KHULNA UNIVERSITY OF ENGINEERING & TECHNOLOGY

Department of Computer Science and Engineering(CSE)

PROJECT ON CSE3110

Course Title: Database Systems

Project Name : Automobile Company's Database

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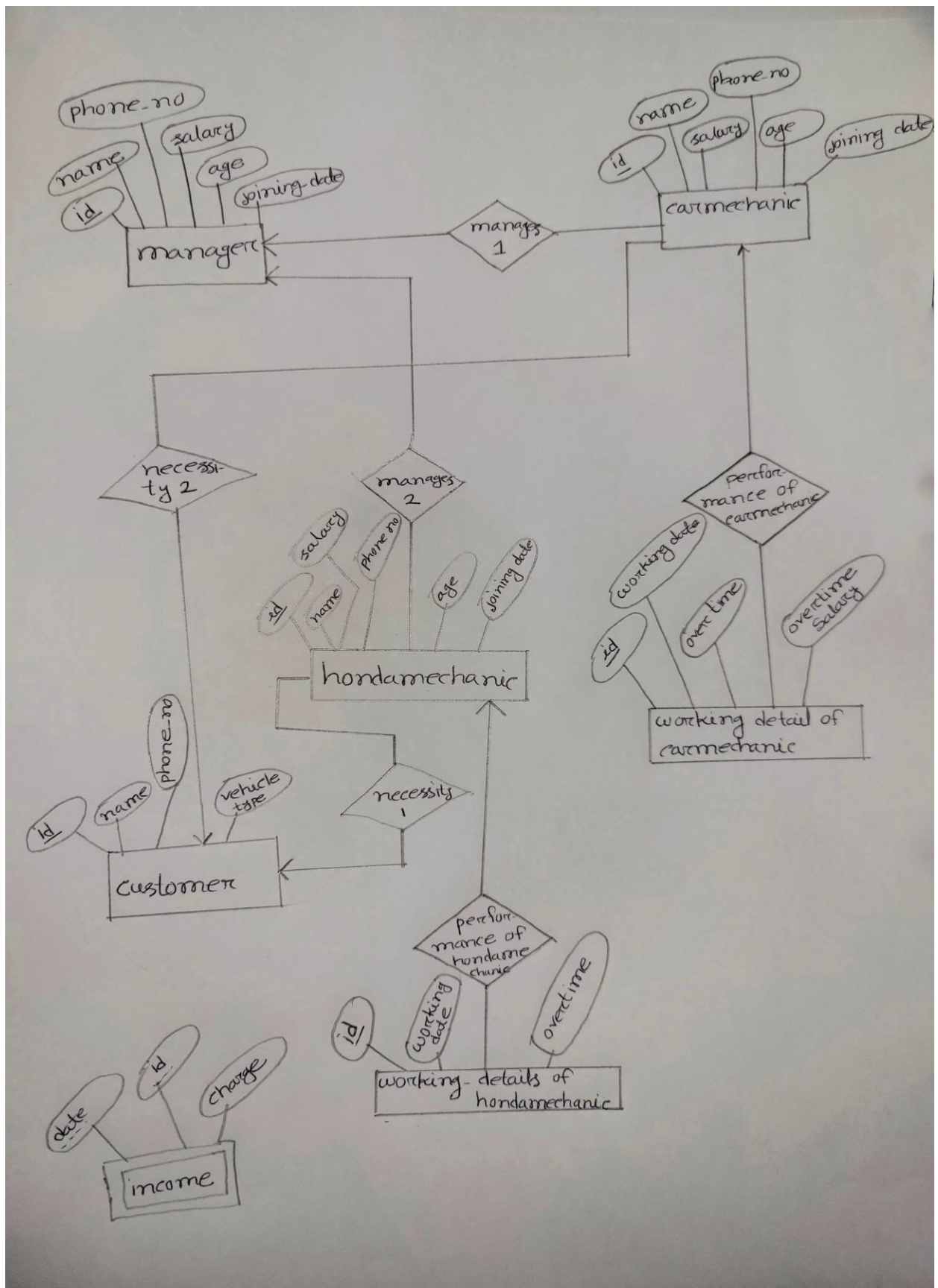**Year**: 3rd Semester: 1st

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Project Overview

All the information of a automobile company's workers and it's income can be managed in this project.Information about customers,managers and workers can be managed in this project.Information of a manager like name,salary,age,joining date etc can be calculated in this project.Information of a customer likename ,vehicle type,phone etc also can be calculated in this project. Information of carmechanic and hondamecanic like name,salary,overtime etc also calculated in this project.Besides in this project some functionalites are used to calculate the overtime salary,overtime hours and overtime date of a worker,how many years a worker works in the company,how many income of a month also calculate in this project.

