

DATABASE SYSTEMS

COEN 280

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MAGIC WAND INC.

Project Members:

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PROJECT DESCRIPTION

The task is to design and develop a record maintenance system for MagicWand Inc, a computer repair and maintenance services company. The system is required to maintain customer service contracts and repair jobs. Customers can take a service contract covering one or more service items like desktops, laptops, or printers. The coverage includes hardware maintenance, software updates, and labor for repairs, excluding parts. Repair jobs can be charged for labor and parts if the item is not under a service contract. The system must create service contracts and repair jobs, generate bills, and generate statistics. PLSQL procedures should be written to create service contracts and repair jobs, and constraints must be enforced, such as the end date of the contract not being less than the start date and recording customer information, and the date of cancellation when a service contract is deleted.

The functionality that is demonstrated includes the following:

- a) Creating customers and at least three service contracts. One of the service contracts should include multiple service items (a laptop, desktop, etc).
- b) Creating at least two repair jobs, where one repair job has a repair item that is included in a service contract and one repair job that has a repair item with no service contract.
- c) Display a service contract by contract id.
- d) Display all the service contracts for a specific customer (by phone).
- e) Display a repair job. This should include all the information about a customer, each repair item, and the itemized bill.
- f) Display the number of active service contracts and the total revenue generated each month by these contracts.
- g) Display the total revenue generated in a specific month by all the repair jobs.

-Create a service contract: A PLSQL procedure must be written that adds it to the ServiceContract table. The service contract must include the customer id, service contract id, start date, end date, machine id, type of service, and the fee charged per month. The procedure should create an instance of the contract and store it in the appropriate table. The service contract must have an active status that can be updated to inactive.

Create a repair job: A PLSQL procedure must be written that adds it to the appropriate table. The repair job should include customer information, date of service, machine id, type of service, whether it's a service item covered, and an itemized list of charges.

Two constraints are enforced: the end date of a service contract cannot be less than the start date, and when a service contract is deleted, the customer's information and cancellation date should be recorded in a separate table

ADDITIONAL FUNCTIONALITY IMPLEMENTED (EXTRA CREDIT)

1. Displaying statistics like the favorite customer (the customer with the highest business offered)
2. Contract Renewal based on the expiry date (displays all the customers who are close to their expiry date of contract so that we can have an understanding of whom we can contact for their contract renewals)
3. Display the customers who are closer to their contract expiry date.
4. Github: <https://github.com/jvsaisrikar/MagicWand>

Relations to Tables

-- Table 1 customer Form

```
create table customer (  
    phone_number number not null primary key,  
    name varchar(30) not null,  
    address varchar(30) not null  
);
```

-- Table 2 service_contract Form

```
create table service_contract (  
    contract_id number not null primary key,  
    start_date date not null,  
    end_date date not null,  
    status varchar(10) not null,  
    phone_number number not null,  
    constraint FK_service_contract foreign key (phone_number) references  
customer(phone_number)  
);
```

-- Table 3 contract_deleted

```
create table contract_deleted (  
    name varchar(30) not null,  
    address varchar(30) not null,  
    phone_number number not null,  
    date_of_cancellation date not null  
);
```

-- Table 4 repair_job Form

```
create table repair_job (  
    repair_id number not null primary key,  
    bill number not null,  
    itemised_bill varchar(100) not null,  
    date_of_service date not null,  
    phone_number number not null,  
    machine_id number not null,
```

```
type_of_service varchar(20) not null,  
constraint FK_repair_job foreign key (phone_number) references  
customer(phone_number),  
constraint FK_repair_job1 foreign key (machine_id) references service_item(item_id)  
);
```

-- Table 5 service_item Form

```
create table service_item (  
    item_id number not null primary key,  
    device_type varchar(15) not null,  
    "year" number not null,  
    make varchar(20) not null,  
    "model" varchar(20) not null  
);
```

-- Table 6 Fee

```
CREATE TABLE Fee (  
    device varchar(15) not null,  
    rate number not null,  
    type_of_service varchar(15) not null CHECK (type_of_service IN ('hardware',  
'software', 'labour'))  
);
```

-- Table 7 Monitor Form

```
create table Monitor (  
    "model" varchar(20) not null,  
    make varchar(20) not null,  
    "size" number not null,  
    "year" date not null  
);
```

