2018-2019 Fall Semester

CME3201 Database Management Systems

Term Project

Final Report

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1) Detail problem description

Today's one the biggest issues about car repair companies are that they can't handle with their schedule and customers. Our aspect to solve this problem is to create a web server that holds the data about customers and stocks.

2) Solution system and operation list

There are two sides of the website first one for admin, other one for customers.

Admin can do:

Insert,Delete,Update and see all Employees

Insert,Delete,Uptade Stock and see all Stock

Update Customer and see allCustomers

Customer can do:

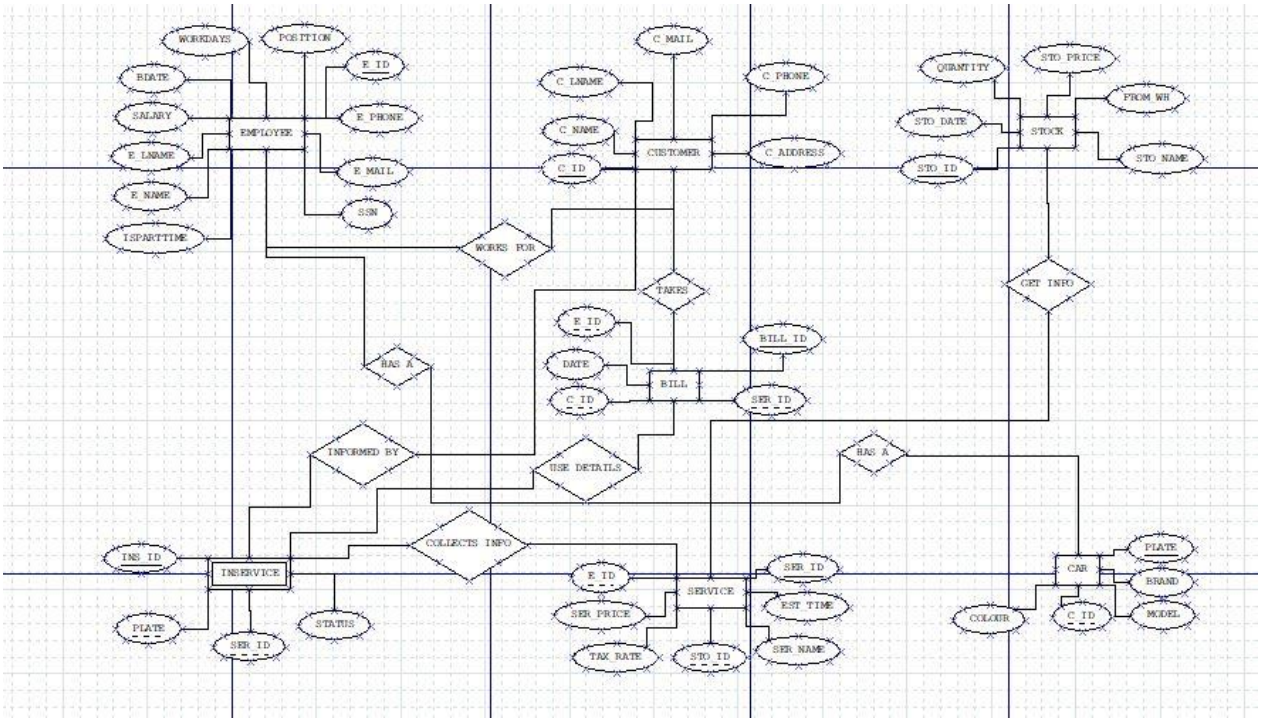
Register to the system

Check the status of the car

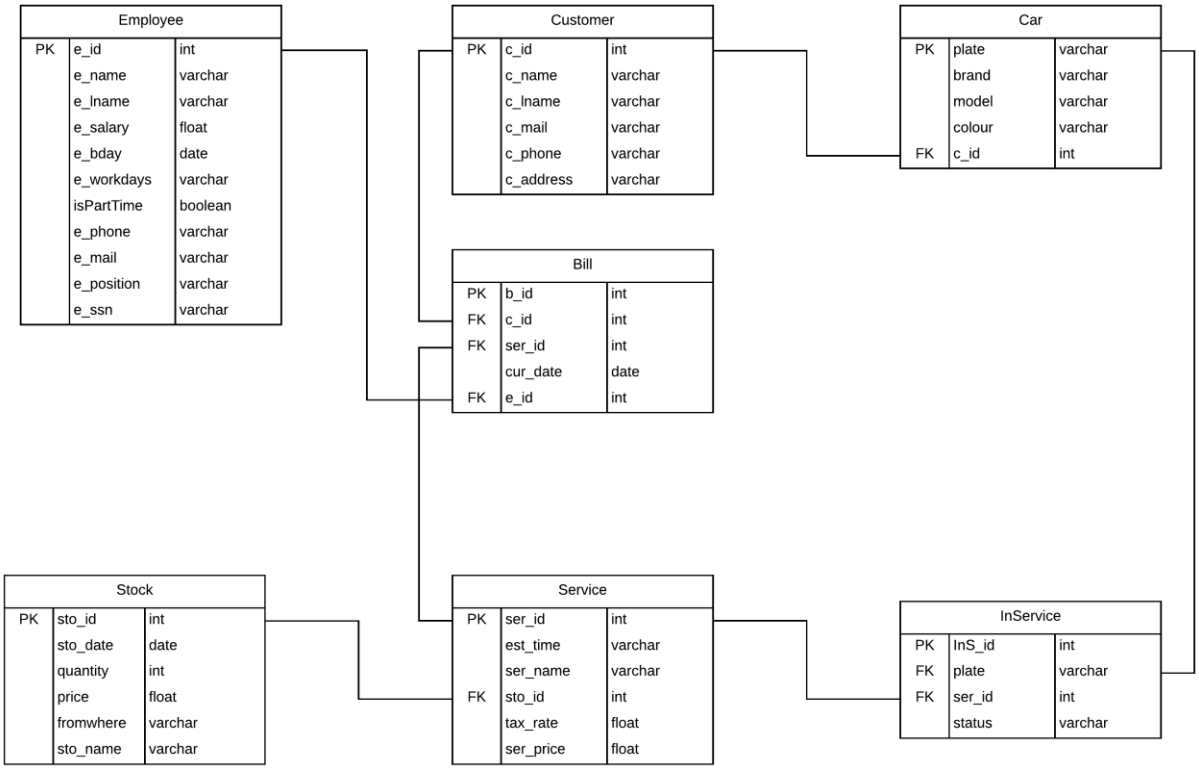
3) System constraints

- *Any employee can not earn salary higher than the employer.*
- *Any employee can not get a promotion different that his/her twenty percent of current salary.*
- *A promotion code discounts only ten percent.*
- *There can not be more than 50 employees.*
- *Employees must be over 18.*
- *Employees must be under 65.*
- *If a spare part's amount is under twenty percent , the system will automatically fulls its own stock.*