Database Structure

The database consists of seven tables and they are manager,customer,carmechanic,hondamechanic,working_detail_carmechanic,working_detail_hondamechanic,income.Here primary key of manager table and primary key of customer table are foreign key of carmechanic, hondamechanic table.

primary key of carmechanic table ,primary key of hondamechanic table are foreign key of working_detail_carmechanic, working_detail_hondamechanic table. ER diagram of the database is given bellow .
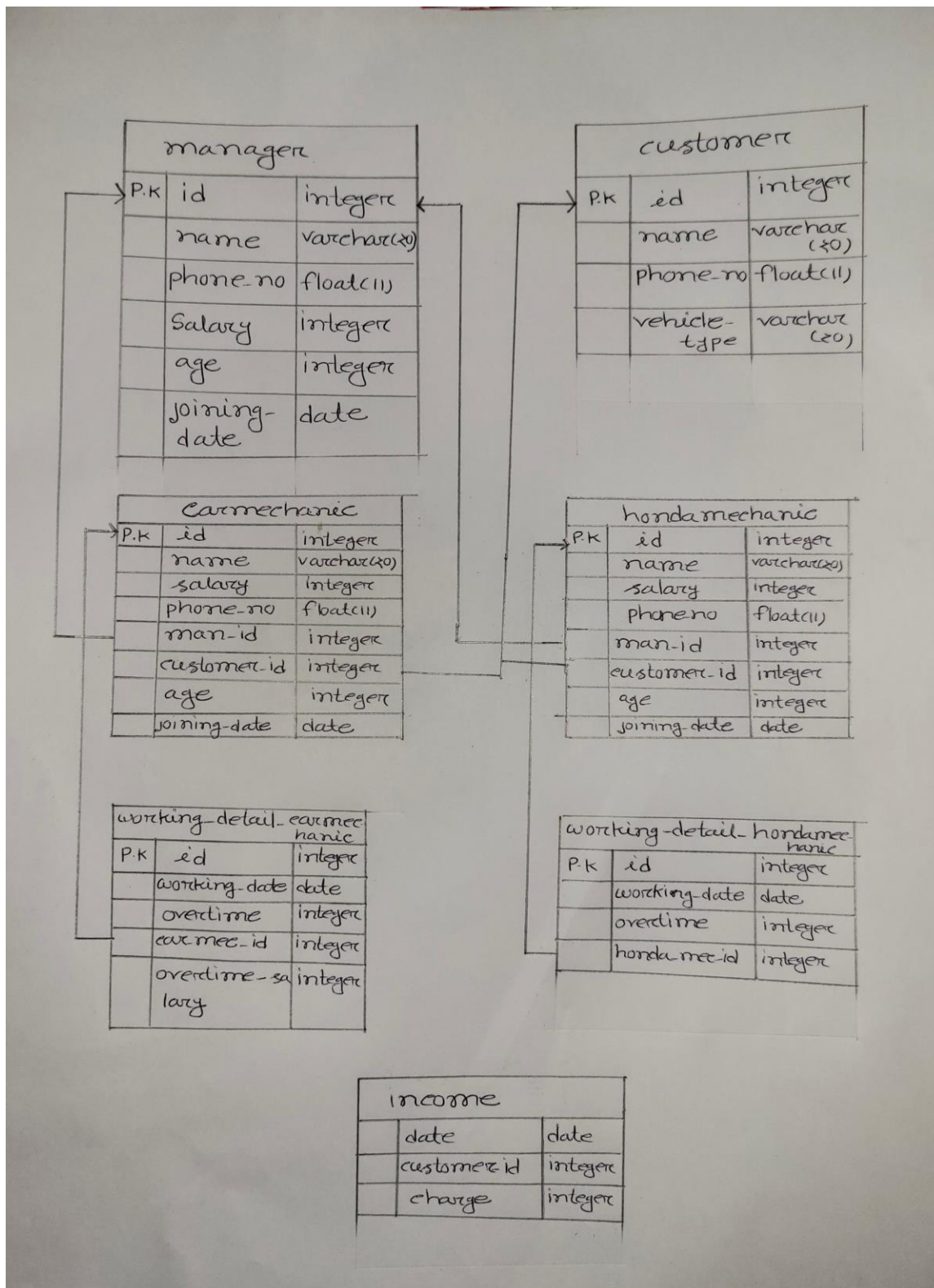
Schema diagram of the database is given bellow

manager

P.K	id	integer
	name	varchar(20)
	phone_no	float(11)
	Salary	integer
	age	integer
	joining-date	date

customer

P.K	id	integer
	name	varchar (20)
	phone-no	float(11)
	vehicle-type	varchar (20)

