**Normalization**

1. **Make** (CH\_ID CH\_NAME, ADDRESS, COUNTRY, CITY, I\_NAME, I\_FLAVOUR, I\_PRICE, I\_QUNTITY)

**1NF**: I\_PRICE multivalued attribute

**2NF:** CH\_ID, CH\_NAME, ADDRESS, COUNTRY, CITY

I\_NAME, I\_FLAVOUR, I\_PRICE, I\_QUNTITY, CH\_ID,

**3NF**: CH\_ID, CH\_NAME, ADDRESS

I\_NAME, I\_FLAVOUR, I\_PRICE, I\_QUNTITY, CH\_ID

A\_ID, COUNTRY, CITY

**TABLE**

1. CH\_ID, CH\_NAME, ADDRESS,
2. I\_NAME, I\_FLAVOUR, I\_PRICE, I\_QUNTITY, CH\_ID
3. A\_ID, COUNTRY, CITY

1. **SUPPLY** (I\_NAME, I\_FLAVOUR, I\_PRICE, I\_QUNTITY, SUP\_ID, SUP\_NAME, SUP\_QUNTITY)

1NF: I\_PRICE multivalued attribute

2NF: I\_NAME, I\_FLAVOUR, I\_PRICE, I\_QUNTITY

SUP\_ID, SUP\_NAME, SUP\_QUNTITY, I\_NAME

3NF: I\_NAME, I\_FLAVOUR, I\_PRICE, I\_QUNTITY

SUP\_ID, SUP\_NAME, SUP\_QUNTITY, I\_NAME

Table

1. I\_NAME, I\_FLAVOUR, I\_PRICE, I\_QUNTITY
2. SUP\_ID, SUP\_NAME, SUP\_QUNTITY,I\_NAME

1. **SERVE** (I\_NAME, I\_FLAVOUR, I\_PRICE, I\_QUNTITY, W\_ID, W\_NAME, W\_PHONE, SALARY)

1NF: W\_PHONE multivalued attribute

2NF:I\_NAME, I\_FLAVOUR, I\_PRICE, I\_QUNTITY

W\_ID, W\_NAME, W\_PHONE, W\_SALARY, I\_NAME

3NF: I\_NAME, I\_FLAVOUR, I\_PRICE, I\_QUNTITY

W\_ID, W\_NAME, W\_PHONE, SALARY, I\_NAME

TABLE:

1. I\_NAME, I\_FLAVOUR, I\_PRICE, I\_QUNTITY
2. W\_ID, W\_NAME, W\_PHONE, SALARY, I\_NAME
3. **WORKS FOR** (W\_ID, W\_NAME, W\_PHONE, SALARY, M\_ID, M\_NAME, M\_PHONE)

1NF: M\_PHONE multivalued attribute

2NF: W\_ID, W\_NAME, W\_PHONE, SALARY

M\_ID, M\_NAME, M\_PHONE, W\_ID

3NF: W\_ID, W\_NAME, W\_PHONE, SALARY

M\_ID, M\_NAME, M\_PHONE, W\_ID

TABLE:

1. W\_ID, W\_NAME, W\_PHONE, SALARY
2. M\_ID, M\_NAME, M\_PHONE, W\_ID
3. **CONTROLS** (M\_ID, M\_NAME, M\_PHONE, O\_ID, O\_PHONE )

1NF: O\_PHONE multivalued attribute

2NF: M\_ID, M\_NAME, M\_PHONE, O\_ID

O\_ID, O\_PHONE

3NF: M\_ID, M\_NAME, M\_PHONE, O\_ID

O\_ID, O\_PHONE

TABLE:

1. O\_ID, O\_PHONE
2. M\_ID, M\_NAME, M\_PHONE, O\_ID
3. **HIRE** (M\_ID, M\_NAME, M\_PHONE, O\_ID, O\_PHONE )

1NF: O\_PHONE multivalued attribute

2NF: M\_ID, M\_NAME, M\_PHONE, O\_ID

O\_ID, O\_PHONE

3NF: M\_ID, M\_NAME, M\_PHONE

O\_ID, O\_PHONE, M\_ID

TABLE:

1. O\_ID, O\_PHONE, M\_ID
2. M\_ID, M\_NAME, M\_PHONE
3. **PAY** (O\_ID, O\_PHONE, W\_ID, W\_NAME, W\_PHONE, SALARY)

1NF: O\_PHONE multivalued attribute

2NF: O\_ID, O\_PHONE

W\_ID, W\_NAME, W\_PHONE, SALARY, O\_ID

3NF: O\_ID, O\_PHONE

W\_ID, W\_NAME, W\_PHONE, SALARY, O\_ID

TABLE:

1. O\_ID, O\_PHONE
2. W\_ID, W\_NAME, W\_PHONE, SALARY, O\_ID
3. **OWN** (O\_ID, O\_PHONE, S\_ID, S\_ADD, CITY, COUNTRY)

1NF: O\_PHONE multivalued attribute

2NF: O\_ID, O\_PHONE, S\_ID

S\_ID, S\_ADD, CITY, COUNTRY

3NF: O\_ID, O\_PHONE, S\_ID

S\_ID, S\_ADD

A\_ID, CITY, COUNTRY

TABLE:

1. O\_ID, O\_PHONE, S\_ID
2. S\_ID, S\_ADD
3. A\_ID, CITY, COUNTRY

1. **SELECT** (C\_ID, C\_NAME, C\_ADD, C\_PHONE, I\_NAME, I\_FLAVOUR, I\_PRICE, I\_QUNTITY)

1NF: C\_PHONE multivalued attribute

2NF: C\_ID, C\_NAME, C\_ADD, C\_PHONE, I\_NAME

I\_NAME, I\_FLAVOUR, I\_PRICE, I\_QUNTITY

3NF: C\_ID, C\_NAME, C\_ADD, C\_PHONE, I\_NAME

I\_NAME, I\_FLAVOUR, I\_PRICE, I\_QUNTITY

TABLE:

1. C\_ID, C\_NAME, C\_ADD, C\_PHONE, I\_NAME
2. I\_NAME, I\_FLAVOUR, I\_PRICE, I\_QUNTITY
3. **ORDER BY** (C\_ID, C\_NAME, C\_ADD, C\_PHONE, W\_ID, W\_NAME, W\_PHONE, SALARY)

1NF: C\_PHONE, W\_PHONE are multivalued attribute

2NF: C\_ID, C\_NAME, C\_ADD, C\_PHONE

W\_ID, W\_NAME, W\_PHONE, SALARY, C\_ID

3NF: C\_ID, C\_NAME, C\_ADD, C\_PHONE

W\_ID, W\_NAME, W\_PHONE, SALARY, C\_ID

TABLE:

1. C\_ID, C\_NAME, C\_ADD, C\_PHONE
2. W\_ID, W\_NAME, W\_PHONE, SALARY, C\_ID
3. **PAYS** (C\_ID, C\_NAME, C\_ADD, C\_PHONE, B\_NUMBER , AMOUNT, TIME )

1NF: C\_PHONE multivalued attribute

2NF: C\_ID, C\_NAME, C\_ADD, C\_PHONE

B\_NUMBER, AMOUNT, TIME, C\_ID

3NF: C\_ID, C\_NAME, C\_ADD, C\_PHONE

B\_NUMBER, AMOUNT, TIME, C\_ID

TABLE:

1. C\_ID, C\_NAME, C\_ADD, C\_PHONE
2. B\_NUMBER , AMOUNT, TIME, C\_ID
3. **RECEIVED** (B\_NUMBER, AMOUNT, TIME, CA\_ID ,CA\_NAME, CITY, COUNTRY)

1NF: No Multivalued attribute

2NF: B\_NUMBER, AMOUNT, TIME, CA\_ID

CA\_ID ,CA\_NAME, CITY, COUNTRY

3NF: B\_NUMBER, AMOUNT, TIME, CA\_ID

CA\_ID, CA\_NAME

A\_ID, CITY, COUNTRY

TABLE:

1. B\_NUMBER, AMOUNT, TIME, CA\_ID
2. CA\_ID ,CA\_NAME
3. A\_ID, CITY, COUNTRY

**TOTAL TABLE**

1. CH\_ID, CH\_NAME, ADDRESS
2. I\_NAME, I\_FLAVOUR, I\_PRICE, I\_QUNTITY, CH\_ID
3. ~~A\_ID, COUNTRY, CITY~~
4. ~~I\_NAME, I\_FLAVOUR, I\_PRICE, I\_QUNTITY~~
5. SUP\_ID, SUP\_NAME, SUP\_QUNTITY,I\_NAME
6. ~~I\_NAME, I\_FLAVOUR, I\_PRICE, I\_QUNTITY~~
7. W\_ID, W\_NAME, W\_PHONE, SALARY, I\_NAME
8. ~~W\_ID, W\_NAME, W\_PHONE, SALARY~~
9. M\_ID, M\_NAME, M\_PHONE, W\_ID
10. ~~O\_ID, O\_PHONE~~
11. M\_ID, M\_NAME, M\_PHONE, O\_ID
12. O\_ID, O\_PHONE, M\_ID
13. ~~M\_ID, M\_NAME, M\_PHONE~~
14. ~~O\_ID, O\_PHONE~~
15. W\_ID, W\_NAME, W\_PHONE, SALARY, O\_ID
16. O\_ID, O\_PHONE, S\_ID
17. S\_ID, S\_ADD
18. A\_ID, CITY, COUNTRY
19. C\_ID, C\_NAME, C\_ADD, C\_PHONE, I\_NAME
20. ~~I\_NAME, I\_FLAVOUR, I\_PRICE, I\_QUNTITY~~
21. ~~C\_ID, C\_NAME, C\_ADD, C\_PHONE~~
22. B\_NUMBER , AMOUNT, TIME, C\_ID
23. B\_NUMBER, AMOUNT, TIME, CA\_ID
24. CA\_ID ,CA\_NAME
25. ~~A\_ID, CITY, COUNTRY~~

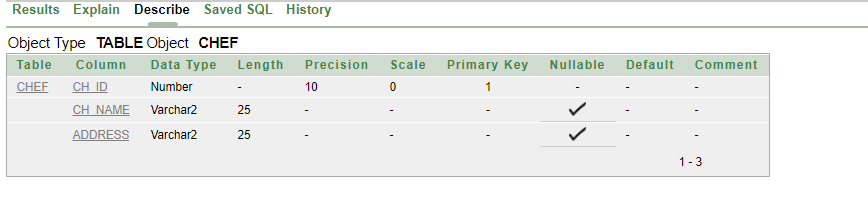
**FINAL TABLE**

1. CH\_ID, CH\_NAME, ADDRESS
2. I\_NAME, I\_FLAVOUR, I\_PRICE, I\_QUNTITY, CH\_ID
3. SUP\_ID, SUP\_NAME, SUP\_QUNTITY,I\_NAME
4. W\_ID, W\_NAME, W\_PHONE, SALARY, I\_NAME
5. M\_ID, M\_NAME, M\_PHONE, W\_ID
6. M\_ID, M\_NAME, M\_PHONE, O\_ID
7. O\_ID, O\_PHONE, M\_ID
8. W\_ID, W\_NAME, W\_PHONE, SALARY, O\_ID
9. O\_ID, O\_PHONE, S\_ID
10. S\_ID, S\_ADD
11. A\_ID, CITY, COUNTRY
12. C\_ID, C\_NAME, C\_ADD, C\_PHONE, I\_NAME
13. B\_NUMBER , AMOUNT, TIME, C\_ID
14. B\_NUMBER, AMOUNT, TIME, CA\_ID
15. CA\_ID ,CA\_NAME
16. create table Chef

(CH\_ID NUMBER(10) constraint Chef\_pk Primary key,

CH\_NAME VARCHAR2(25),

ADDRESS VARCHAR2(25))



1. create table ICE\_CREAM

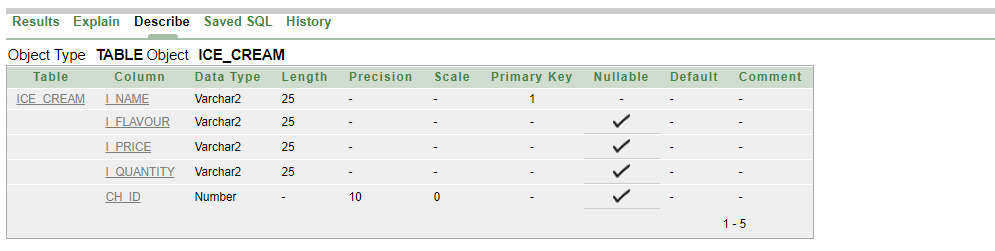
(I\_NAME VARCHAR2(25) constraint ICE\_pk Primary key,

I\_FLAVOUR VARCHAR2(25),

I\_PRICE VARCHAR2(25),

I\_QUANTITY VARCHAR2(25),

CH\_ID NUMBER (10) CONSTRAINT ICE\_FK REFERENCES CHEF(CH\_ID))