4) ER diagram



5) The database schema



6) All SQL statements

```
CREATE TABLE [dbo].[Employee](
	[e_id] [int] IDENTITY(1,1) NOT NULL,
	[e_name] [nvarchar](50) NULL,
	[e_lname] [nvarchar](50) NULL,
	[e_salary] [int] NOT NULL,
	[e_bday] [date] NULL,
	[e_workdays] [nvarchar](9) NULL,/******S M T1 W T2 F S ********/
	[isPartTime] [nvarchar](10) NULL,
	[e_phone] [nvarchar](20) NULL,
	[e_mail] [nvarchar](45) NULL,
	[e_position] [nvarchar](15) NULL,
	[e_ssn] [nvarchar](20) NOT NULL,
 CONSTRAINT [PK_Employee] PRIMARY KEY CLUSTERED
```

```
(
	[e_id] ASC
)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF, IGNORE_DUP_KEY = OFF,
ALLOW_ROW_LOCKS = ON, ALLOW_PAGE_LOCKS = ON) ON [PRIMARY]
) ON [PRIMARY]


CREATE TABLE [dbo].[Customer](
	[c_id] [int] IDENTITY(1,1) NOT NULL,
	[c_name] [nvarchar](50) NULL,
	[c_lname] [nvarchar](50) NULL,
	[c_phone] [nvarchar](20) NULL,
	[c_mail] [nvarchar](45) NULL,
	[c_ssn] [nvarchar](20) NOT NULL,
 CONSTRAINT [PK_Customer] PRIMARY KEY CLUSTERED
(
	[c_id] ASC
)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF, IGNORE_DUP_KEY = OFF,
ALLOW_ROW_LOCKS = ON, ALLOW_PAGE_LOCKS = ON) ON [PRIMARY]
) ON [PRIMARY]


CREATE TABLE [dbo].[Stock](
	[sto_id] [int] IDENTITY(1,1) NOT NULL,
	[sto_date] [date] NOT NULL,
	[quantity] [int] NOT NULL,
	[price] [int] NOT NULL,
	[fromwhere] [nvarchar](50) NULL,
	[sto_name] [nvarchar](20)NOT NULL,
 CONSTRAINT [PK_Stock] PRIMARY KEY CLUSTERED
(
	[sto_id] ASC
)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF, IGNORE_DUP_KEY = OFF,
ALLOW_ROW_LOCKS = ON, ALLOW_PAGE_LOCKS = ON) ON [PRIMARY]
) ON [PRIMARY]

CREATE TABLE [dbo].[Car](
	[plate] [int] IDENTITY(1,1) NOT NULL,
	[c_id] [int] NOT NULL,
	[brand] [nvarchar](50) NULL,
	[model] [nvarchar](50)NOT NULL,
	[colour] [nvarchar](50) NULL,

	CONSTRAINT PK_Car PRIMARY KEY CLUSTERED (plate),
	CONSTRAINT FK_Car_Owner FOREIGN KEY (c_id)