Readme

Functional Dependencies-

1. Customer relation:

a. phone_number -> name, address

2. Service_Contract relation:

a. contract_id -> start_date, end_date, status, phone_number

3. Contract_deleted relation:

a. name, address, phone_number, date_of_cancellation

4. Repair_Job relation:

a. repair_id -> bill, itemised_bill, date_of_service, phone_number, machine_id, type_of_service

5. Service_item relation:

a. item_id -> device_type, year, make, model

6. Fee relation:

a. Device, rate, type_of_service

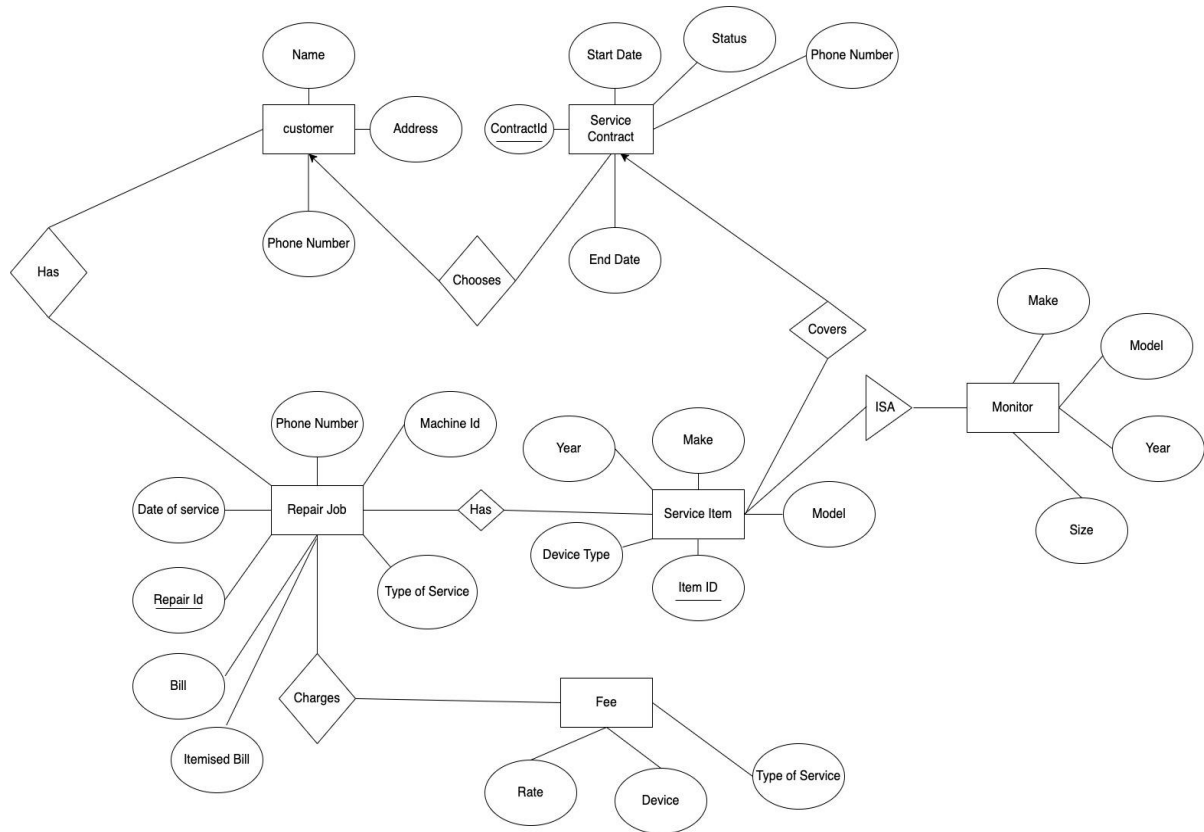
7. Monitor relation:

a. model, make, size, year

Working of the project:

1. The user lands on the home page.
2. The user will be able to use any of the services provided
3. Data can be entered into a few tables by filling out the forms
4. Data can be retrieved as well.
5. Additional features have been implemented (Extra Credit)

ER Diagram



NOTE:

-MachineID=ItemID=ContractID

- The 2 procedures, Functionalities asked (A-G), and Extra Credit Functionalities screenshots are attached

Screenshots

HOME PAGE:

Welcome to Magic wand! Select a Service:

Customer Form

Service Form

Contract Termination

Service Item

Repair Job

C) Sample Input to display a service contract by contract id.

