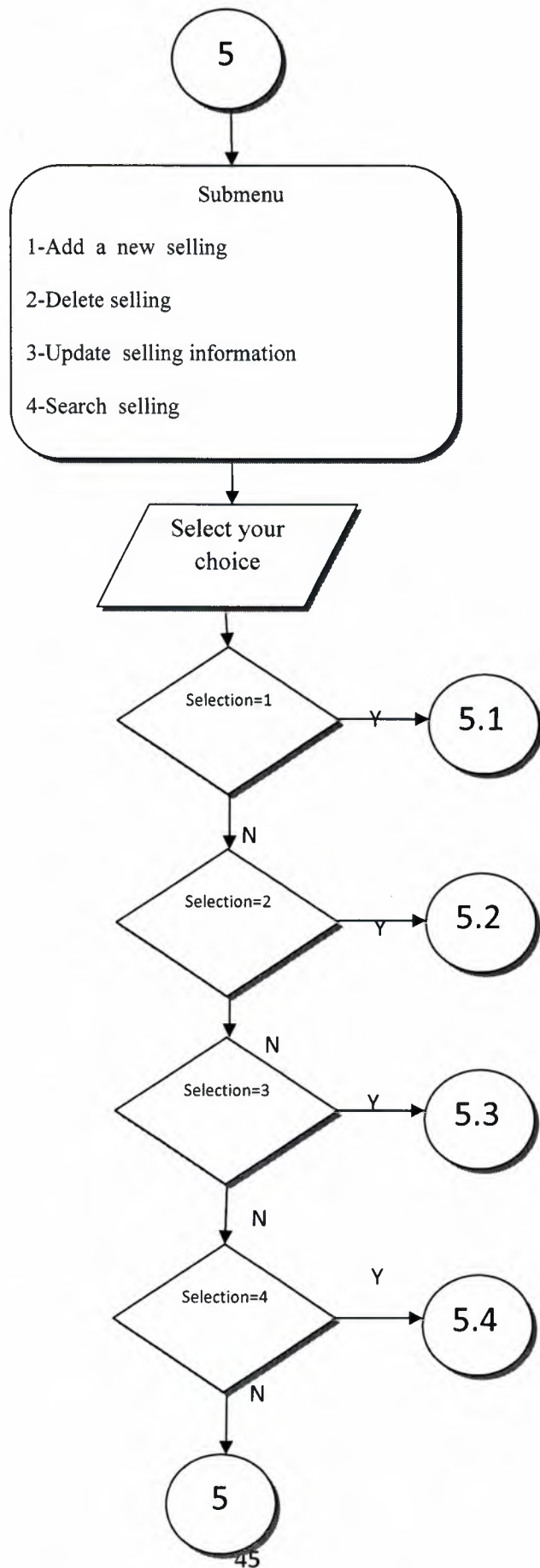




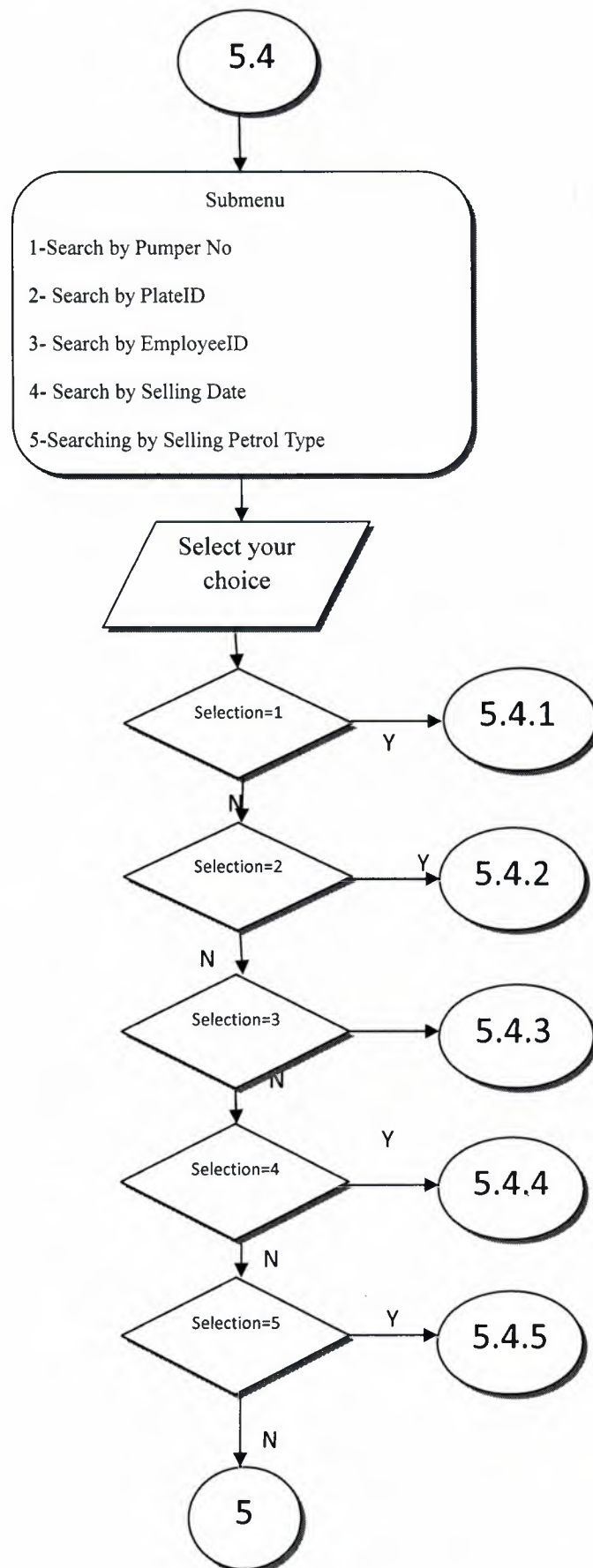
## SEARCHING BUYING INFORMATION BY Buy Petrol Type



