

TABLES

Fields	Datatype	keys	Not null	constraints	other
<u>Bus.no</u>	Number(p, s)	PK			
Driver Id	Number(p, s)	FK			
Staff id		FK			
<u>Route no</u>		FK			
Capacity	Number(p, s)		Not null		
Departure time	Time/date				
Arrival time	Time/date				

BUSES

DRIVER

Field	Datatype	keys	Not null	constraints	other
<u>Driver-ID</u>	Number (p, s)	PK			
name	VARCHAR2(30)		Not null		
<u>Bus.no</u>	Number (p, s)	FK			
Contact.no	Number (p, s)		Not null		
address	VARCHAR2(50)		Not null		
Qualification	VARCHAR2(20)		Not null		
licensed	Number (p, s)		Not null		
department	Number (p, s)		Not null		
Hire date	Date		Not null		
schedule	Time		Not null		
Salary	Number (p, s)		Not null		
Working hours	Number (p, s)		Not null		

STAFF

Field	Datatype	keys	Not null	constraints	other
<u>Staff-ID</u>	Number (p, s)	PK			
name	VARCHAR2(30)		Not null		
gender	VARCHAR2(10)			CHECK	
Contact.no	Number (p, s)		Not null		
Address	VARCHAR2(50)		Not null		
qualification	VARCHAR2(20)		Not null		
Hire-date	Date		Not null		
department	Number (p, s)		Not null		
schedule	Number (p, s)		Not null		
Working hours	Number (p, s)		Not null		
Salary	Number (p, s)		Not null		

ROUTE

Field	Data type	Keys	Not null	Constraint	other
<u>Route no.</u>	NUMBER	PK			
Route point	VARCHAR(20)		Not null		
Schedule	TIME				
Fare	NUMBER			CHECK	
Pick up point	VARCHAR(20)		Not null		
Final point	VARCHAR(25)		Not null		

PASSENGER

Field	Data type	keys	Not null	constraints	other
<u>Card no</u>	Number (p, s)	PK			
name	VARCHAR2(30)		Not null		
gender	VARCHAR2(10)			CHECK	
Contact.no	Number (p, s)		Not null		
<u>Bus no</u>	Number (p, s)		Not null		
schedule	Number (p, s)		Not null		
Starting point	VARCHAR2(20)		Not null		
destination	VARCHAR2(50)		Not null		

SOL QUERIES

BEFORE NORMALIZATION

DRIVER

CREATE TABLE DRIVER0

```
(DRIVER_ID          NUMBER (20),
DNAME               VARCHAR2(30) NOT NULL,
BUS_NUMBER          NUMBER (10),
CONTACT_NUMBER      NUMBER (14) NOT NULL,
ADDRESS             VARCHAR2(50) NOT NULL,
QUALIFICATIONS      VARCHAR2(20) NOT NULL,
LICENSE             VARCHAR2(5) NOT NULL,
DEPARTMENT          NUMBER (20) NOT NULL,
HIRE_DATE           DATE NOT NULL,
    SCHEDULE         VARCHAR2 (30) NOT NULL,
SALARY              NUMBER (10) NOT NULL,
    WORKING_HOURS     NUMBER (10) NOT NULL,          CONSTRAINTS
DRIVER0_DRIVER_ID_PK PRIMARY KEY(DRIVER_ID),
CONSTRAINTS DRIVER0_LICENSE_CK CHECK (LICENSE IN('YES','NO')))
```

```

1 CREATE TABLE DRIVER0
2 (DRIVER_ID          NUMBER (20),
3  DNAME              VARCHAR2(30) NOT NULL,
4  BUS_NUMBER         NUMBER (10),
5  CONTACT_NUMBER     NUMBER (14) NOT NULL,
6  ADDRESS             VARCHAR2(50) NOT NULL,
7  QUALIFICATIONS     VARCHAR2(20) NOT NULL,
8  LICENSE             VARCHAR2(5) NOT NULL,
9  DEPARTMENT         NUMBER (20) NOT NULL,
10 HIRE_DATE           DATE NOT NULL,
11 SCHEDULE            VARCHAR2 (30) NOT NULL,
12 SALARY              NUMBER (10) NOT NULL,
13 WORKING_HOURS       NUMBER (10) NOT NULL,
14 CONSTRAINTS DRIVER0_DRIVER_ID_PK PRIMARY KEY(DRIVER_ID),
15 CONSTRAINTS DRIVER0_LICENSE_CK CHECK (LICENSE IN('YES','NO')))]

```

Results Explain Describe Saved SQL History

Table created.