Carmechanic

P.K	id	integer
	name	varchar(20)
	salary	integer
	phone-no	float(11)
	man-id	integer
	customer-id	integer
	age	integer
	joining-date	date

hondamechanic

P.K	id	integer
	name	varchar(20)
	salary	integer
	phone-no	float(11)
	man-id	integer
	customer-id	integer
	age	integer
	joining-date	date

working-detail_carmechanic

P.K	id	integer
	working-date	date
	overtime	integer
	carmec-id	integer
	overtime-salary	integer

working-detail_hondamechanic

P.K	id	integer
	working-date	date
	overtime	integer
	honda_mec-id	integer

income

	date	date
	customer-id	integer
	charge	integer

Table Creation

```sql
1    drop table income;
2    drop table working_detail_carmechanic;
3    drop table working_detail_hondamechanic;
4    drop table carmechanic;
5    drop table hondamechanic;
6    drop table customer;
7    drop table manager;
8
9    create table manager(
10                   id integer,
11            name varchar(20) not null,
12           phone_no number(11) unique,
13           salary integer,
14               age integer check(age>=1 and age<=120),
15               joining_date date,
16           primary key(id)
17           );
18   create table customer(
19           id integer,
20           name varchar(20),
21           phone_no number(11) unique,
22           vechile_type varchar(20),
23           primary key(id)
24           );
25   create table carmechanic(
26           id integer,
27           name varchar(20) not null,
28           salary integer,
29           phone_no number(11) unique,
30           man_id integer,
31           customer_id integer,
32           age integer check(age>=1 and age<=120),
33           joining_date date,
34           primary key(id),
35           foreign key(man_id) references manager(id) on delete cascade,
36           foreign key(customer_id) references customer(id) on delete cascade
37           );
```

```sql
38   create table hondamechanic(
39              id integer,
40              name varchar(20) not null,
41              salary integer,
42              phone_no number(11) unique,
43              man_id integer,
44              customer_id integer,
45              age integer check(age>=1 and age<=120),
46              joining_date date,
47              primary key(id),
48              foreign key(man_id) references manager(id) on delete cascade,
49              foreign key(customer_id) references customer(id) on delete cascade
50              );
51   create table working_detail_carmechanic(
52              id integer,
53              working_date date,
54              overtime integer,
55              car_mec_id integer,
56              overtime_salary integer,
57              primary key(id),
58              foreign key(car_mec_id) references carmechanic(id) on delete cascade
59              );
60   create table working_detail_hondamechanic(
61              id integer,
62              working_date date,
63              overtime integer,
64              honda_mec_id integer,
65              primary key(id),
66              foreign key(honda_mec_id) references hondamechanic(id) on delete cascade
67              );
68
69
70   create table income(
71              date_ date,
72              id integer,
73              charge integer
74              --  primary key(date_,id),
75              --  foreign key(id) references customer(id) on delete cascade
76              );
77
```

```sql
78    insert into manager(id,name,salary,phone_no,age,joining_date) values(1001,'Rakib',60000,01700000001,30,'01-jan-15');
79    insert into manager(id,name,salary,phone_no,age,joining_date) values(1002,'Alif',60000,01700000002,33,'02-jan-14');
80    insert into manager(id,name,salary,phone_no,age,joining_date) values(1003,'Mehedy',70000,01700000003,40,'04-dec-12');
81    insert into manager(id,name,salary,phone_no,age,joining_date) values(1004,'Nazib',72000,01700000004,36,'02-feb-13');
82    insert into manager(id,name,salary,phone_no,age,joining_date) values(1005,'Shoriful',80000,01700000005,42,'01-mar-11');
83
84    insert into customer(id,name,phone_no,vechile_type) values(2001,'Parvej',01710000001,'car');
85    insert into customer(id,name,phone_no,vechile_type) values(2002,'Emon',01710000002,'car');
86    insert into customer(id,name,phone_no,vechile_type) values(2003,'Swassow',01710000003,'honda');
87    insert into customer(id,name,phone_no,vechile_type) values(2004,'Arnob',01710000004,'honda');