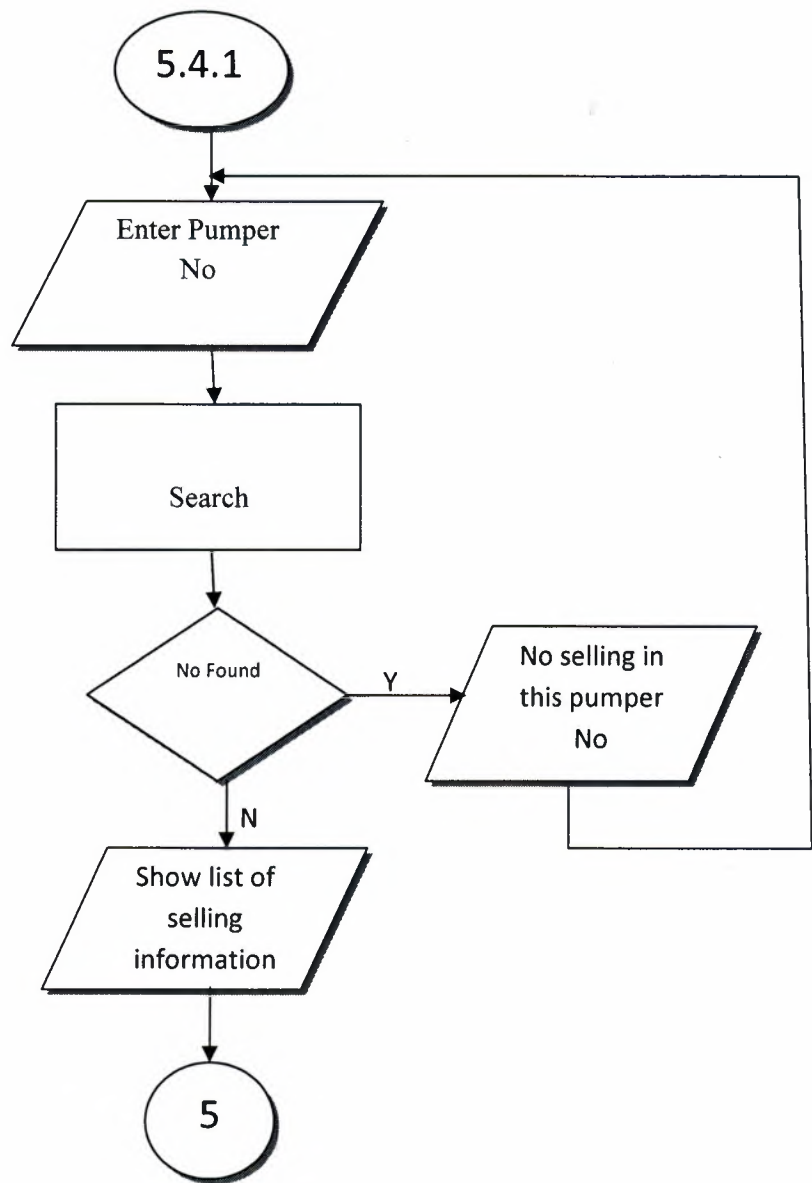
# SELLING PROCESS



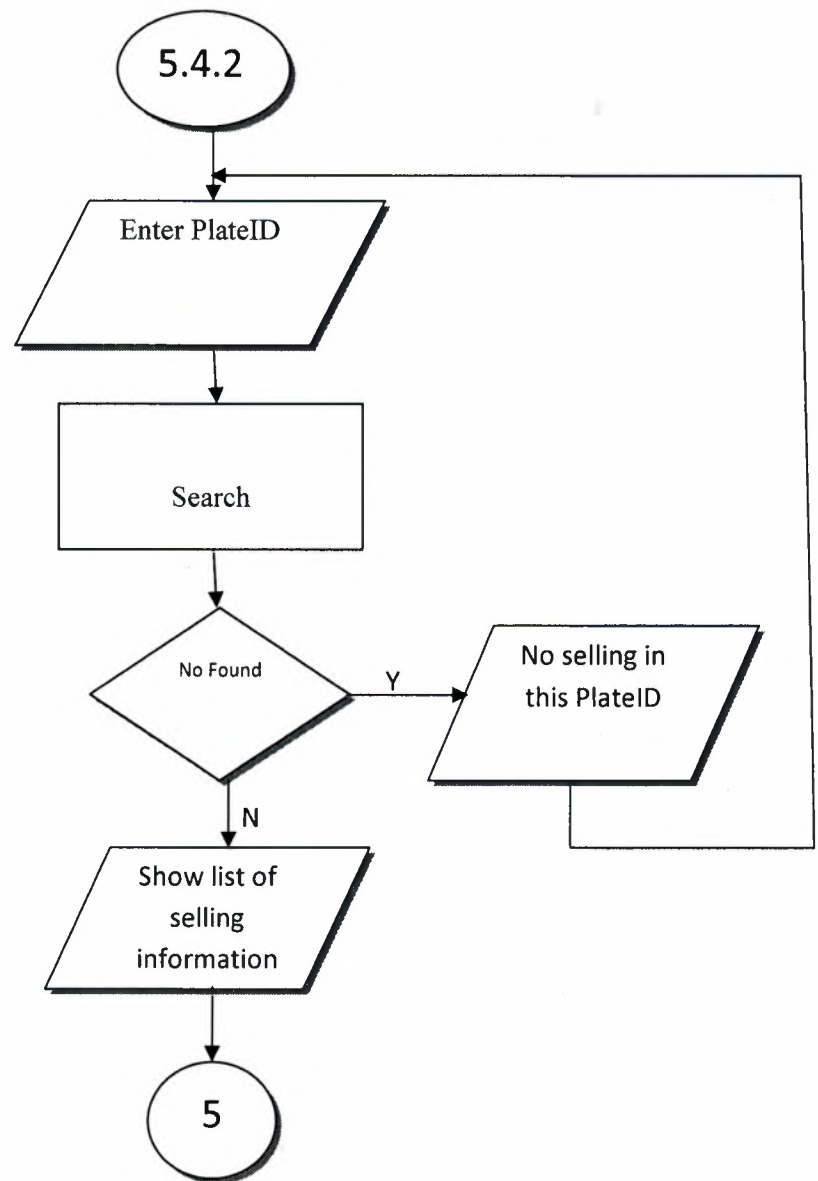
## SEARCH SELLING INFORMATION



SEARCHING SELLING INFORMATION BY Pumper No

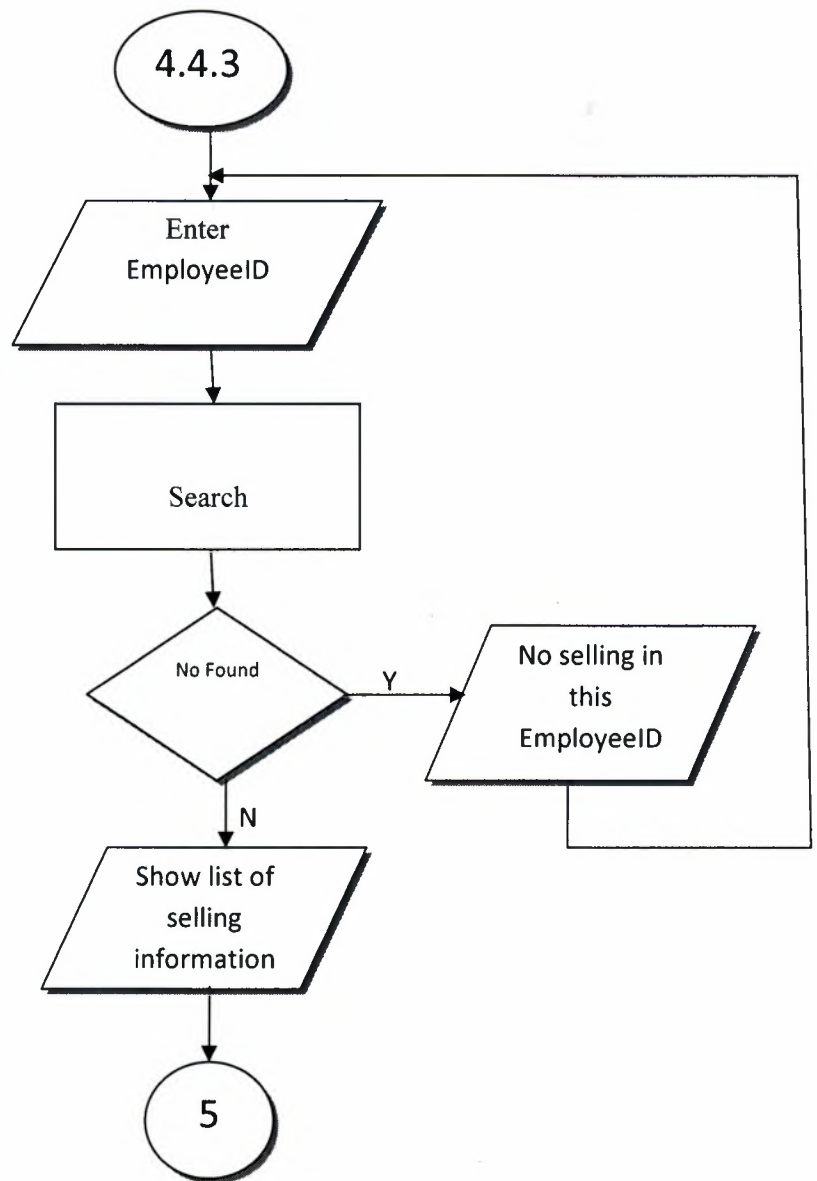