1
DESC DRIVER0;

Results	Explain	Describe	Saved SQL	History					
Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
DRIVER0	DRIVER_ID	NUMBER	-	20	0	1	-	-	-
	DNAME	VARCHAR2	30	-	-	-	-	-	-
	BUS_NUMBER	NUMBER	-	10	0	-	✓	-	-
	CONTACT_NUMBER	NUMBER	-	14	0	-	-	-	-
	ADDRESS	VARCHAR2	50	-	-	-	-	-	-
	QUALIFICATIONS	VARCHAR2	20	-	-	-	-	-	-
	LICENSE	VARCHAR2	5	-	-	-	-	-	-
	DEPARTMENT	NUMBER	-	20	0	-	-	-	-
	DEPARTMENT	NUMBER	-	20	0	-	-	-	-
	HIRE_DATE	DATE	7	-	-	-	-	-	-
	SCHEDULE	VARCHAR2	30	-	-	-	-	-	-
	SALARY	NUMBER	-	10	0	-	-	-	-
	WORKING_HOURS	NUMBER	-	10	0	-	-	-	-

ROUTE

create table Route

(Route_No NUMBER,
Route_point VARCHAR(20) NOT NULL,
Schadule VARCHAR(20) NOT NULL,

Fare NUMBER,

Pick_Up_Point VARCHAR(20) NOT NULL,

Final_Point VARCHAR(25) NOT NULL,

CONSTRAINTS Route_Route_No_PK PRIMARY KEY(Route_No),

CONSTRAINTS Route_Fare_CK CHECK(Fare IN('15','20')));

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```
create table Route
(
  Route_No NUMBER,
  Route_point VARCHAR(20) NOT NULL,
  Schadule VARCHAR(20) NOT NULL,
  Fare NUMBER,
  Pick_Up_Point VARCHAR(20) NOT NULL,
  Final_Point VARCHAR(25) NOT NULL,
  CONSTRAINTS Route_Route_No_PK PRIMARY KEY(Route_No),
  CONSTRAINTS Route_Fare_CK CHECK(Fare IN('15','20')));
```

Results Explain Describe Saved SQL History

Table created.

0.02 seconds

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DESC Route

Results Explain Describe Saved SQL History

Object Type **TABLE** Object **ROUTE**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
ROUTE	ROUTE_NO	Number	-	-	-	1	-	-	-
	ROUTE_POINT	Varchar2	20	-	-	-	-	-	-
	SCHADULE	Varchar2	20	-	-	-	-	-	-
	FARE	Number	-	-	-	-	✓	-	-
	PICK_UP_POINT	Varchar2	20	-	-	-	-	-	-
	FINAL_POINT	Varchar2	25	-	-	-	-	-	-

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STAFF

CREATE TABLE STAFF0

```
(STAFF_ID          NUMBER (20),
 SNAME             VARCHAR2(30) NOT NULL,
 GENDER            VARCHAR2(10) ,
 CONTACT_NUMBER    NUMBER (14) NOT NULL,
 ADDRESS           VARCHAR2(50) NOT NULL,
 QUALIFICATIONS    VARCHAR2(20) NOT NULL,
 HIRE_DATE         DATE NOT NULL,
 DEPARTMENT        NUMBER (20) NOT NULL,
 SCHEDULE          NUMBER (30) NOT NULL,
 WORKING_HOURS     NUMBER (10) NOT NULL,
 SALARY            NUMBER (10) NOT NULL,
 CONSTRAINTS STAFF0_STAFF_ID_PK PRIMARY KEY(STAFF_ID),
 CONSTRAINTS STAFF0_GENDER_CK CHECK (GENDER IN('MALE', 'FEMALE')));
```