88    insert into customer(id,name,phone_no,vechile_type) values(2005,'Sadi',01710000005,'car');
89
90    insert into carmechanic(id,name,salary,phone_no,man_id,customer_id,age,joining_date) values(3001,'Tahsin',20000,01720000001,1001,2001,23,'01-jan-17');
91    insert into carmechanic(id,name,salary,phone_no,man_id,customer_id,age,joining_date) values(3002,'Apon',30000,01720000002,1002,2001,27,'02-jan-18');
92    insert into carmechanic(id,name,salary,phone_no,man_id,customer_id,age,joining_date) values(3003,'Pushon',40000,01720000003,1003,2002,30,'01-dec-19');
93    insert into carmechanic(id,name,salary,phone_no,man_id,customer_id,age,joining_date) values(3004,'Sahid',50000,01720000004,1002,2003,33,'02-feb-20');
94    insert into carmechanic(id,name,salary,phone_no,man_id,customer_id,age,joining_date) values(3005,'Sifat',25000,01720000005,1005,2002,35,'01-jan-21');
95
96    insert into hondamechanic(id,name,salary,phone_no,man_id,customer_id,age,joining_date) values(4001,'Farhan',20000,01722000001,1001,2003,21,'01-mar-17');
97    insert into hondamechanic(id,name,salary,phone_no,man_id,customer_id,age,joining_date) values(4002,'Mishu',25000,0172200002,1002,2003,26,'01-feb-16');
98    insert into hondamechanic(id,name,salary,phone_no,man_id,customer_id,age,joining_date) values(4003,'Uday',20000,0172200003,1003,2004,31,'01-dec-14');
99    insert into hondamechanic(id,name,salary,phone_no,man_id,customer_id,age,joining_date) values(4004,'Tudu',20000,0172200004,1004,2003,34,'02-jan-12');
100   insert into hondamechanic(id,name,salary,phone_no,man_id,customer_id,age,joining_date) values(4005,'Mahim',20000,0172200005,1003,2004,28,'01-jan-15');
101
102   insert into working_detail_carmechanic(id,working_date,overtime,car_mec_id,overtime_salary) values(1,'05-jan-22',3,3001,3000);
103   insert into working_detail_carmechanic(id,working_date,overtime,car_mec_id,overtime_salary) values(2,'05-jan-22',4,3002,4000);
104   insert into working_detail_carmechanic(id,working_date,overtime,car_mec_id,overtime_salary) values(3,'05-jan-22',2,3003,2000);
105   insert into working_detail_carmechanic(id,working_date,overtime,car_mec_id,overtime_salary) values(4,'05-jan-22',5,3004,5000);
106   insert into working_detail_carmechanic(id,working_date,overtime,car_mec_id,overtime_salary) values(5,'04-jan-22',1,3005,1000);
107
108
109   insert into working_detail_hondamechanic(id,working_date,overtime,honda_mec_id) values(1,'05-jan-22',3,4001);
110   insert into working_detail_hondamechanic(id,working_date,overtime,honda_mec_id) values(2,'05-jan-22',5,4002);
111   insert into working_detail_hondamechanic(id,working_date,overtime,honda_mec_id) values(3,'05-jan-22',2,4003);
112   insert into working_detail_hondamechanic(id,working_date,overtime,honda_mec_id) values(4,'05-jan-22',1,4004);
113   insert into working_detail_hondamechanic(id,working_date,overtime,honda_mec_id) values(5,'04-jan-22',4,4005);
114
```

```sql
insert into working_detail_carmechanic(id,working_date,overtime,car_mec_id,overtime_salary) values(1,'05-jan-22',3,3001,3000);
insert into working_detail_carmechanic(id,working_date,overtime,car_mec_id,overtime_salary) values(2,'05-jan-22',4,3002,4000);
insert into working_detail_carmechanic(id,working_date,overtime,car_mec_id,overtime_salary) values(3,'05-jan-22',2,3003,2000);
insert into working_detail_carmechanic(id,working_date,overtime,car_mec_id,overtime_salary) values(4,'05-jan-22',5,3004,5000);
insert into working_detail_carmechanic(id,working_date,overtime,car_mec_id,overtime_salary) values(5,'04-jan-22',1,3005,1000);

insert into working_detail_hondamechanic(id,working_date,overtime,honda_mec_id) values(1,'05-jan-22',3,4001);
insert into working_detail_hondamechanic(id,working_date,overtime,honda_mec_id) values(2,'05-jan-22',5,4002);
insert into working_detail_hondamechanic(id,working_date,overtime,honda_mec_id) values(3,'05-jan-22',2,4003);
insert into working_detail_hondamechanic(id,working_date,overtime,honda_mec_id) values(4,'05-jan-22',1,4004);
insert into working_detail_hondamechanic(id,working_date,overtime,honda_mec_id) values(5,'04-jan-22',4,4005);

insert into income(date_,id,charge) values('02-jan-18',2001,50000);
insert into income(date_,id,charge) values('03-jan-18',2002,40000);
insert into income(date_,id,charge) values('02-jan-18',2003,70000);
insert into income(date_,id,charge) values('04-jan-18',2004,60000);
insert into income(date_,id,charge) values('07-jan-18',2005,55000);
commit;
```