## SEARCHING SELLING INFORMATION BY PlateID

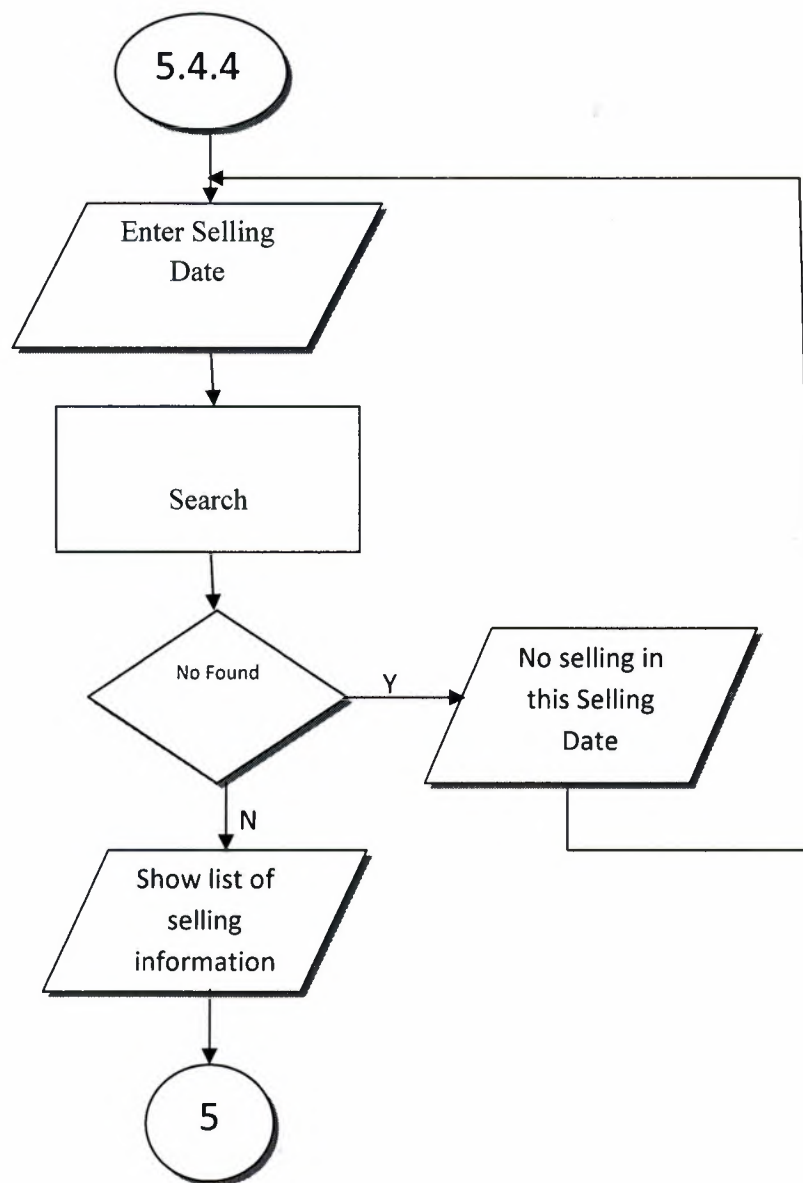




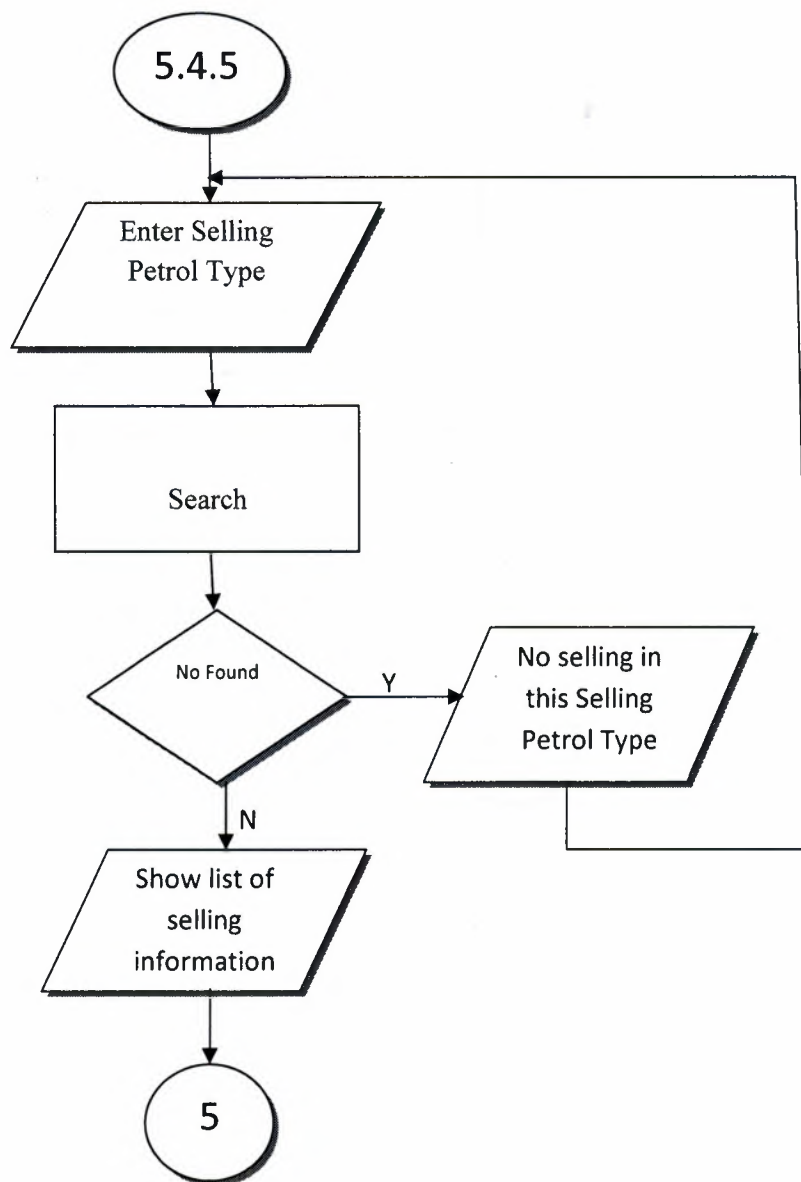
## SEARCHING SELLING INFORMATION BY EmployeeID



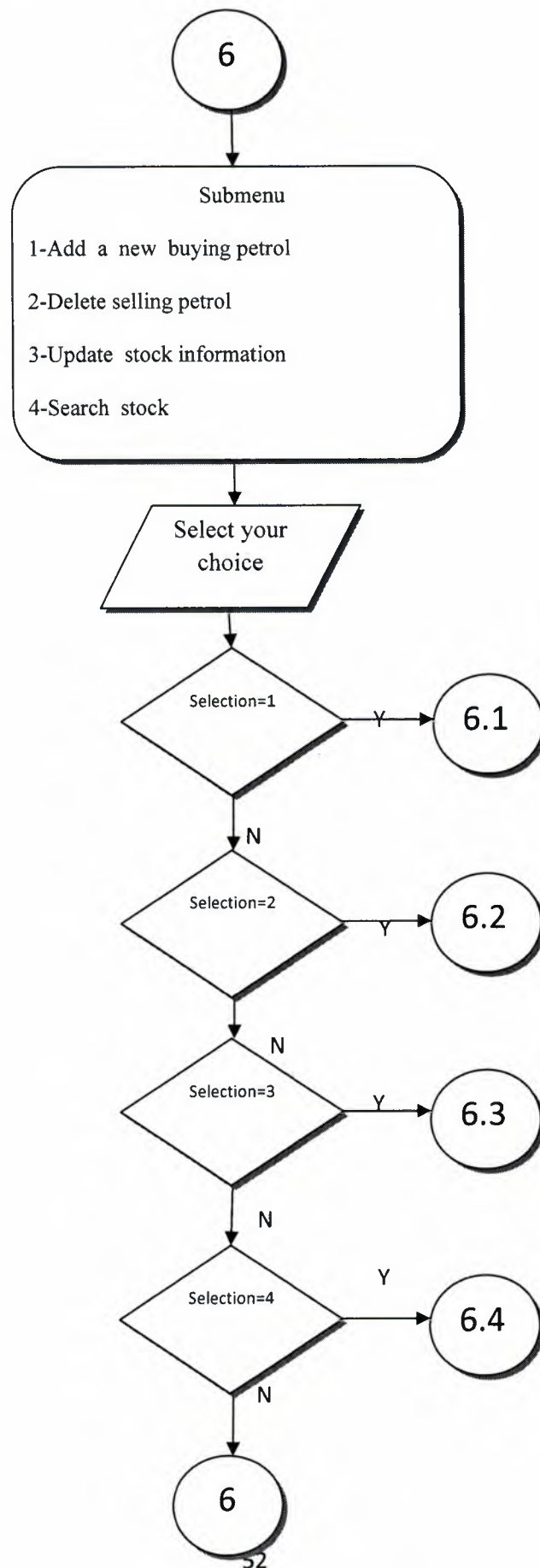
## SEARCHING SELLING INFORMATION BY Selling Date