    REFERENCES dbo.Customer (c_id)
    ON DELETE CASCADE
    ON UPDATE CASCADE
);


CREATE TABLE [dbo].[Service](
	[ser_id] [int] IDENTITY(1,1) NOT NULL,
	[est_time] [nvarchar](50) NULL,
	[ser_name] [nvarchar](50)NOT NULL,
	[tax_rate] [int] NOT NULL,
	[ser_price] [int] NOT NULL,
```

```
	CONSTRAINT PK_Service PRIMARY KEY CLUSTERED (ser_id)
	/*,
	CONSTRAINT FK_Used_Stock FOREIGN KEY (sto_id)
    REFERENCES dbo.Stock (sto_id)
    ON DELETE CASCADE
    ON UPDATE CASCADE
*/

);

CREATE TABLE [dbo].[InService](
	[inS_id] [int] IDENTITY(1,1) NOT NULL,
	[plate] [int] NOT NULL,
	/*[ser_id] [int] NOT NULL,*/
	[status] [nvarchar](50) NOT NULL,
	CONSTRAINT PK_InService PRIMARY KEY CLUSTERED (inS_id),
	CONSTRAINT FK_Car FOREIGN KEY (plate)
    REFERENCES dbo.Car (plate)
    ON DELETE CASCADE
    ON UPDATE CASCADE,
	/*
	CONSTRAINT FK_Ins_Used_Service FOREIGN KEY (ser_id)
    REFERENCES dbo.[Service] (ser_id)
    ON DELETE CASCADE
    ON UPDATE CASCADE
	*/
);
CREATE TABLE [dbo].[Bill](
	[b_id] [int] NOT NULL,
	[c_id] [int] NOT NULL,
	/*[ser_id] [int] NOT NULL,*/
	/*[e_id] [int] NOT NULL,*/
	[cur_date] [date]NOT NULL,
	CONSTRAINT PK_Bill PRIMARY KEY CLUSTERED (b_id),
	CONSTRAINT FK_Bill_Customer FOREIGN KEY (c_id)
    REFERENCES dbo.Customer (c_id)
    ON DELETE CASCADE
    ON UPDATE CASCADE,
	/*CONSTRAINT FK_Bill_Used_Service FOREIGN KEY (ser_id)
    REFERENCES dbo.[Service] (ser_id)
    ON DELETE CASCADE
    ON UPDATE CASCADE,
	*/
	/*
	CONSTRAINT FK_Worked_Employee FOREIGN KEY (e_id)
    REFERENCES dbo.Employee (e_id)
    ON DELETE CASCADE
    ON UPDATE CASCADE
	*/
);


/******************** 1NF ----- ADDITIONAL TABLES ********************/

CREATE TABLE [dbo].[Stocks_Used_In_Services](
	[suis] [int] IDENTITY(1,1) NOT NULL,/* SUIS = Stocks Used In Services*/
	[ser_id] [int] NOT NULL,
	[sto_id] [int] NOT NULL,
```