D) Sample Input to display all the service contracts for a specific customer (by phone).

E) Display a repair job. This should include all the information about customer, each repair item and the itemized bill.

F) Display the number of active service contracts and the total revenue generated each month by these contracts.

G) Display the total revenue generated in a specific month by all the repair jobs.

Additional Functionality (Extra Credit)

Display the favourite customer (The customer who generated maximum number of repair jobs.)

Display the customers closer to contract expiry

Display the average size in repair job

CUSTOMER FORM

Enter Your Information

Name:

Anish

Address:

3549 Rimini Lane

Number:

1111111111

SUBMIT

Updated Data:

	PHONE_NUMBER	NAME	ADDRESS
1	874559138	Fay Henderson	629-8745 Convallis Road
2	257792152	Jackson Combs	Ap #852-5409 Lacus. St.
3	239363595	Yoko Rivera	P.O. Box 703, 9964 Fusce St.
4	209889102	Margaret Chambers	929-6487 Vivamus Rd.
5	560246527	Dorothy Madden	201-7082 Dolor Av.
6	837364289	Hector Scott	Ap #590-6330 Aliquet. St.
7	784329857	Ashley Martinez	P.O. Box 315, 9643 Integer Rd.
8	861234567	Clifford Nguyen	Ap #123-4567 Egestas Rd.
9	111111111	Anish	3549 Rimini Lane

Service Contract Form and Updated Data

Contract Form

Contract ID:
21

Start Date:
23/03/2023

End Date:
31/03/2023

Status:
Active

Customer ID: (Phone Number)
209889102

SUBMIT

	CONTRACT_ID	START_DATE	END_DATE	STATUS	PHONE_NUMBER
1	21	23-03-23	31-03-23	active	209889102
2	1	01-04-22	01-04-23	active	874559138
3	2	01-05-22	01-05-23	active	874559138
4	3	01-06-22	01-06-23	active	874559138
5	4	01-06-22	01-06-23	active	257792152
6	5	01-07-22	01-07-23	active	239363595
7	6	01-08-22	01-08-23	active	209889102
8	7	01-09-22	01-09-23	inactive	209889102
9	8	01-10-22	01-10-23	active	560246527
10	9	01-11-22	01-11-23	active	874559138
11	10	01-03-22	01-03-23	active	239363595

Contract Termination

Contract Termination

Enter the Contract ID to Terminate:
<input type="text" value="7"/>
Enter the Phone Number:
<input type="text" value="0209889102"/>
<input type="button" value="SUBMIT"/>

After Submitting

Thanks! Contract Terminated

Updated Record Status->Inactive

7	7	01-09-22	01-09-23	inactive	209889102
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Contract Deleted Table

	NAME	ADDRESS	PHONE_NUMBER	DATE_OF_CANCELLATION
1	Margaret Chambers	929-6487 Vivamus Rd.	209889102	22-03-23

Service Item Form and Updated Data

Service Item

Item ID:
<input type="text" value="21"/>
Device Type:
<input type="text" value="Laptop"/>
Year:
<input type="text" value="2022"/>
Make:
<input type="text" value="Lenovo"/>
Model:
<input type="text" value="Dell"/>
<input type="button" value="SUBMIT"/>

Service Item

Item ID:

22

Device Type:

Desktop

Year:

2015

Make:

LG

Model:

Model1

SUBMIT

Service Item

Item ID:

23

Device Type:

Printer

Year:

2019

Make:

HP

Model:

Model3

SUBMIT

	ITEM_ID	DEVICE_TYPE	year	MAKE	model
1	110	desktop	2016	HP	model10
2	111	laptop	2018	Dell	model2
3	112	printer	2019	HP	model3
4	113	desktop	2017	Lenovo	model4
5	114	laptop	2020	Apple	model5
6	115	printer	2016	Canon	model6
7	116	desktop	2019	Acer	model7
8	117	laptop	2018	Asus	model8
9	119	printer	2021	Brother	model9
10	1	desktop	2015	LG	model1
11	2	laptop	2018	Dell	model2
12	3	printer	2019	HP	model3
13	4	desktop	2017	Lenovo	model4
14	5	laptop	2020	Apple	model5
15	6	printer	2016	Canon	model6
16	7	desktop	2019	Acer	model7
17	8	laptop	2018	Asus	model8
18	9	printer	2021	Brother	model9
19	10	desktop	2016	HP	model10
20	21	laptop	2022	Lenovo	Dell
21	22	desktop	2015	LG	Model1
22	23	printer	2019	HP	Model3