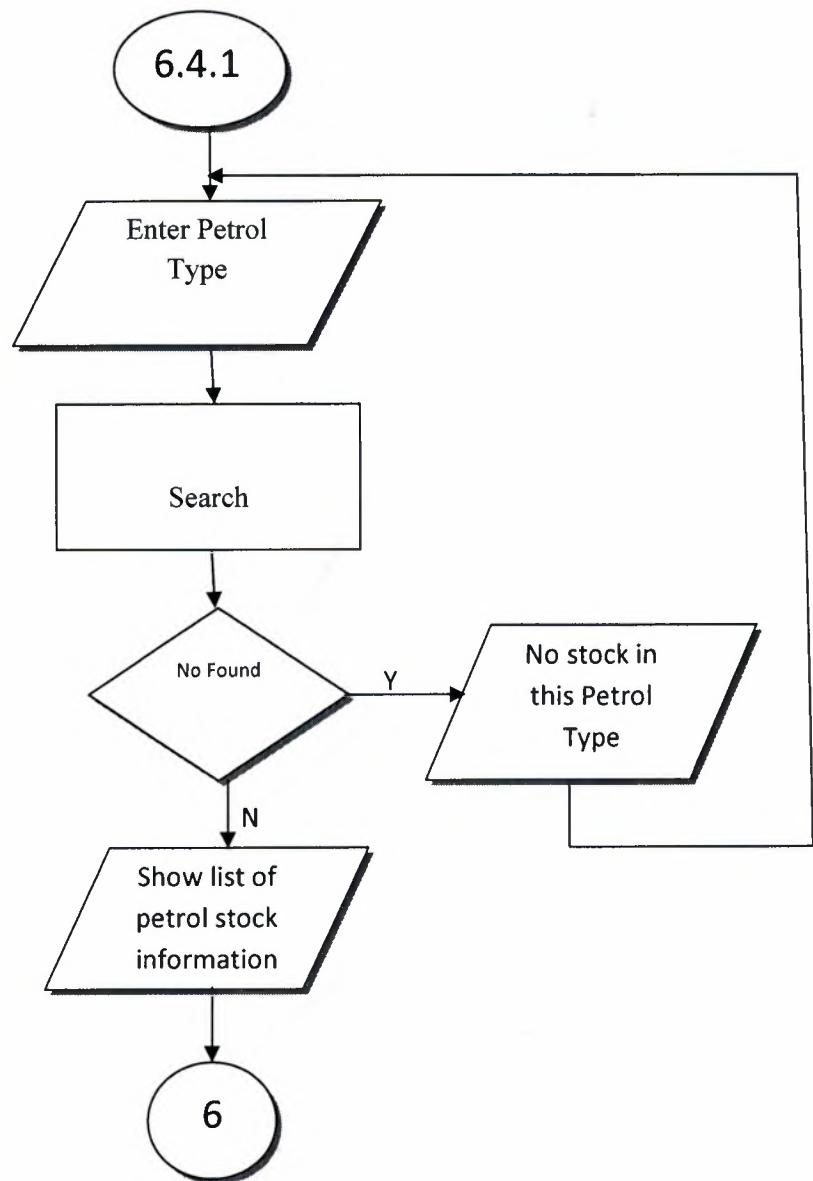
## SEARCHING SELLING INFORMATION BY Selling Petrol Type