Functionality

Some mainfunctionality of this database project are given bellow .

❖ We can find how many carmechanic and hondamechanic did overtime for a particular day, overtime salary, overtime hours and total salary by using procedure. The code is given below.

```
Rakib0(table creation and inserting).sql        rakib1(procedure).sql ×

C: > database project >  rakib1(procedure).sql
 1    SET SERVEROUTPUT ON
 2    create or replace procedure p(w_date in date) is
 3    total integer;
 4    total1 integer;
 5    var integer;
 6    var1 integer;
 7    var2 integer;
 8    var3 integer;
 9    counter2 integer:=4001;
10    count1 integer;
11    counter integer:=3001;
12    counter1 integer:=1;
13    counter3 integer:=1;
14    type carid is varray(4) of number(11);
15    type carname is varray(4) of varchar(20);
16    type carsalary is varray(4) of integer;
17    type carovertime is varray(4) of integer;
18    type hid is varray(4) of number(11);
19    type hname is varray(4) of varchar(20);
20    type hsalary is varray(4) of integer;
21    type hovertime is varray(4) of integer;
22
23    id_array carid:=carid();
24    name_array carname:=carname();
25    salary_array carsalary:=carsalary();
26    overtime_array carovertime:=carovertime();
27    hid_array hid:=hid();
28    hname_array hname:=hname();
29    hsalary_array hsalary:=hsalary();
30    hovertime_array hovertime:=hovertime();
31    begin
32    select count(*) into total from carmechanic;
33    select count(*) into total1 from hondamechanic;
34    select count(*) into  var from working_detail_carmechanic where working_date=w_date;
35    select count(*) into  var1 from working_detail_hondamechanic where working_date=w_date;
36    dbms_output.put_line('Total carmechanic '||total||' Overtime did '||var);
37    dbms_output.put_line('Total hondamechanic '||total1||' Overtime did '||var1);
38    for counter in 3001..3004
```

```
loop
hid_array.extend();
hname_array.extend();
hsalary_array.extend();
hovertime_array.extend();
select a.id,a.name,a.salary,b.overtime into hid_array(counter3),hname_array(counter3),hsalary_array(counter3),hovertime_array(counter3)
from hondamechanic a join working_detail_hondamechanic  b on a.id=b.honda_mec_id where b.working_date=w_date and a.id=counter2;
counter3:=counter3+1;
end loop;
for counter1 in 1..var1
loop
 var3:=hsalary_array(counter1) + hovertime_array(counter1)*1000;

dbms_output.put_line('Hondamechanic  id '||hid_array(counter1)||' name '||hname_array(counter1)||
' salary '||hsalary_array(counter1)||' overtime '||hovertime_array(counter1) ||'hours '||
' overtime salary '||hovertime_array(counter1)*1000||
' total salary '||var3);
end loop;
end;
/
```

```
C: > database project > 🥟 rakib2(procedure call using array).sql
    1    SET SERVEROUTPUT ON
    2    begin
    3    p('05-jan-22');
    4    end;
    5    /
```

❖ We can calculate bonus according to experience level by using function . If
experience is above 4 year then bonus 5,000tk ,if experience is above 3 year
and bellow 4 year then bonus 4,000tk,if experience is above 2 year and
bellow 3 year then bonus 3,000tk,if experience is above 1 year and bellow 2
year then bonus 2,000tk. Sample code is given bellow .

```sql
1   SET SERVEROUTPUT ON
2   CREATE OR REPLACE FUNCTION f(car_id in integer) return integer is
3   age integer;
4   c_id carmechanic.id%type;
5   c_name carmechanic.name%type;
6   c_salary carmechanic.salary%type;
7   begin
8   select floor(MONTHS_BETWEEN(current_date,joining_date)/12) into age from carmechanic where id=car_id;
9   select id,name,salary into c_id,c_name,c_salary from carmechanic where id=car_id;
10  dbms_output.put_line('before update id '||c_id||' name '||c_name|| ' age ' || age || ' salary '||c_salary);
11  if age>=1 and age<2 then
12  update carmechanic set salary=salary+2000 where id=car_id;
13  select id,name,salary into c_id,c_name,c_salary from carmechanic where id=car_id;
14  dbms_output.put_line('after update id '||c_id||' name '||c_name||' salary '||c_salary);
15  return 2000;
16  elsif age>=2 and age<3 then
17  update carmechanic set salary=salary+3000 where id=car_id;
18  select id,name,salary into c_id,c_name,c_salary from carmechanic where id=car_id;
19  dbms_output.put_line('after update id '||c_id||' name '||c_name||' salary '||c_salary);
20  return 3000;
21  elsif age>=3 and age<4 then
22  update carmechanic set salary=salary+4000 where id=car_id;
23  select id,name,salary into c_id,c_name,c_salary from carmechanic where id=car_id;
24  dbms_output.put_line('after update id '||c_id||' name '||c_name||' salary '||c_salary);
25  return 4000;
26  else
27  update carmechanic set salary=salary+5000 where id=car_id;
28  select id,name,salary into c_id,c_name,c_salary from carmechanic where id=car_id;
29  dbms_output.put_line('after update id '||c_id||' name '||c_name||' salary '||c_salary);
30  return 5000;
31  end if;
32  end;
33  /
```

```
rakib1(procedure).sql        rakib2(procedure call using array).sql        rakib3(function).sql        rakib4(function call).sql ×

C: > database project > ⬟ rakib4(function call).sql
  1    SET SERVEROUTPUT ON
  2    declare
  3    type carid is varray(5) of integer;
  4    extra carid:=carid();
  5    counter integer:=3001;
  6    counter1 integer:=1;
  7    c_id carmechanic.id%type;
  8    c_name carmechanic.name%type;
  9    c_salary carmechanic.salary%type;
 10     begin
 11     for counter in 3001..3005
 12     loop
 13     extra.extend();
 14     extra(counter1):=f(counter);
 15     counter1:=counter1+1;
 16     end loop;
 17     counter:=3001;
 18    for counter1 in 1..5
 19    loop
 20    select id,name,salary into c_id,c_name,c_salary from carmechanic where id=counter;
 21    counter:=counter+1;
 22    dbms_output.put_line('Increased salary for id'||c_id||' name '||c_name||' is '||extra(counter1));
 23    end loop;
 24    end;
 25    /
```