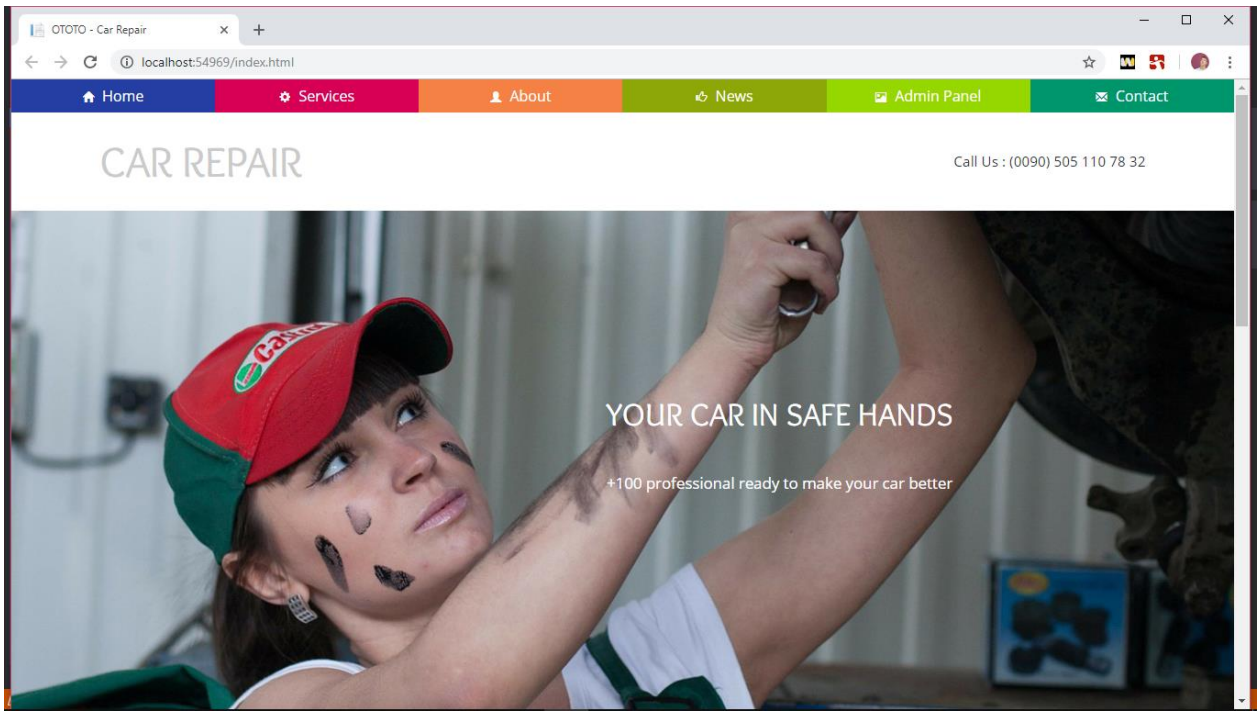
```
       CONSTRAINT PK_SUIS PRIMARY KEY CLUSTERED (suis),
       CONSTRAINT FK_SUIS_Service FOREIGN KEY (ser_id)
    REFERENCES dbo.[Service] (ser_id)
    ON DELETE CASCADE
    ON UPDATE CASCADE,
       CONSTRAINT FK_SUIS_Stock FOREIGN KEY (sto_id)
    REFERENCES dbo.Stock (sto_id)
    ON DELETE CASCADE
    ON UPDATE CASCADE,
);

CREATE TABLE [dbo].[Services_Used_In_Bill](
       [suib] [int] IDENTITY(1,1) NOT NULL,/* SUIB = Services Used In Bill*/
       [b_id] [int] NOT NULL,
       [ser_id] [int] NOT NULL,

       CONSTRAINT PK_SUIB PRIMARY KEY CLUSTERED (suib),
       CONSTRAINT FK_SUIB_Service FOREIGN KEY (ser_id)
    REFERENCES dbo.[Service] (ser_id)
    ON DELETE CASCADE
    ON UPDATE CASCADE,
       CONSTRAINT FK_SUIB_Bill FOREIGN KEY (b_id)
    REFERENCES dbo.Bill (b_id)
    ON DELETE CASCADE
    ON UPDATE CASCADE,
);

CREATE TABLE [dbo].[Employees_Used_In_Bill](
       [euib] [int] IDENTITY(1,1) NOT NULL,/* EUIB = Employees Used In Bill*/
       [b_id] [int] NOT NULL,
       [e_id] [int] NOT NULL,

       CONSTRAINT PK_EUIB PRIMARY KEY CLUSTERED (euib),
       CONSTRAINT FK_EUIB_Employee FOREIGN KEY (e_id)
    REFERENCES dbo.[Employee] (e_id)
    ON DELETE CASCADE
    ON UPDATE CASCADE,
       CONSTRAINT FK_EUIB_Bill FOREIGN KEY (b_id)
    REFERENCES dbo.Bill (b_id)
    ON DELETE CASCADE
    ON UPDATE CASCADE,
);

CREATE TABLE [dbo].[Services_Used_In_Inservice](
       [suii] [int] IDENTITY(1,1) NOT NULL,/* SUII = Services Used In Inservice*/
       [inS_id] [int] NOT NULL,
       [ser_id] [int] NOT NULL,

       CONSTRAINT PK_SUII PRIMARY KEY CLUSTERED (suii),
       CONSTRAINT FK_SUII_Service FOREIGN KEY (ser_id)
    REFERENCES dbo.[Service] (ser_id)
    ON DELETE CASCADE
    ON UPDATE CASCADE,
       CONSTRAINT FK_SUII_Inservice FOREIGN KEY (inS_id)
    REFERENCES dbo.Inservice (inS_id)
    ON DELETE CASCADE
    ON UPDATE CASCADE,
```