## STOCK PROCESS

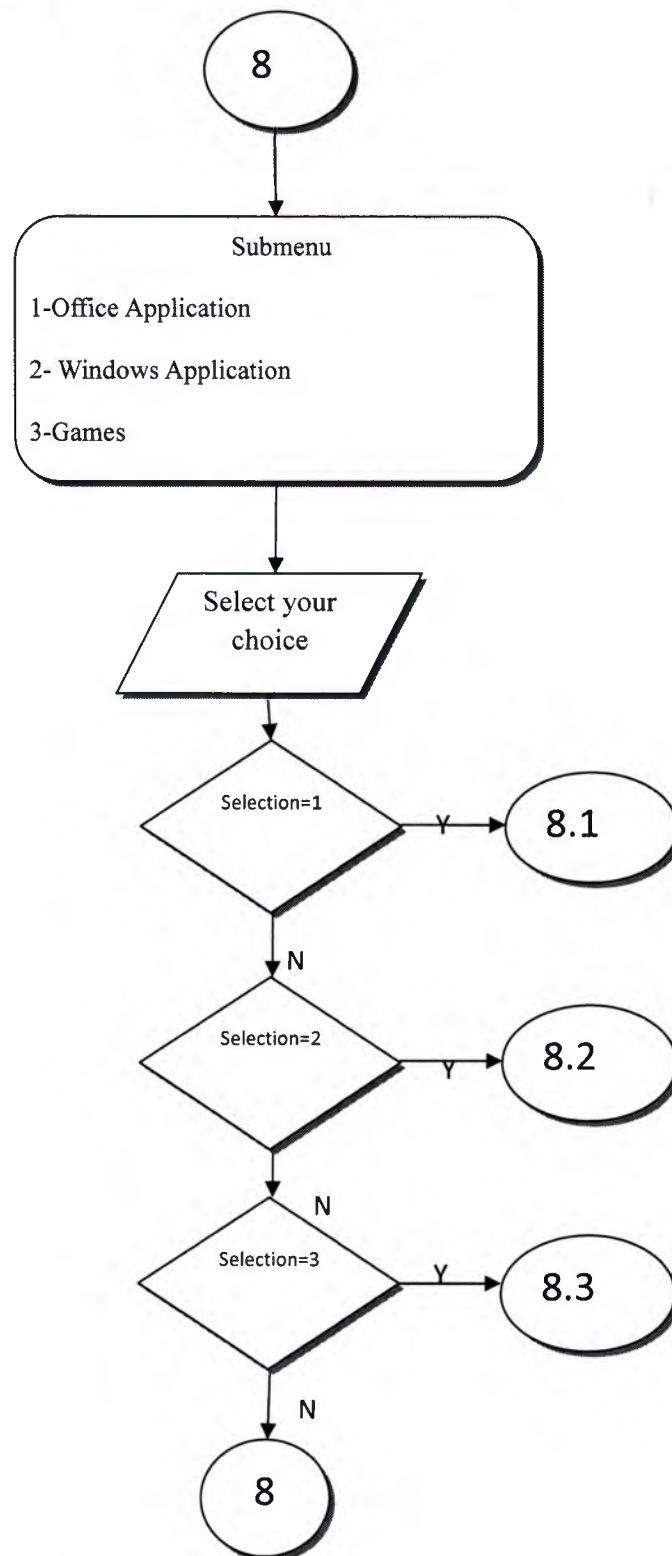


## SEARCHING STOCK INFORMATION BY Petrol Type

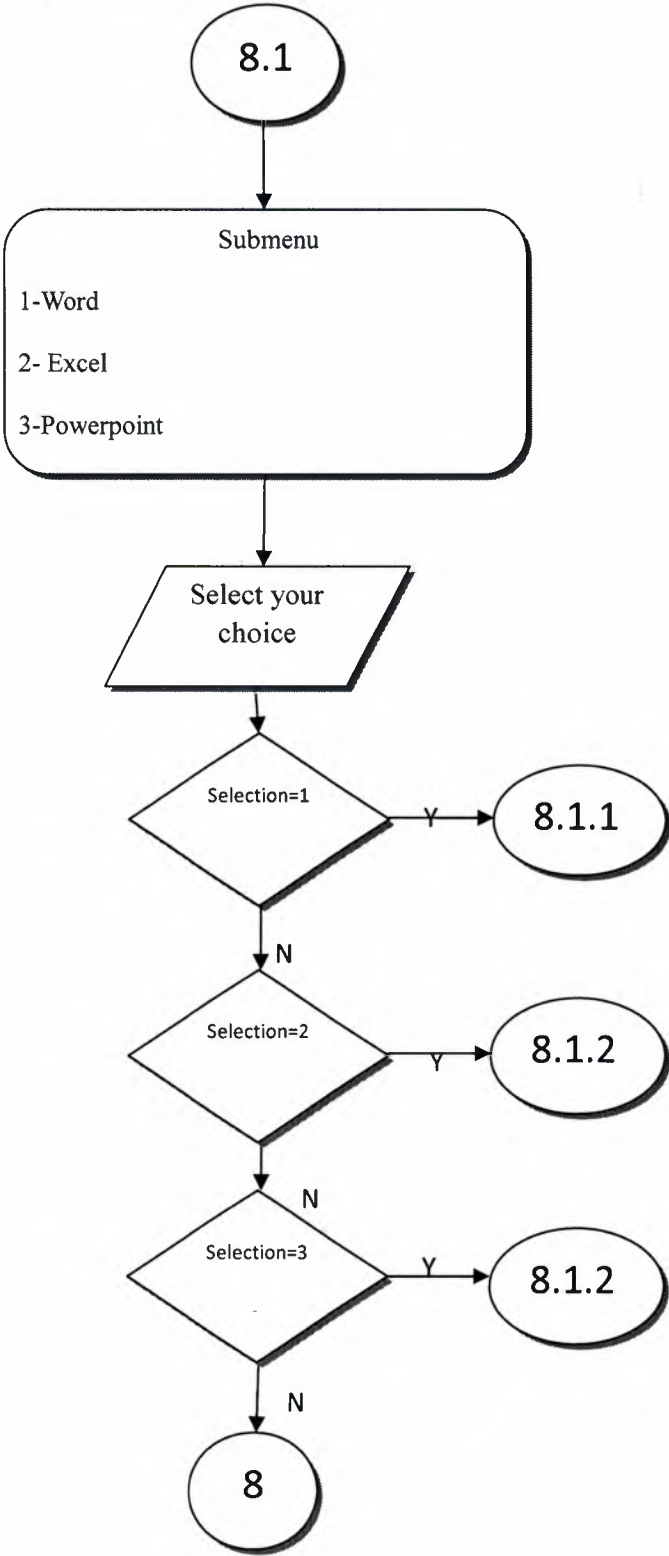




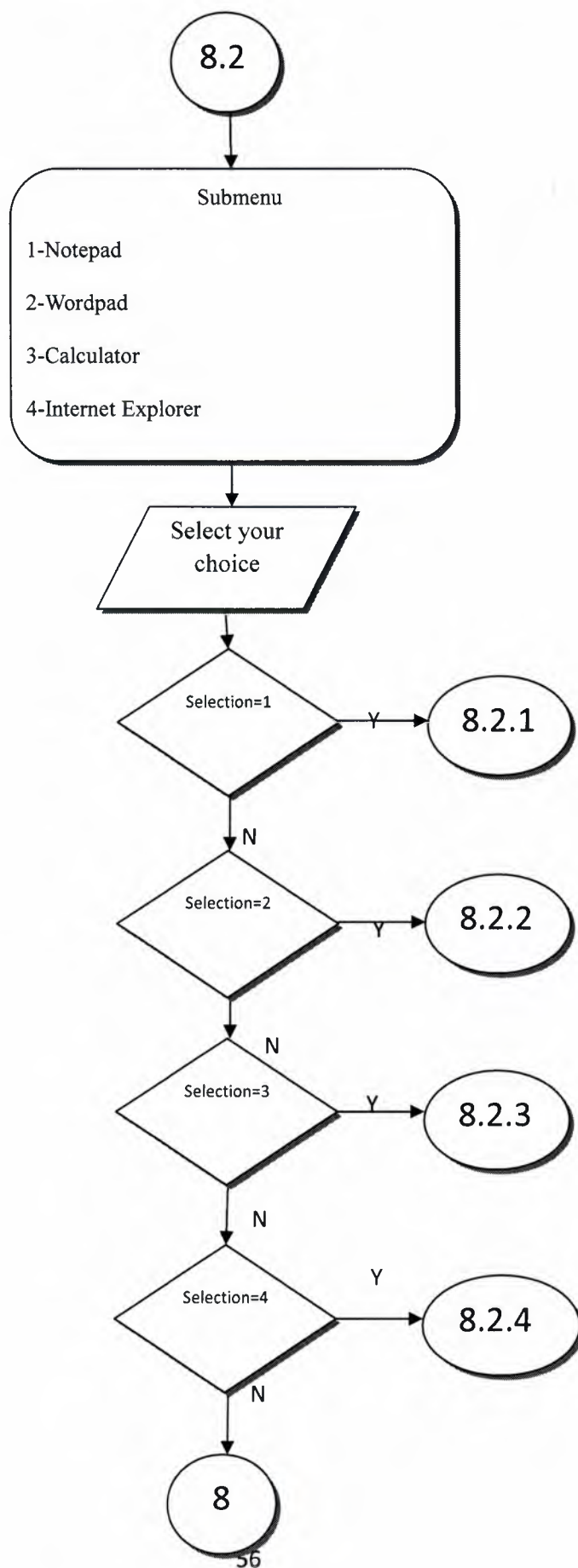
## APPLICATION PROCESS



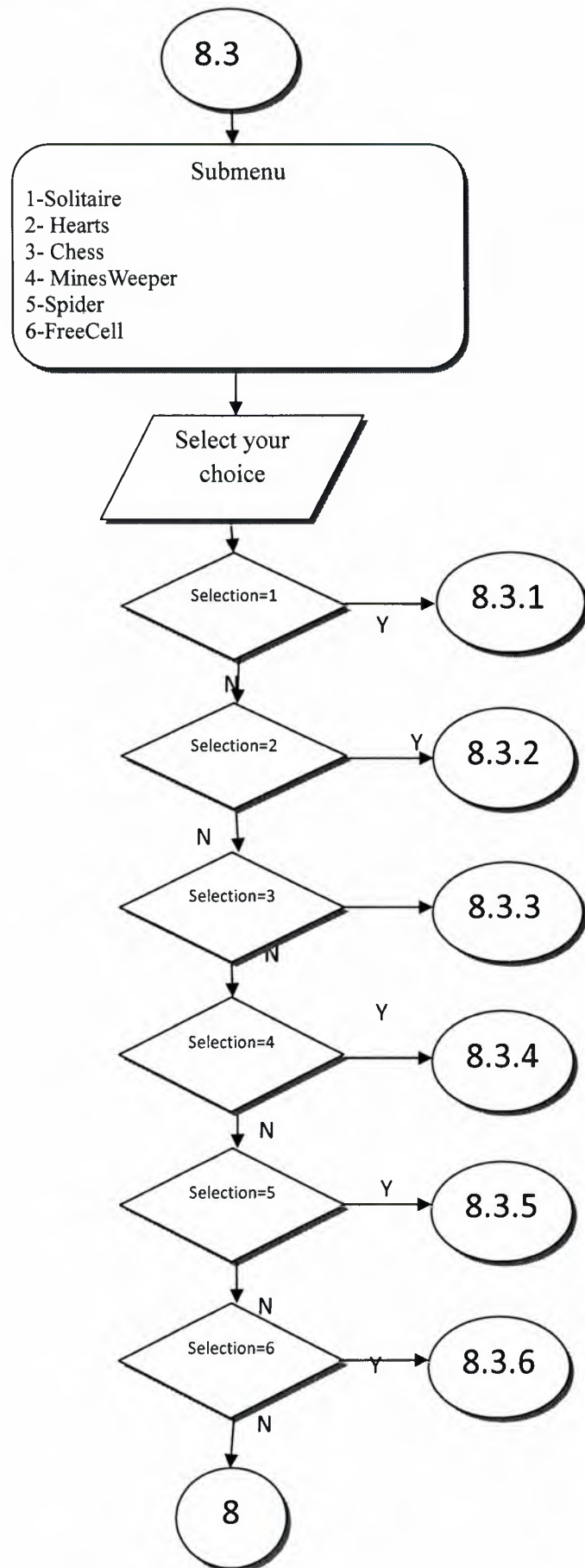
APPLICATION OFFICE APPLICATION INFORMATION



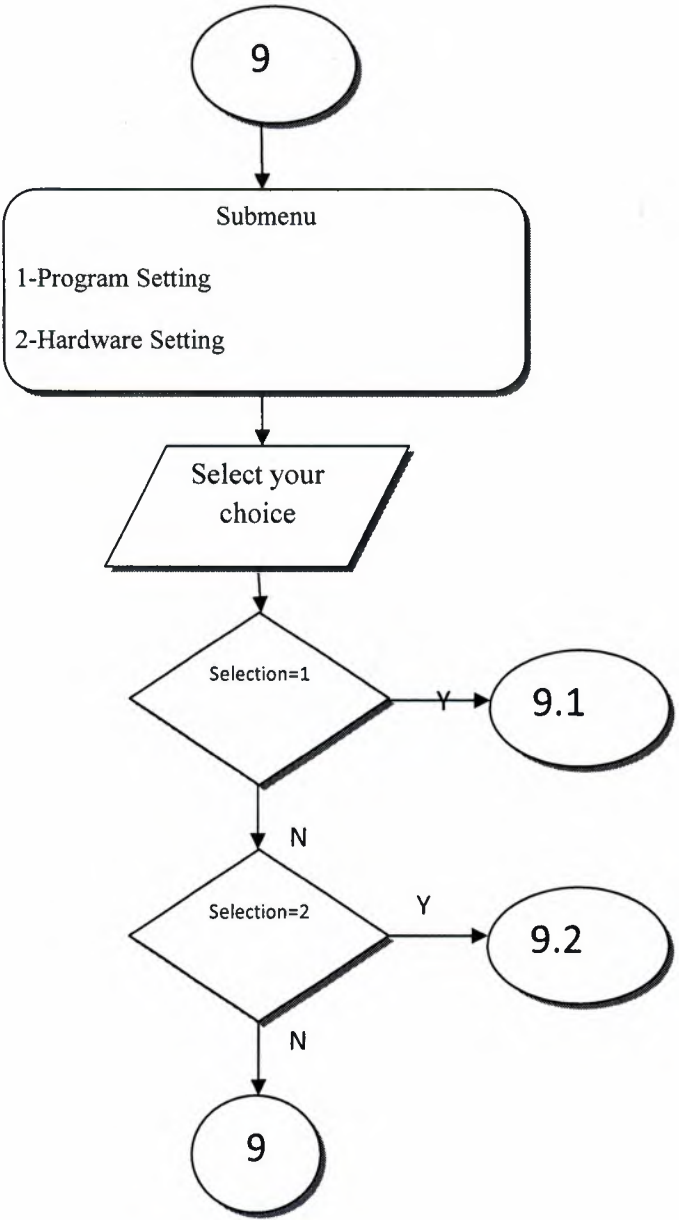
## APPLICATION WINDOWS APPLICATION INFORMATION



# APPLICATION GAMES INFORMATION

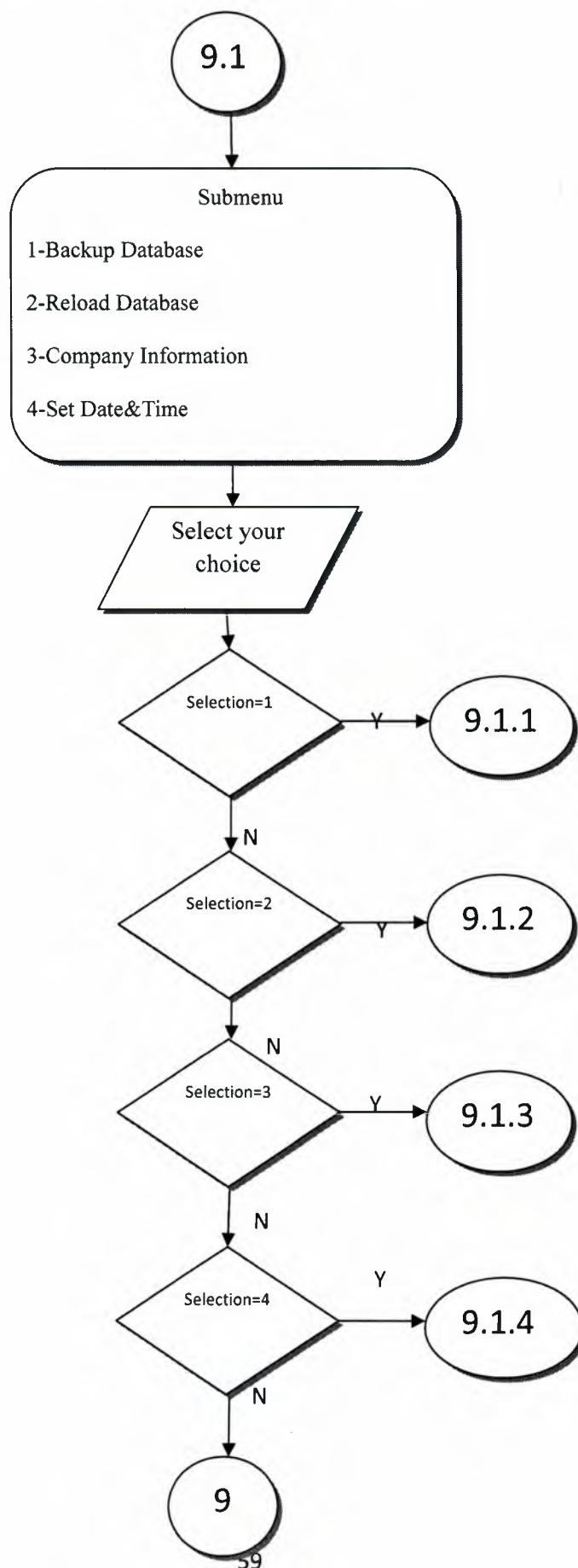


# SETTING PROCESS

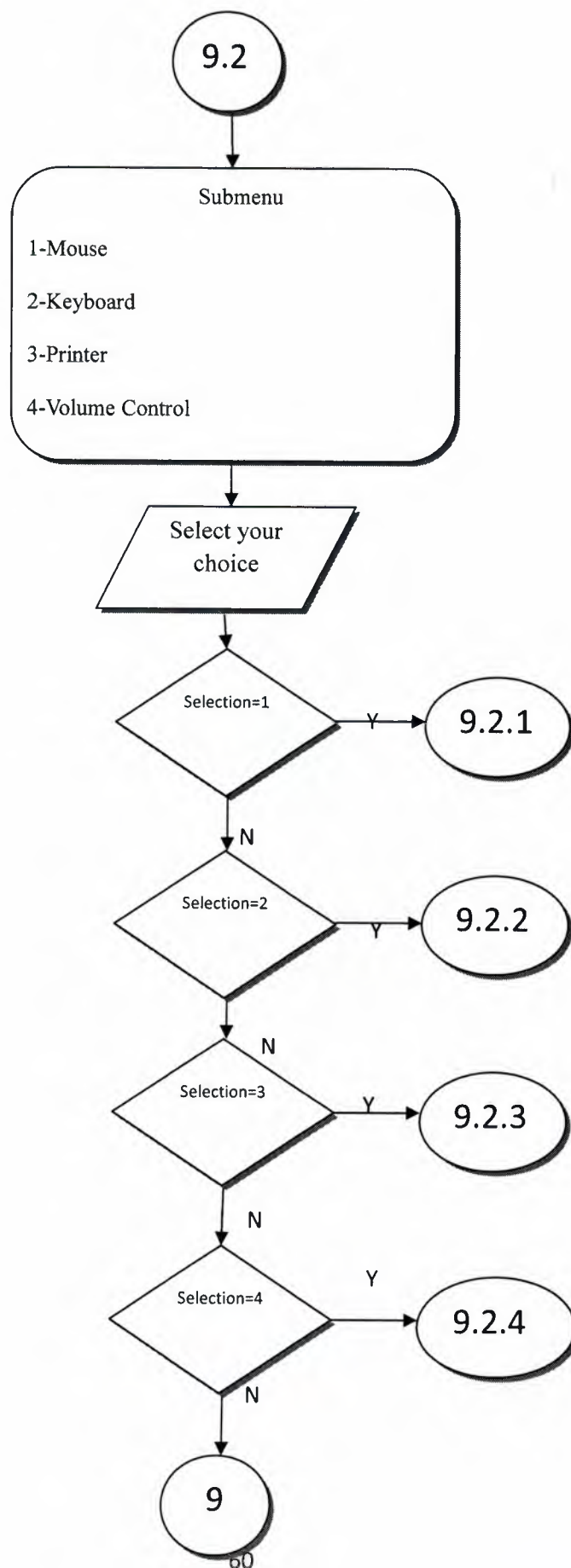




## SETTING PROGRAM SETTING INFORMATION



## SETTING HARDWARE SETTING INFORMATION



## **USER GUIDELINES**

If the user wants to change the folder or destination that the program will be installed by clicking on 'Change' and after choosing the destination, can click on 'Next' option.

The user can choose the type of set up above the figure. After choosing the type, user can click on 'Next' option.

The above figure, the user will directly click on 'Next' option.

In the next Windows opened, as shown this figure, the user will not have to do anything, but just wait for the installation to be completed and this process will take a few minutes according to the capacity of the computer.

In this figure the user will click on the 'Finish' button to end the installation of the program. The Petrol Station Automation System has been successfully completed in this way. After the window in this figure is closed, the user open the program from the destination that user installed the program.

For example, I installed the program to folder called 'Petrol Station Automation System' under the 'Programs' option in start menu in this figure. If you click on Petrol Station Automation System executable form inside the folder 'Petrol Station Automation System', the program will start to run. The first window opened in the program is the main page for all users as shown in this figure.