```
1  CREATE TABLE STAFF0
2  (STAFF_ID          NUMBER (20),
3  SNAME             VARCHAR2(30) NOT NULL,
4  GENDER            VARCHAR2(10),
5  CONTACT_NUMBER    NUMBER (14) NOT NULL,
6  ADDRESS           VARCHAR2(50) NOT NULL,
7  QUALIFICATIONS    VARCHAR2(20) NOT NULL,
8  HIRE_DATE         DATE NOT NULL,
9  DEPARTMENT        NUMBER (20) NOT NULL,
10 SCHEDULE          NUMBER (30) NOT NULL,
11 WORKING_HOURS     NUMBER (10) NOT NULL,
12 SALARY            NUMBER (10) NOT NULL,
13 CONSTRAINTS STAFF0_STAFF_ID_PK PRIMARY KEY(STAFF_ID),
```

Results Explain Describe Saved SQL History

Table created.

1 DESC STAFF0;

Results

Explain

Describe

Saved SQL

History

Object Type

TABLE

Object

STAFF0

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
STAFF0	STAFF_ID	NUMBER	-	20	0	1	-	-	-
	SNAME	VARCHAR2	30	-	-	-	-	-	-
	GENDER	VARCHAR2	10	-	-	-	✓	-	-
	CONTACT_NUMBER	NUMBER	-	14	0	-	-	-	-
	ADDRESS	VARCHAR2	50	-	-	-	-	-	-
	QUALIFICATIONS	VARCHAR2	20	-	-	-	-	-	-

	QUALIFICATIONS	VARCHAR2	20	-	-	-	-	-	-
	HIRE_DATE	DATE	7	-	-	-	-	-	-
	DEPARTMENT	NUMBER	-	20	0	-	-	-	-
	SCHEDULE	NUMBER	-	30	0	-	-	-	-
	WORKING_HOURS	NUMBER	-	10	0	-	-	-	-
	SALARY	NUMBER	-	10	0	-	-	-	-

TABLE AFTER NORMALIZATION

Total tables = 5

- 1) Buses
- 2) department
- 3) Driver
- 4) Staff
- 5) Passenger
- 6) Route

BUSES						
<u>Bus no.</u>	Driver-id	Staff-id	Route no.	capacity	Arrival time	Departure time

DRIVER							
<u>Driver-id</u>	name	Contact no.	address	qualification	Hire-date	Licensed detail	<u>Bus no.</u>

STAFF						
<u>Staff-id</u>	name	Contact no.	address	gender	qualification	Hire date

department				
<u>Department no.</u>	shift	timing	Working hour	salary

<i>ROUTE</i>				
<u>Route no.</u>	schedule	fare	Pick up point	Final point

<i>passenger</i>							
<u>Card no.</u>	name	gender	Contact no.	schedule	Starting point	destination	<u>Bus no.</u>

TABLES DESCRIPTION

Object type : Table

Table : Buses

Description:

Table	Fields	Datatype	keys	Not null	constraints
<u>Buses</u>	<u>Bus.no</u>	Number(p, s)	PK		
	<u>Driver Id</u>	Number(p, s)	FK		
	<u>Staff id</u>		FK		
	<u>Route no</u>		FK		
	Capacity	Number(p, s)		Not null	
	Departure time	Time/date			
	Arrival time	Time/date			

Object type : Table

Table : Driver

Description:

Table	Field	Datatype	keys	Not null	constraints
<u>Driver</u>	<u>Driver-ID</u>	Number (p, s)	PK		
	name	VARCHAR2(30)		Not null	
	<u>Bus.no</u>	Number (p, s)	FK		
	Contact.no	Number (p, s)		Not null	
	address	VARCHAR2(50)		Not null	
	Qualification	VARCHAR2(20)		Not null	
	licensed	Number (p, s)		Not null	
	Hire date	Date		Not null	

Object type : Table

Table : Staff

Description:

Table	Field	Datatype	keys	Not null	constraints
<u>Staff</u>	<u>Staff-ID</u>	Number (p, s)	PK		
	name	VARCHAR2(30)		Not null	
	gender	VARCHAR2(10)			CHECK
	Contact.no	Number (p, s)		Not null	
	Address	VARCHAR2(50)		Not null	
	qualification	VARCHAR2(20)		Not null	
	Hire-date	Date		Not null	

Object type : Table

Table : Route

Description:

Table	Field	Data type	Keys	Not null	Constraint
<u>Route</u>	<u>Route no.</u>	Number	PK		
	Schedule	Time			
	Fare	Number			CHECK
	Pick up point	VARCHAR (20)		Not null	
	Final point	VARCHAR (25)		Not null	

Object type : Table

Table : Passenger

Description:

Table	Field	Data type	keys	Not null	constraints
<u>Passenger</u>	<u>Card no</u>	Number (p, s)	PK		
	name	VARCHAR2(30)		NOT NULL	
	gender	VARCHAR2(10)			CHECK
	Contact.no	Number (p, s)		NOT NULL	
	<u>Bus no</u>	Number (p, s)		NOT NULL	
	schedule	Number (p, s)		NOT NULL	
	Starting point	VARCHAR2(20)		NOT NULL	
	destination	VARCHAR2(50)		NOT NULL	

Object type : Table

Table : Department

Description:

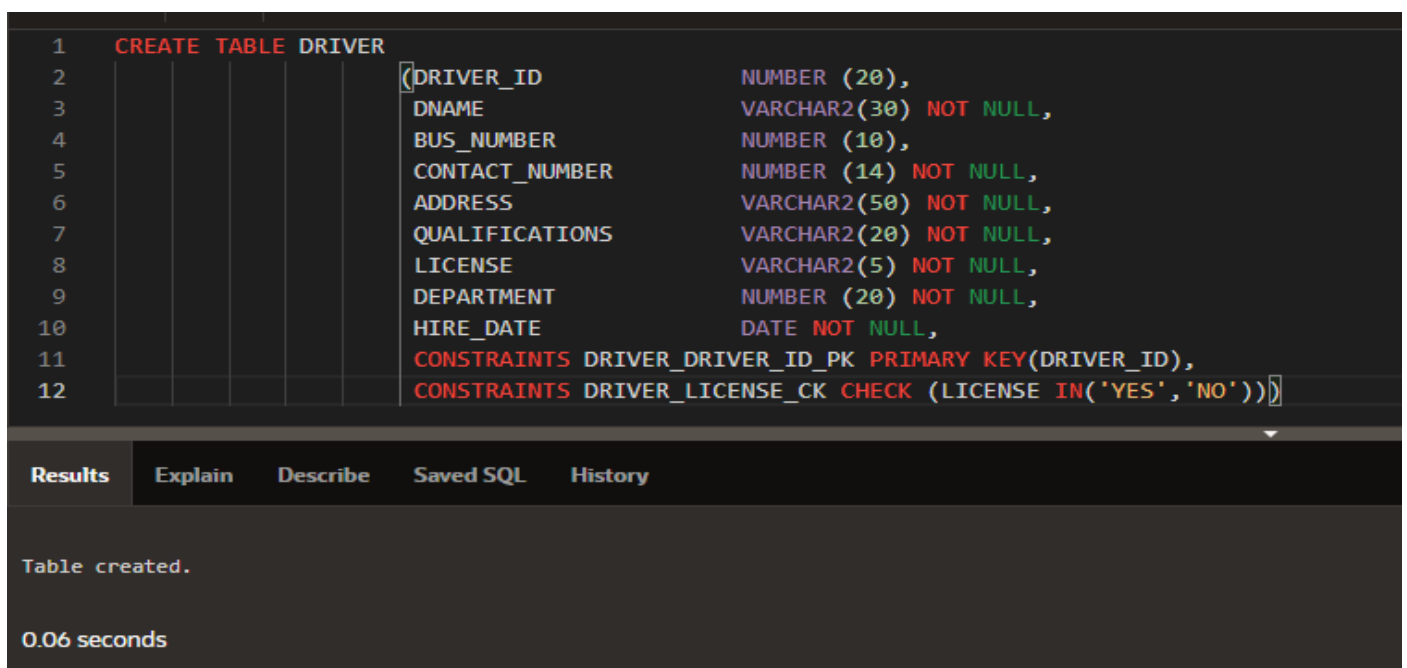
Table	Field	Data type	Keys	Not null	Constraint
<u>Department</u>	<u>department no.</u>				
	shift				
	timing				
	Working hours				
	salary				

AFTER NORMALIZATION

DRIVER

1) CREATE TABLE DRIVER