❖ We can find overtime salary, overtime hours, id, name ,total salary of
   carmechanic   and   Hondamechanic by using cursor.Sample code is given
   bellow .

```sql
SET SERVEROUTPUT ON
create or replace procedure p(w_date in date) is
total integer;
total1 integer;
var integer;
var1 integer;
var2 integer;
var3 integer;
cursor ct is
select a.id,a.name,a.salary,b.overtime from
carmechanic a join working_detail_carmechanic  b on a.id=b.car_mec_id where b.working_date=w_date;
c_record ct%rowtype;
cursor ct1 is
select a.id,a.name,a.salary,b.overtime
from hondamechanic a join working_detail_hondamechanic  b on a.id=b.honda_mec_id where b.working_date=w_date;
c_record1 ct1%rowtype;
begin
select count(*) into total from carmechanic;
select count(*) into total1 from hondamechanic;
select count(*) into  var from working_detail_carmechanic where working_date=w_date;
select count(*) into  var1 from working_detail_hondamechanic where working_date=w_date;
dbms_output.put_line('Total carmechanic '||total||' Overtime did '||var);
dbms_output.put_line('Total hondamechanic '||total1||' Overtime did '||var1);
open ct;
loop
fetch ct into c_record;
exit when ct%notfound;
var2:=c_record.salary+c_record.overtime*1000;
dbms_output.put_line('Carmechanic  id '|| c_record.id||' Name '||c_record.name||
' Salary '||c_record.salary||' Overtime '||c_record.overtime||'hours '||
'Overtime Salary '||c_record.overtime*1000||' Total Salary '||var2);
end loop;
close ct;
open ct1;
loop
fetch ct1 into c_record1;
exit when ct1%notfound;
var3:=c_record1.salary+c_record1.overtime*1000;
dbms_output.put_line('Hondamechanic  id '|| c_record1.id||' Name '||c_record1.name||
' Salary '||c_record1.salary||' Overtime '||c_record1.overtime||'hours '||
'Overtime Salary '||c_record1.overtime*1000||' Total Salary '||var3);
end loop;
close ct1;
end;
/
```

```sql
SET SERVEROUTPUT ON
begin
p('05-jan-22');
end;
/
```

❖ We can find working experience and overtime hours by using trigger.

```
rakib5(cursor).sql        rakib6(procedure call using cursor).sql        rakib7(trigger).sql ×
C: > database project > rakib7(trigger).sql
1    SET SERVEROUTPUT ON
2    CREATE OR REPLACE trigger t_name before insert on carmechanic
3    referencing old as o new as n
4    for each row
5    declare
6    age integer;
7    begin
8    age:= floor(MONTHS_BETWEEN(current_date,:n.joining_date)/12);
9    if age>=1 and age<2
10   then:n.salary:=20000*1.10;
11   elsif age>=2 and age<3
12   then:n.salary:=20000*1.20;
13   elsif age>=3 and age<4
14   then:n.salary:=20000*1.30;
15   else:n.salary:=20000*1.40;
16   end if;
17   dbms_output.put_line('trigger created');
18   end;
19   /
20
```

```
Rakib0(table creation and inserting).sql        rakib7.1(trigger verify).sql ×
C: > database project > rakib7.1(trigger verify).sql
1    insert into carmechanic(id,name,salary,phone_no,man_id,customer_id,age,joining_date) values(3010,'fuad','',01720000022,1001,2001,23,'01-jan-17');
2    select *from carmechanic;
3    delete from carmechanic where id='3010';
4    select *from carmechanic;
```