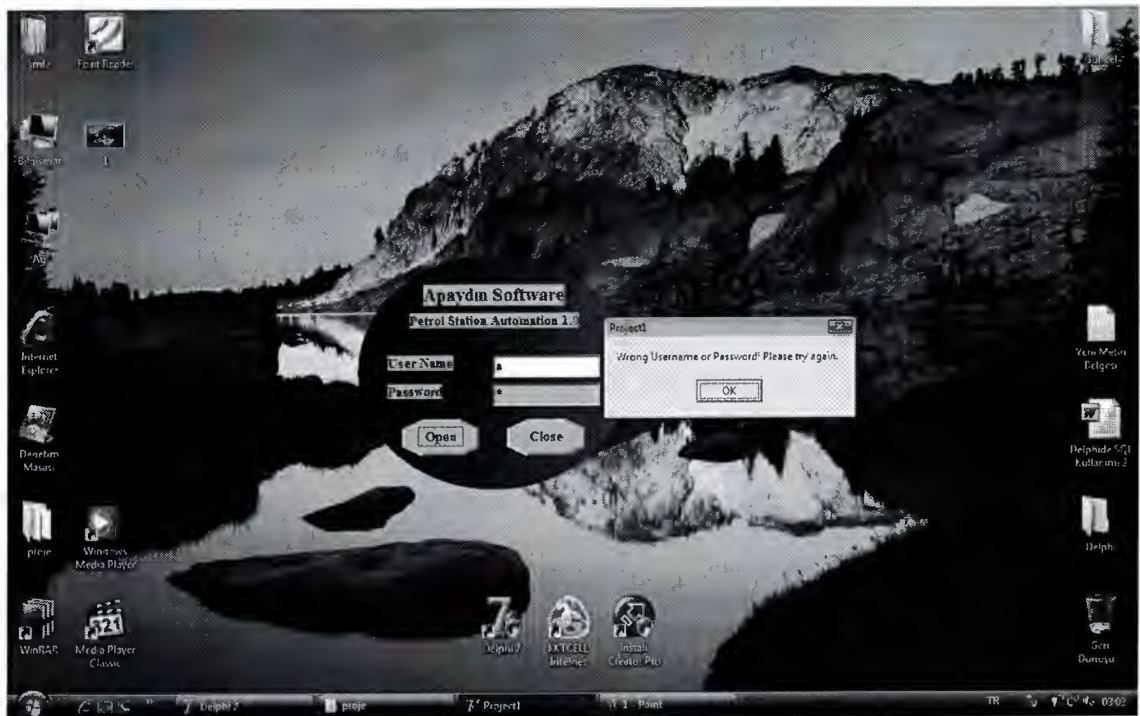
### **Password Entry**

This part of our program is user login with user password. If the users registered with their username and passwording system, they can login our system as shown in this figure.





In password entry form, username and password of user controlled with their registered information in database. If entering the username and password don't correct or correspond with database, application gives an warning message to user to correct information as shown in this figure.





Password form also controlled blanks fields by user. If user does not enter any information, again program will give a warning message as shown in this figure.

If the user correct username and password information and then main menu of program opens as shown in this figure.

## Main Menu



After entering correct password, in the program; main menu opens. Main menu provides to control all functions of program. Main menu is a guide for user that we will do functions. We can arrive to each menu from the main menu. For example; customer, stock, employee and also their buying and selling records. As you see in this figure, main menu contains the controlling of every functions buttons. Also we can arrive to every functions panel by function keys of keyboard (F1,F2,F3,...) that show for each panel on the function buttons.



## Customer Menu

APAYDIN YAZILIM

File Edit Search View About Help

CUSTOMER EMPLOYEE SUPPLIER BUYING SELLING STOCK REPORT APPLICATION SETTING EXIT

KURSUNSUZ35 KURSUNSUZ37

Panel11

DIZEL FUELOIL

PLATE ID: 06AB201  
 NAME: enfa  
 SURNAME: enay  
 COMPANY:  
 ADDRESS: adwawa  
 GSM:  
 E-MAIL: fadfas

Plate_ID	Name	Surname	Company	Address	GSM	Email
06AB201	enfa	enay		adwawa		fadfas
34SA122	qwe	asfwe		revel		deac
06AB61	qwewd	hzcw	erg	hncw	312	edat

Navigation buttons: [Previous], [Next], [Add], [Delete], [Update], [Search], [Save], [Move]

Our customer informations are stored in our customer panel. Customer panel provides to reach recording details of our every customer. Customer panel has shown as in this figure. As you can see this figure, at the bottom of the panel, navigation buttons control the related operations that are add, delete, update, search, save and moving between records.

## Stock Menu

APAYDIN YAZILIM

File Edit Search View About Help

CUSTOMER EMPLOYEE SUPPLIER BUYING SELLING STOCK REPORT APPLICATION SETTING EXIT

KURSUNSUZ35 KURSUNSUZ37

Panel11

DIZEL FUELOIL

PETROL TYPE: KURSUNSUZ37  
 LITER: 8000  
 UNIT PRICE: 2  
 CAPACITY: 10000

Petrol Type	Liter	Unit Price	Capacity
Kursunsuz37	8000	2	10000
Kursunsuz35	8000	1.8	10000
Fuel03	6500	0.6	10000
Dizel	6500	1.2	10000

Navigation buttons: [Previous], [Next], [Add], [Delete], [Update], [Search], [Save], [Move]

Stock panel contains all details of our petrols in the stock. While program users buys any petrol for own petrol station, user should enter some of buying petrol to this part of program. Recording buying petrols are show the petrol depot and recording buying petrols lists in grid list with their details. Also they are controlled by navigation buttons. Stock panel shown as in this figure.

## Buying Menu

BuyID	SupplierID	PetrolType	Total	Liter	PaymentType	KDV	Date	Time
1	Kursunusuz95			1000				
2	Kursunusuz97			1500				

From buying panel, we reach buying informations related with buying processes. If program user wants to buy petrol, during this buying processes, user should enter buying informations to system with this panel. Recording buying petrols are show the petrol depot increasing and recording buying petrols lists in grid list with their details. Buying panel has shown as in this figure.



## Selling Menu

PetrolType	Liter	UnitPrice	Capacity
Kursunus297	8000	2	1000
Kursunus295	8000	1.8	1000
FuelOil	6500	0.8	1000
Diesel	6500	1.3	1000

SaleID	PetrolID	EmployeeID	PumperNo	PetrolType	Total	Liter	PaymentType	KDV	Date	Time
3	23qwe23	2	3	Kursunus295	3300	Cash	1000			
9	02qwe34	3	5	Kursunus297	113400	Cash	1200	11.06.2009	30.12.1899	16.25.00
19	04qwe23	3	5	Kursunus297	113400	Cash	1100	22.06.2009	30.12.1899	16.25.00
20	06qwe55	2	3	Kursunus295	100000	Cash	300			
22	12qwe45	2	5	FuelOil	50000	Credit				

With selling panel, user can see records selling process. When the user sold any petrol from stock, user should enter this information as a record to the database with using selling panel. And selling the petrols are shown the petrol depot decreasing. Selling panel has shown as in this figure.

## Supplier Menu

SupplierID	Company	Address	Phone	Email
1	sdsl	sdsl	sdsl	sdsl



Supplier informations are stored in our supplier panel. Supplier panel provides to reach details of our every supplier. Supplier panel has shown as in this figure.