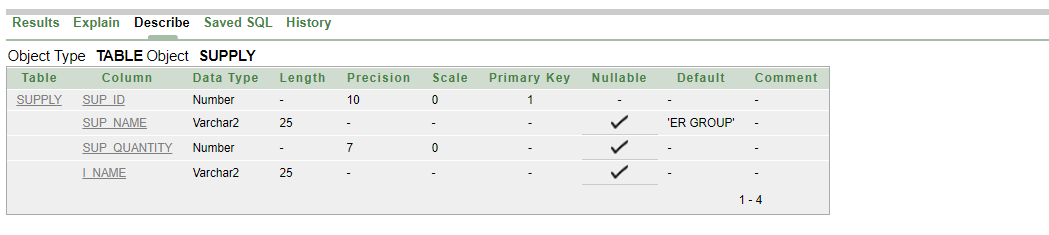


1. create table SUPPLY

(SUP\_ID NUMBER(10) CONSTRAINT SUPPLY\_PK PRIMARY KEY,

SUP\_NAME VARCHAR2(25) DEFAULT 'ER GROUP',

SUP\_QUANTITY NUMBER(7),

 I\_NAME VARCHAR2(25) CONSTRAINT SUPPLY\_FK REFERENCES ICE\_CREAM(I\_NAME))

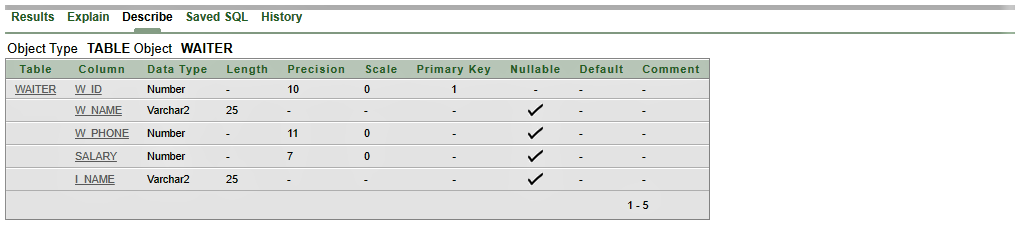
1. create table WAITER

(W\_ID NUMBER(10) CONSTRAINT WAITER\_PK PRIMARY KEY,

W\_NAME VARCHAR2(25),

W\_PHONE NUMBER(11),

SALARY NUMBER (7),

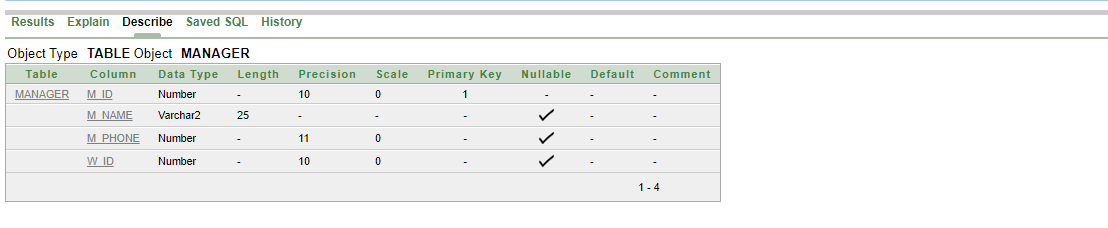
 I\_NAME VARCHAR2(25) CONSTRAINT WAITER\_FK REFERENCES ICE\_CREAM(I\_NAME))

1. create table Manager

(M\_ID number(10) constraint Manager\_pk Primary key,

M\_name varchar2(25),

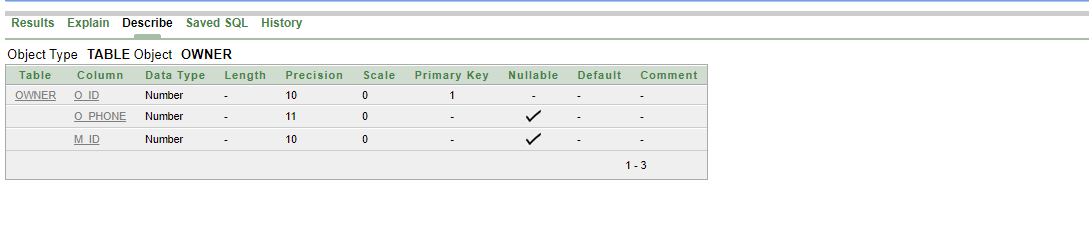
M\_phone number(11),

 W\_ID number(10) constraint manager\_fk references Waiter(w\_id))