❖ Some sqlquery are given below.

```sql
rakib8(normal queries).sql ×

C: > database project > 🛢 rakib8(normal queries).sql
  1    -- description of each table
  2    DESC manager;
  3    DESC customer;
  4    DESC hondamechanic;
  5    DESC carmechanic;
  6    DESC working_detail_hondamechanic;
  7    DESC working_detail_carmechanic;
  8    DESC income;
  9
 10
 11    -- data according each table
 12    select * from manager;
 13    select * from customer;
 14    select * from hondamechanic;
 15    select * from carmechanic;
 16    select * from  working_detail_hondamechanic;
 17    select * from working_detail_carmechanic;
 18    select * from  income;
 19
 20
 21    --add operation (adding column)
 22    alter table manager add temporary_column VARCHAR2(50);
 23    desc manager;
 24    select * from manager;
 25
 26    --modify operation (modifying column data type)
 27    alter table manager modify temporary_column NUMBER(20);
 28    desc manager;
 29    select * from manager;
 30
 31    --drop operation (dropping column)
 32    alter table manager drop column temporary_column;
 33    desc manager;
 34    select * from manager;
 35
 36    --rename operation (renaming column)
 37    alter table manager rename column phone_no to p_no;
 38    desc manager;
 39    select * from manager;
 40
```

```sql
35
36   --rename operation (renaming column)
37   alter table manager rename column phone_no to p_no;
38   desc manager;
39   select * from manager;
40
41   alter table manager rename column p_no to phone_no;
42   desc manager;
43   select * from manager;
44
45
46   --update operation (updating a value)
47   update manager set salary = 5000 where id=1005;
48   desc manager;
49   select * from manager;
50
51   update manager set salary = 80000 where id=1005;
52   desc manager;
53   select * from manager;
54
55   --delete operation (deleting a row from tags table)
56   insert into manager(id,name,salary,phone_no,age,joining_date) values(1006,'Shoriful',80000,01700000006,43,'01-mar-11');
57   select * from manager;
58
59   delete from manager where id=1006;
60   select * from manager;
61
62
63   --applying conditions
64   select name from manager where id=1001;
65
66   --Range Search
67   SELECT name,phone_no,salary FROM manager
68   WHERE id BETWEEN 1001 AND 1005;
69
70   SELECT name,phone_no,salary FROM manager
71   WHERE id not BETWEEN 1001 AND 1003;
72
```

```sql
72
73      --range operators
74      SELECT name,phone_no,salary FROM manager
75      WHERE id>=1001 AND id<=1003;
76
77      SELECT name,phone_no,salary FROM manager
78      WHERE id>=1001 or id<=1003;
79
80      --Set membership
81      SELECT name,phone_no,salary FROM manager WHERE id IN (1001,1005);
82      SELECT name,phone_no,salary FROM manager WHERE id NOT IN (1001,1005);
83
84      --Ordering by column values
85      SELECT name,phone_no,salary,age FROM manager ORDER BY age;
86      SELECT name,phone_no,salary,age FROM manager ORDER BY age desc;
87
88      --Ordering by column values(with multiple columns)
89
90      SELECT id,name,age FROM manager ORDER BY age,id;
91      SELECT id,name,age FROM manager ORDER BY age,id desc;
92      select * from manager order by id;
93
94      --Use of DISTINCT
95      select distinct (salary) from manager;
96
97      --calculated field
98      select (id/2) as id_divided_by_two from manager;
99
100     --------------------finish  finish for  today--------------------------------------
101
102     --aggregate functions:
103     select  max(id) from manager;
104
105     select min(id) from manager;
106
107     select  sum(id) from manager;
108
109     select count(id) from manager;
110
111     select count(*) from manager;
```

```sql
109    select count(id) from manager;
110
111    select count(*) from manager;
112
113    select count(distinct (id)) from manager;
114
115
116    insert into manager(id,name,salary,phone_no,age,joining_date) values(1006,'Shoriful','',01700000006,43,'01-mar-11');
117    select * from manager;
118
119
120    select  avg(salary) from manager;
121
122    select  avg(nvl(salary,0)) from manager;
123
124    delete from manager where id=1006;
125    select * from manager;
126
127
128
129
130    --GROUP BY clause
131    select count(man_id),man_id from carmechanic group by man_id;
132    select count(man_id),man_id from carmechanic where salary>30000 group by man_id;
133
134    --HAVING clause
135    select count(man_id),man_id from carmechanic group by man_id having count(*)<2;
136    select count(man_id),man_id from carmechanic group by man_id having man_id>1002;
137
138
139    --IN
140    select id,name,salary from carmechanic where name in ('Apon','Tahsin','Sifat');
141    --nested query
142    select name from carmechanic where man_id in(select man_id from carmechanic group by man_id having count(*)>1);
143
144
145    --Pattern Matching
146    select id,name from customer
147    where vechile_type like 'c%';
148
```

```sql
143
144
145    --Pattern Matching
146    select id,name from customer
147    where vechile_type like 'c%';
148
149    select id,name from customer
150    where vechile_type like '%r';
151
152    select id,name from customer
153    where name like '%a%';
154    -- a can be anywhere in middle but not first and last
155
156    select * from customer
157    where name like '_a%v%j';
158    -- 2nd letter a, v can be anywhere after a and before j, last letter must be j