## Employee Menu

Employee Name	Surname	Address	GSM	E-mail	Position	HireDate	Explain
1 ali	veli	asaf		salva	Manager		
2 vesve	vsalv	alvibbd		bdbd			
3 vsdv	asdad	idi	324	ads	MANAGER	12.12.2000	radeda

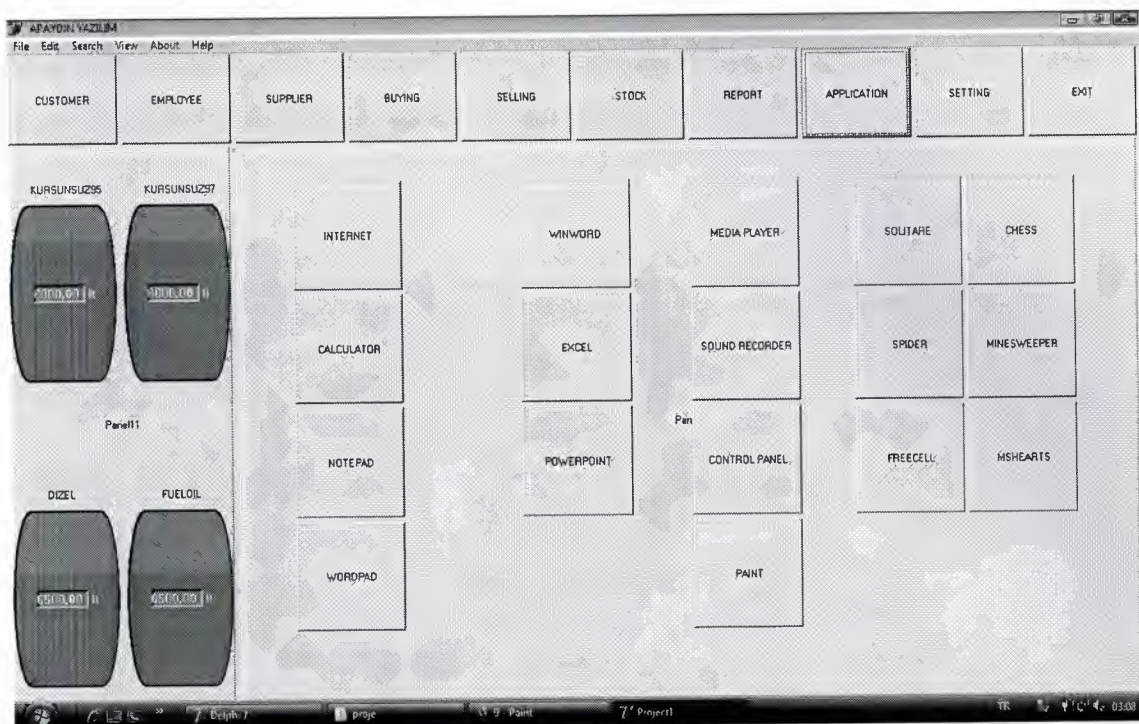
If the user has employee or personnel, I mean user was operating these employees, user needs hold the informations of these employees in the database. Therefore our program support this need. Employee panel answers to this need as shown in this figure.

## Reports

After this all processes, program user can see all results graphically as the diagrams. Program has supported visualization results according to different processes. User can look and control all of this process as visual graph. After pressing reports section or button from the report main menu panel will open.

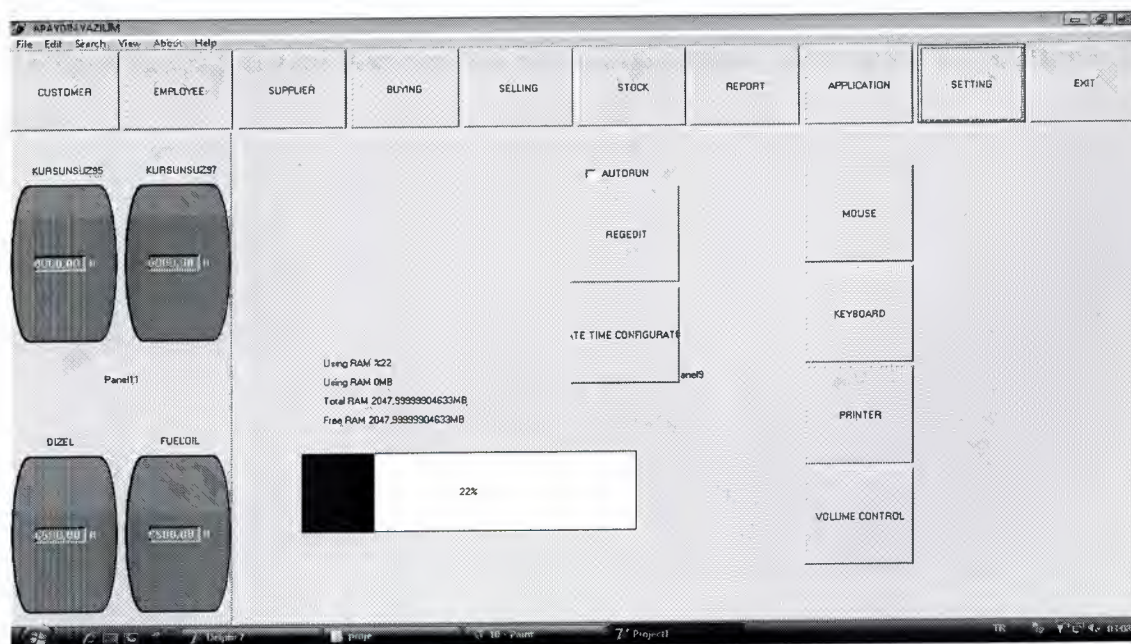


## Applications



Our program supports to reach any applications which belong to Windows operating system. User can use necessary applications with medium our program. During the process in this program, user can not want to quit Windows to run any applications. This panel as shown in this figure.

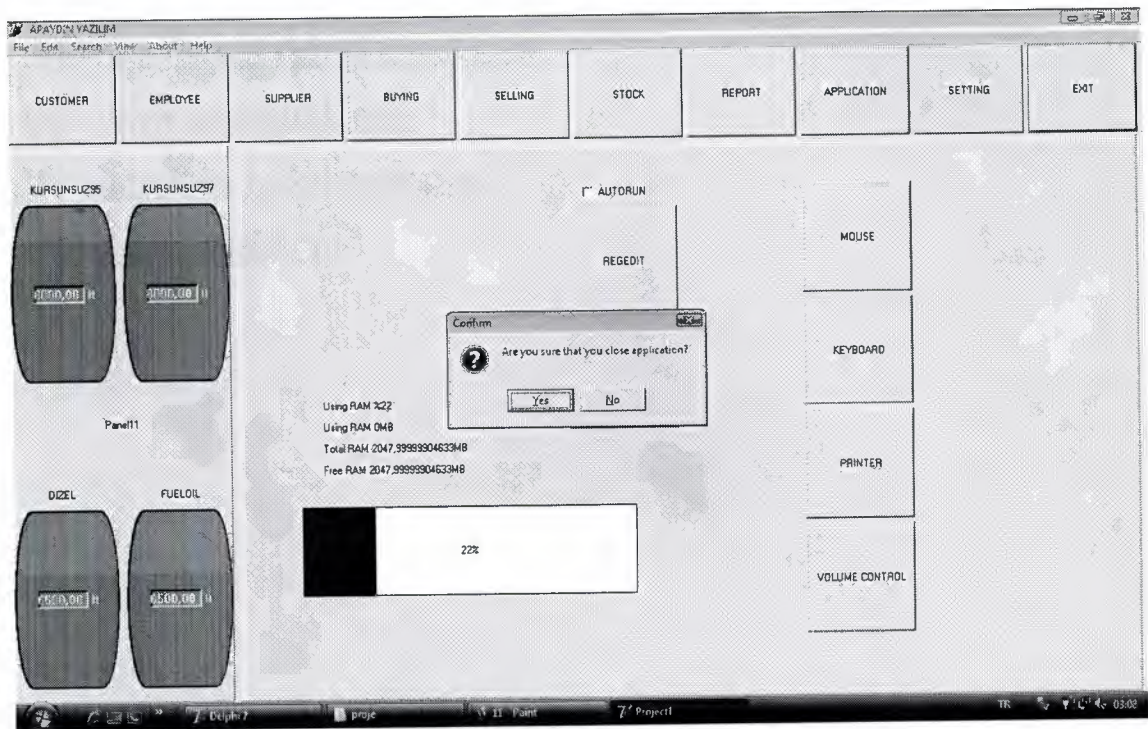
## Settings





Like most Professional programs,our program contains a settings menu.User can change some settings according to opinions of user.Setting menu has several properties related with program.User can control many settings related with program from this panel.This panel as shown in this figure.

## Exit



When the users wants to quit program,user uses exit button.After the user pressed exit button on the main form,program wants a confirmation which is ye sor no.If user answers as yes,program is colsed but the users answers no,program will continue to run.

## REFERENCES

- [1] Karagülle İ., "Delphi 7", Türkmen Kitabevi, Türkiye, 2003.
- [2] Yanık M., "Delphi ile Database Design", Beta Yayınevi, Türkiye, 1998.
- [3] [www.borland.com](http://www.borland.com)
- [4] <http://www.delphi.about.com>
- [5] [www.delphitürk.com](http://www.delphitürk.com)
- [6] <http://www.codegear.com>
- [7] [www.delphi.org](http://www.delphi.org)