1. create table OWNER

(O\_ID number(10) constraint Owner\_pk primary key,

O\_Phone number(11),

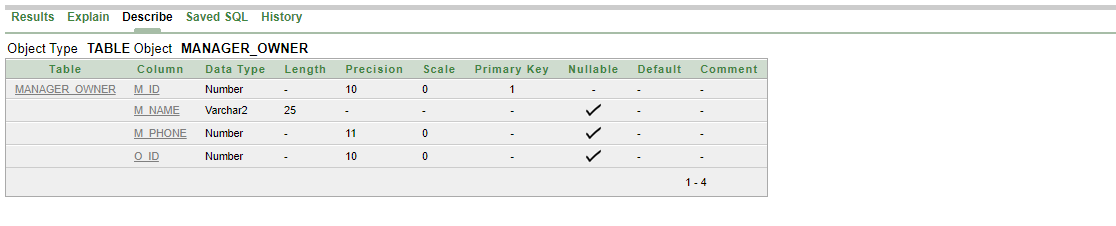
 M\_ID number(10) constraint owner\_fk references Manager(M\_ID))

1. create table Manager\_Owner

(M\_ID number(10) constraint Man\_pk Primary key,

M\_NAME varchar2(25),

M\_PHONE number(11),

 O\_ID NUMBER(10) constraint man\_fk references Owner(O\_ID))

1. create table Waiter\_owner

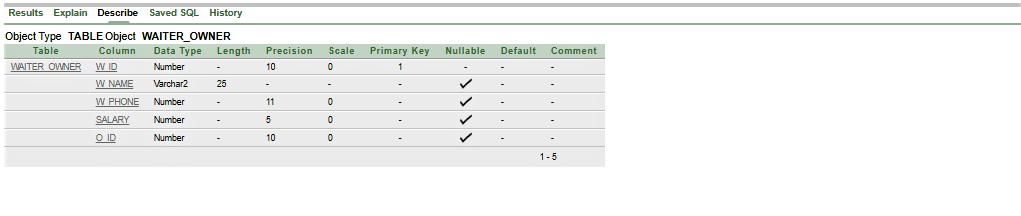
(W\_ID number(10) constraint wait\_pk Primary key,

W\_name varchar2(25),

W\_Phone number(11),

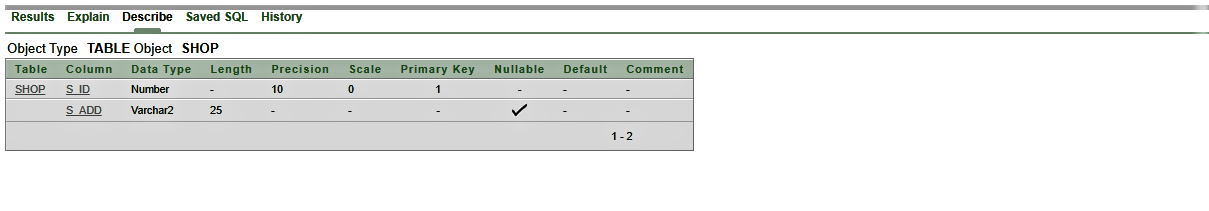
salary number(5),

O\_ID number(10) constraint wait\_fk references owner(o\_id))



1. create table shop

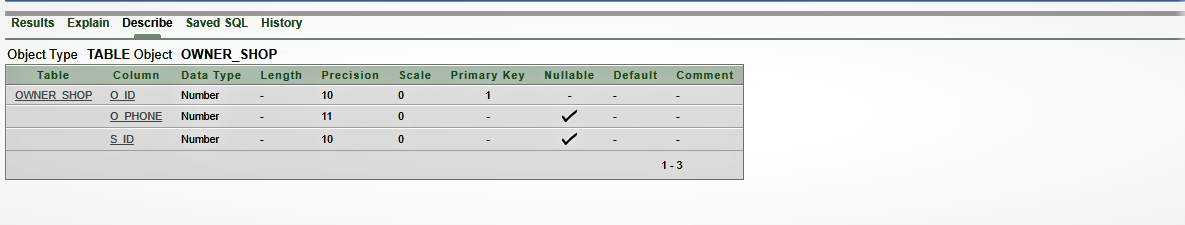
(s\_id number(10) constraint shop\_pk primary key,

 s\_add varchar2(25))