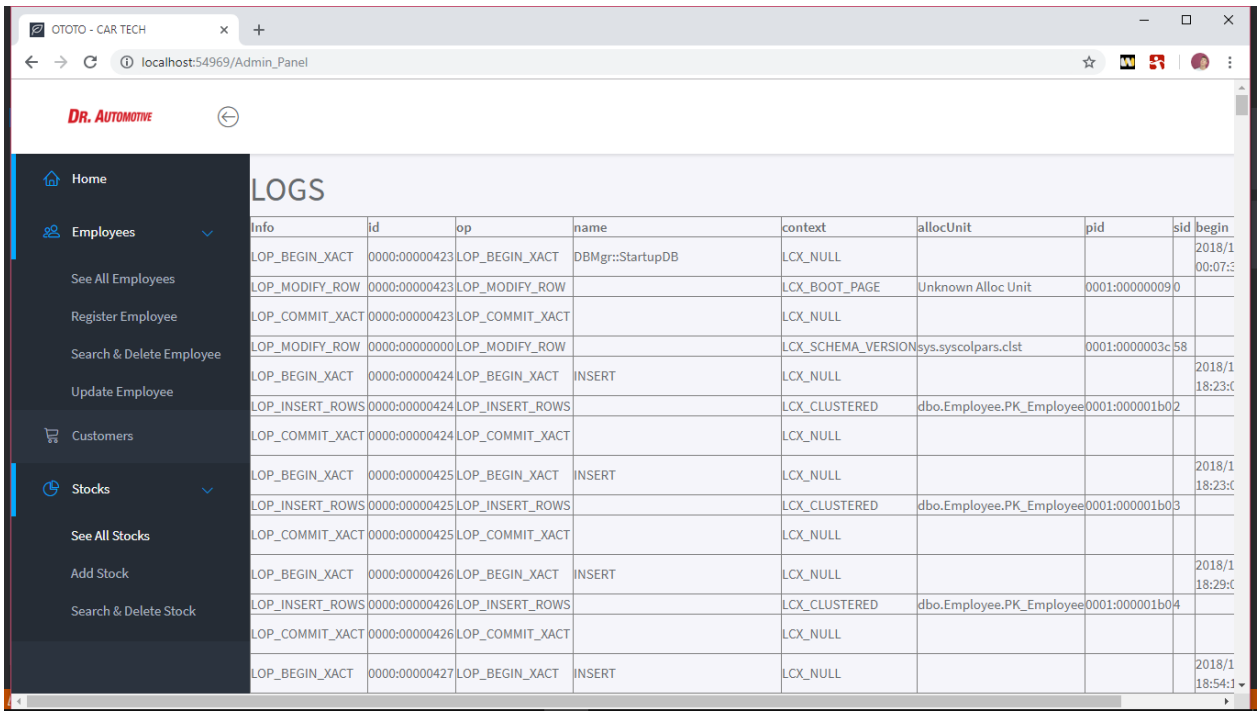
```
);
/****************      END OF 1NF      ***********************/

CREATE TABLE logs(
[log_id] int IDENTITY(1,1) not null,
[log_data] nvarchar(256),
[log_date] date,
CONSTRAINT PK_LOG PRIMARY KEY CLUSTERED (log_id),

);


go

/* getting logs*/
create PROCEDURE spSelectLogs
as

SELECT
 [Transaction ID],
 [Operation],
  [Transaction Name],
 [CONTEXT],
 [AllocUnitName],
 [Page ID],
 [Slot ID],
 [Begin Time],
 [End Time]
FROM sys.fn_dblog(NULL,NULL)
WHERE Operation IN
   ('LOP_INSERT_ROWS','LOP_MODIFY_ROW',
    'LOP_DELETE_ROWS','LOP_BEGIN_XACT','LOP_COMMIT_XACT')

GO

/* trigger*/
ALTER TRIGGER trigger_employee
ON Employee AFTER DELETE
AS
Begin
DECLARE @CNT INT
SELECT @CNT = COUNT(*) FROM Employee
IF(@CNT=0)
BEGIN
INSERT INTO dbo.Employee
VALUES('Onur','Kantar','1606','','','yes','05347760010','onur.kantar@ceng.deu.edu.tr','CEO
','35327127134')
END
End

/****************      Stored Procedures      ***********************/
Go;
CREATE PROCEDURE spSelectEmployee
AS
SELECT * FROM Employee
GO

CREATE PROCEDURE sp_GetEmployeeByID @id int
```

```
AS
BEGIN
SELECT * FROM Employee WHERE e_id = @id
END
GO


CREATE PROCEDURE SP_InsertEmployee @NAME nvarchar(50), @SURNAME nvarchar(50), @SALARY int,
@ISPARTTIME nvarchar(20)  ,@PHONE nvarchar(20), @MAIL nvarchar(45), @POSITION
nvarchar(15), @WORKDAYS nvarchar(50), @SSN nvarchar(20) , @BIRTHDAY date
AS
begin
INSERT into dbo.Employee
(e_name,e_lname,e_salary,e_bday,e_workdays,isPartTime,e_phone,e_mail,e_position,e_ssn)
VALUES(@NAME,@SURNAME,@SALARY,@BIRTHDAY,@WORKDAYS,@ISPARTTIME,@PHONE,@MAIL,@POSITION,@SSN)
end
GO



CREATE PROCEDURE SP_DeleteEmployee @ID int
as
delete Employee where 'e_id' = @ID
go

Create procedure SP_UpdateEmployee @ID int , @NAME nvarchar(50), @SURNAME nvarchar(50),
@SALARY int, @ISPARTTIME nvarchar(20)  ,@PHONE nvarchar(20), @MAIL nvarchar(45), @POSITION
nvarchar(15), @WORKDAYS nvarchar(50), @SSN nvarchar(20) , @BIRTHDAY date
AS
UPDATE Employee
SET "e_name" = @NAME, "e_lname" = @SURNAME, "e_salary" = @SALARY , "e_bday" = @BIRTHDAY ,