Repair Job

Add Repair Job

Repair ID:

5

Phone Number:

0874559138

Machine ID:

3

Type of Service:

Hardware

Parts List:

Processor

Powercable

Hard Drive

Heatsink

SUBMIT

Thanks for submitting the form

Review

Name	Phone Number	Address	Date of Service	Machine ID	Type of Service	Service Item Covered	Itemised Charges	Total
Fay Henderson	874559138	629-8745 Convallis Road	2023-03-22 00:00:00	3	hardware	yes	processor:100 powercable:7	107.0

Add Repair Job

Repair ID:

7

Phone Number:

0874559138

Machine ID:

112

Type of Service:

Hardware

Parts List:

Processor

Powercable

Hard Drive

Heatsink

SUBMIT

Thanks for submitting the form

Review

Name	Phone Number	Address	Date of Service	Machine ID	Type of Service	Service Item Covered	Itemised Charges	Total
Fay Henderson	874559138	629-8745 Convallis Road	2023-03-22 00:00:00	112	hardware	no	processor:100 labour:15	115.0

Sample Input to display a service contract by Contract ID

Display a service contract by contract id.

Enter a Contract_Id:

3

SUBMIT

Output

Review

ID	Start Date	End Date	Status	Phone
3	2022-06-01 00:00:00	2023-06-01 00:00:00	active	874559138

Sample Input to display all the service contracts for a specific customer (by phone)

Display all the service contracts for a specific customer (by phone).

Enter a Contract_Id:

0874559138

SUBMIT

Output

Review				
ID	Start Date	End Date	Status	Phone
1	2022-04-01 00:00:00	2023-04-01 00:00:00	active	874559138
2	2022-05-01 00:00:00	2023-05-01 00:00:00	active	874559138
3	2022-06-01 00:00:00	2023-06-01 00:00:00	active	874559138
9	2022-11-01 00:00:00	2023-11-01 00:00:00	active	874559138

Display a repair job. This should include all the information about a customer, each repair item, and the itemized bill.

Display a repair job. This should include all the information about customer, each repair item and the itemized bill.

Enter a Repair Id:

3

SUBMIT

Output

Review										
Name	Phone Number	Address	Type of Device	Make	Model	Year	Date of Service	Type of Service	Itemised Charges	Total
Fay Henderson	874559138	629-8745 Convallis Road	desktop	LG	model1	2015	2022-06-10 00:00:00	hardware	heatsink:12	12.0

Display the number of active service contracts and the total revenue generated each month by these contracts.

Display the number of active service contracts and the total revenue generated each month by these contracts.

RETRIEVE INFORMATION

Output

Review

Year	Month	Active	Revenue
2023	3	1	27
2022	6	1	12

Display the total revenue generated in a specific month by all the repair jobs

Display the total revenue generated in a specific month by all the repair jobs.

Enter a Year:

2022

Enter a Month:

07

SUBMIT

Output

Total Revenue Generated in the Month and Year mentioned

Month	Year	Revenue Generated
07	2022	57.0 \$

Additional Functionality (Extra Credit)

Display the favorite customer (The customer who generated the maximum number of repair jobs.)

Display the favourite customer (The customer who generated maximum number of repair jobs.)

RETRIEVE INFORMATION

Output

Favourite Customer Details

Name	Address	Phone Number	Repair Count
Fay Henderson	629-8745 Convallis Road	874559138	4

Display the customers closer to contract expiry.

Display the customers closer to contract expiry

Enter no of days left for expiry:

80

SUBMIT

Output

Data

ID	Phone Number	End Date
1	874559138	2023-04-01 00:00:00
2	874559138	2023-05-01 00:00:00
3	874559138	2023-06-01 00:00:00
4	257792152	2023-06-01 00:00:00

Display the average size in repair job

Display the average size in repair job.

RETRIEVE INFORMATION

Output

The average bill size is 23.6

Database Screenshots