10. create table owner\_shop

(O\_ID number(10) constraint Ownshop\_pk primary key,

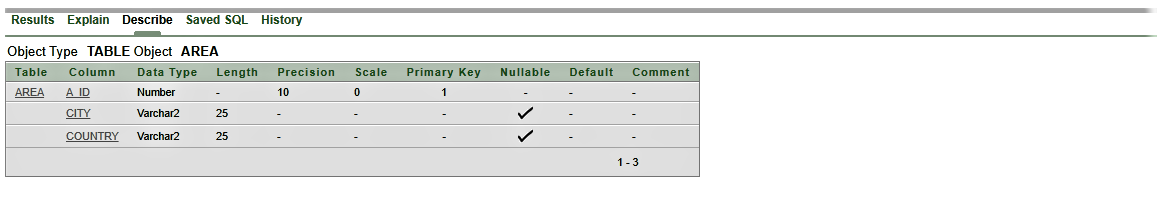
O\_Phone number(11),

 s\_id number(10) constraint ownshop\_fk references shop(s\_id))

1. create table Area

(a\_id number(10) constraint area\_pk primary key,

city varchar2(25),

 country varchar2(25))

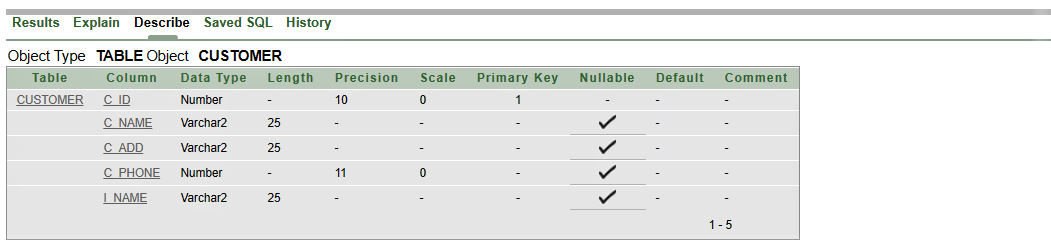
12. create table Customer

(c\_id number(10) constraint customer\_pk primary key,

C\_name varchar2(25),

c\_add varchar2(25),

c\_phone number(11),

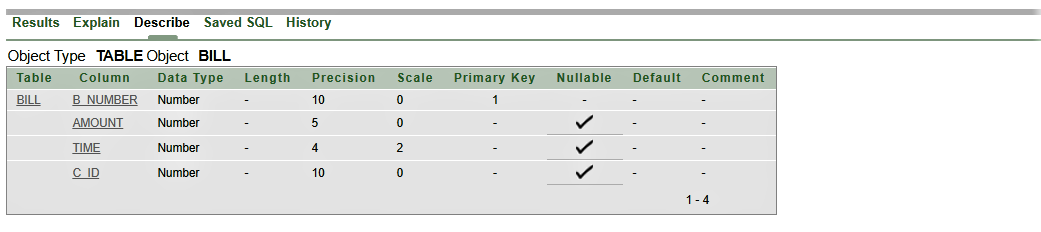
 i\_name varchar2(25) constraint customer\_fk references Ice\_cream(i\_name))

1. create table bill

(b\_number number(10) constraint bill\_pk primary key,

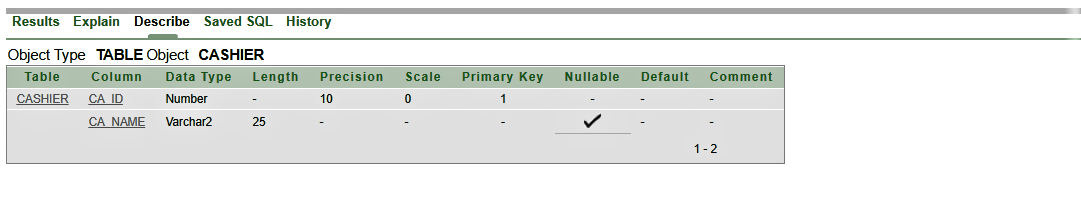
amount number(5),

time number(4,2),

 c\_id number(10) constraint bill\_fk references customer(c\_id))

1. create table cashier

(ca\_id number(10) constraint cashier\_pk primary key,

 ca\_name varchar2(25))

1. create table cashier\_bill

(b\_number number(10) constraint cashbill\_pk primary key,

amount number(5),

time number(4,2),

ca\_id number(10) constraint cashier\_Fk references cashier(ca\_id))