159
160    select * from customer
161    where name like 'P_r%v%j';
162    -- 1st letter p , 2nd letter a, v can be anywhere after a and before j, last letter must be j
163
164    select * from customer
165    where name like '_a%';
166    -- 2nd letter a, rest can be anything
167
168    select id,name from customer
169    where name not like '%a%';
170
171
172    -------------------finish  finish for  today-------------------------------------
173
```

```sql
1    --set operations
2
3    --union all operation (duplicate ashe)
4
5    insert into manager(id,name,salary,phone_no,age,joining_date) values(1006,'Sifat',80000,01700000006,42,'01-mar-11');
6    insert into carmechanic(id,name,salary,phone_no,man_id,customer_id,age,joining_date) values(3006,'Shoriful',25000,01720000006,1005,2002,35,'01-jan-21');
7    select name from manager where id>=1001 and id<=1006
8    union all
9    select name from carmechanic where man_id>=1001 and man_id<=1006;
10
11   --union operation (duplicate ashe na)
12   select name from manager where id>=1001 and id<=1006
13   union
14   select name from carmechanic where man_id>=1001 and man_id<=1006;
15
16   --INTERSECT operation
17   select name from manager where id>=1001 and id<=1006
18   INTERSECT
19   select name from carmechanic where man_id>=1001 and man_id<=1006;
20
21   --MINUS operation
22   select name from manager where id>=1001 and id<=1006
23   MINUS
24   select name from carmechanic where man_id>=1001 and man_id<=1006;
25
26
27   delete from manager where id=1006;
28   select * from manager;
29
30   delete from carmechanic where id=3006;
31   select *from carmechanic;
32
33   --simple join examples customer and income table
34   select t.id,t.name,c.date_ from customer t join
35   income c on t.id = c.id;
36
37   -- natural join
38   select id,name,date_ from customer natural join income;
```

```sql
38    select id,name,date_ from customer natural join income;
39
40    -- cross join
41    select t.id,t.name,c.date_ from customer t cross join
42    income c;
43
44    --Inner Join
45    select t.id,t.name,c.date_ from customer t inner join
46    income c on t.id = c.id;
47
48
49    --Outer Join
50    --LEFT Outer Join
51    insert into customer(id,name,phone_no,vechile_type) values(2006,'Ayonn',01710000006,'car');
52    select t.id,t.name,c.date_ from customer t LEFT Outer join
53    income c on t.id = c.id;
54
55    --RIGHT Outer Join
56    insert into income(date_,id,charge) values('08-jan-18',2007,55000);
57    select t.id,t.name,c.date_ from customer t RIGHT Outer join
58    income c on t.id = c.id;
59
60    -- full outer join
61    select t.id,t.name,c.date_ from customer t full Outer join
62    income c on t.id = c.id;
63
64    --Self Join
65    select p.id from income p MINUS
66    select p.id from income p join income q on p.id<q.id;
67
68
69    delete from customer where id=2006;
70    select *from customer;
71
72
73    delete from income where id=2007;
74    select *from income;
75
76         --View
```

```
75
76    -- View
77
78
79    -- single table
80
81    CREATE View view_details as
82    select date_,id from income
83    where id<2004;
84
85    select *from view_details;
86    drop View view_details;
87
88    -- Multiple table
89
90    CREATE View view_details2 as
91    select s.id,s.date_,m.vechile_type from
92    income s, customer m
93    where s.id=m.id;
94
95    select *from view_details2;
96    drop View view_details2;
97
98    -- rollback related thing
99
100   select *from income;
101   commit;
102   select *from income;
103   delete from income where id=2001;
104   select *from income;
105   delete from income where id>2003;
106   select *from income;
107   rollback;
108   select *from income;
109
```

Customers/Audience

 The main users of this database are customers and the workers of a automobile company.

Database Design Process

This database project is developed by ORACLE . We developed seven new tables and inserted data from file .

We learned several important lessons through the design process. These include:
1) Designing tables is the most important step and must be done early in the project.
2) Building a database and web application from scratch is often easier than revising anexisting database and application – which is why initial design is so important and wasstressed throughout the course!

Future of Database

The database of this project can be used via web application to maintain data for a automobile company. In future this database can be used in the following **aspects-**

1)Gather feedback (both direct and observational) from customer and workers for future

usability requirement.

 2) Develop information architecture for needed forms, web pages, and database tables to support the form.

3) Create the database tables in Oracle.

4) Update code to incorporate feedback.

Discussion & Conclusion

The project was a learning experience for us and allowed us to improve upon our SQL skills. From this we learn about database management system, sql query, function procedure, trigger, cursor etc that help us for future database development .We developed a database system for managing workers and customers information . I think that this project will be helpful for a automobile company .

Reference

https://www.w3schools.com/sql/

Github Project Link

https://github.com/rakibMahmud/Automobile-Company-s-Database