"e_workdays" = @WORKDAYS , "isPartTime" = @ISPARTTIME , "e_phone" = @PHONE , "e_mail" =
@MAIL , "e_position" = @POSITION , "e_ssn" = @SSN
WHERE 'e_id' = @ID;
go

/* end of employee part */

CREATE PROCEDURE spSelectCustomer
AS
SELECT * FROM Customer
go

CREATE PROCEDURE SP_InsertCustomer @NAME nvarchar(50), @SURNAME nvarchar(50),@PHONE
nvarchar(20), @MAIL nvarchar(45), @SSN nvarchar(20)
AS
begin
INSERT into dbo.Customer VALUES(@NAME,@SURNAME,@PHONE,@MAIL,@SSN)
end
go

CREATE PROCEDURE SP_DeleteCustomer @ID int
as
delete Customer where c_id = @ID
go

CREATE PROCEDURE sp_GetCustomerByID @id int
AS
```

```
BEGIN
SELECT * FROM Customer WHERE c_id = @id
END
GO

CREATE procedure SP_UpdateCustomer @ID int , @NAME nvarchar(50), @SURNAME nvarchar(50),
@PHONE nvarchar(20), @MAIL nvarchar(45), @SSN nvarchar(20)
AS
UPDATE Customer
SET "c_name" = @NAME, "c_lname" = @SURNAME, "c_phone" = @PHONE , "c_mail" = @MAIL ,
"c_ssn" = @SSN
WHERE c_id = @ID;
go
/*end of customer part*/

CREATE PROCEDURE spSelectStock
AS
SELECT * FROM Stock
go

CREATE PROCEDURE sp_GetStockByID @id int
AS
BEGIN
SELECT * FROM Stock WHERE sto_id = @id
END
GO

CREATE PROCEDURE SP_InsertStock @STODATE date,@QUANTITY int,@PRICE int,@FROMWHERE
nvarchar(50),@STONAME nvarchar(20)
AS
begin
INSERT into dbo.Stock VALUES(@STODATE,@QUANTITY,@PRICE,@FROMWHERE,@STONAME)
end
go


CREATE procedure SP_UpdateStock @ID int , @STODATE date,@QUANTITY int,@PRICE
int,@FROMWHERE nvarchar(50),@STONAME nvarchar(20)
AS
UPDATE Stock
SET "sto_date" = @STODATE, "quantity" = @QUANTITY, "price" = @PRICE , "fromwhere" =
@FROMWHERE, "sto_name" = @STONAME
WHERE sto_id = @ID;
go

CREATE PROCEDURE SP_DeleteStock @ID int
as
delete Stock where sto_id = @ID
go
/*end of stock part*/
```

7) Screen shots of your interfaces with brief declaration for main operations





8) Logs

The logs are shown in section 7 with images.

9) Additional properties of your project

-

10) Used technology, tools and Challenges

We used 3 tier architecture for modelling our system.We used Visual Studio and SQL Server.The most common challange was the time.We thought so detailed about project.