```
(DRIVER_ID          NUMBER (20),
DNAME               VARCHAR2(30) NOT NULL,
BUS_NUMBER          NUMBER (10),
CONTACT_NUMBER      NUMBER (14) NOT NULL,
ADDRESS             VARCHAR2(50) NOT NULL,
QUALIFICATIONS      VARCHAR2(20) NOT NULL,
LICENSE             VARCHAR2(5) NOT NULL,
DEPARTMENT          NUMBER (20) NOT NULL,
HIRE_DATE           DATE NOT NULL,
CONSTRAINTS DRIVER_DRIVER_ID_PK PRIMARY KEY(DRIVER_ID),
CONSTRAINTS DRIVER_LICENSE_CK CHECK (LICENSE
IN('YES','NO')))
```



```
1  CREATE TABLE DRIVER
2  (
3      DRIVER_ID          NUMBER (20),
4      DNAME               VARCHAR2(30) NOT NULL,
5      BUS_NUMBER          NUMBER (10),
6      CONTACT_NUMBER      NUMBER (14) NOT NULL,
7      ADDRESS             VARCHAR2(50) NOT NULL,
8      QUALIFICATIONS      VARCHAR2(20) NOT NULL,
9      LICENSE             VARCHAR2(5) NOT NULL,
10     DEPARTMENT          NUMBER (20) NOT NULL,
11     HIRE_DATE           DATE NOT NULL,
12     CONSTRAINTS DRIVER_DRIVER_ID_PK PRIMARY KEY(DRIVER_ID),
13     CONSTRAINTS DRIVER_LICENSE_CK CHECK (LICENSE IN('YES','NO'))
14 )
```

Results Explain Describe Saved SQL History

Table created.

0.06 seconds

1 DESC DRIVER;

Results	Explain	Describe	Saved SQL	History					
Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
DRIVER	DRIVER_ID	NUMBER	-	20	0	1	-	-	-
	DNAME	VARCHAR2	30	-	-	-	-	-	-
	BUS_NUMBER	NUMBER	-	10	0	-	✓	-	-
	CONTACT_NUMBER	NUMBER	-	14	0	-	-	-	-
	ADDRESS	VARCHAR2	50	-	-	-	-	-	-
	QUALIFICATIONS	VARCHAR2	20	-	-	-	-	-	-
	LICENSE	VARCHAR2	5	-	-	-	-	-	-
	DEPARTMENT	NUMBER	-	20	0	-	-	-	-
	HIRE_DATE	DATE	7	-	-	-	-	-	-

ROUTE

create table Route1

(Route_No NUMBER,

Schedule VARCHAR(20) NOT NULL,

Fare NUMBER,

Pick_Up_Point VARCHAR(20) NOT NULL,

Final_Point VARCHAR(25) NOT NULL,

CONSTRAINTS Route1_Route_No_PK PRIMARY KEY(Route_No),

CONSTRAINTS Route1_Fare_CK CHECK(Fare IN('15','20')));

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DESC Route1

Results Explain Describe Saved SQL History

Object Type TABLE Object ROUTE1

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
ROUTE1	ROUTE_NO	Number	-	-	-	1	-	-	-
	SCHADULE	Varchar2	20	-	-	-	-	-	-
	FARE	Number	-	-	-	-	✓	-	-
	PICK_UP_POINT	Varchar2	20	-	-	-	-	-	-
	FINAL_POINT	Varchar2	25	-	-	-	-	-	-
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```
create table Route1
  (Route No NUMBER,
   Schadule VARCHAR(20) NOT NULL,
   Fare NUMBER,
   Pick Up Point VARCHAR(20) NOT NULL,
   Final Point VARCHAR(25) NOT NULL,
   CONSTRAINTS Route1_Route_No_PK PRIMARY KEY(Route No),
   CONSTRAINTS Route1_Fare_CK CHECK(Fare IN('15','20')));
```

Results Explain Describe Saved SQL History

Table created.

0.02 seconds

STAFF

CREATE TABLE STAFF

```
(STAFF_ID          NUMBER (20),
 SNAME             VARCHAR2(30) NOT NULL,
 CONTACT_NUMBER    NUMBER (14) NOT NULL,
 ADDRESS           VARCHAR2(50) NOT NULL,
 GENDER            VARCHAR2(10),
 QUALIFICATIONS     VARCHAR2(20) NOT NULL,
 DEPARTMENT        NUMBER (20) NOT NULL,
 HIRE_DATE         DATE NOT NULL,
 CONSTRAINTS STAFF_STAFF_ID_PK PRIMARY KEY(STAFF_ID),
 CONSTRAINTS STAFF_GENDER_CK CHECK (GENDER IN ('MALE',
 'FEMALE')));
```

```
1  CREATE TABLE STAFF
2
3      (STAFF_ID          NUMBER (20),
4      SNAME             VARCHAR2(30) NOT NULL,
5      CONTACT_NUMBER    NUMBER (14) NOT NULL,
6      ADDRESS           VARCHAR2(50) NOT NULL,
7      GENDER            VARCHAR2(10),
8      QUALIFICATIONS     VARCHAR2(20) NOT NULL,
9      DEPARTMENT        NUMBER (20) NOT NULL,
10     HIRE_DATE         DATE NOT NULL,
11     CONSTRAINTS STAFF_STAFF_ID_PK PRIMARY KEY(STAFF_ID),
12     CONSTRAINTS STAFF_GENDER_CK CHECK (GENDER IN ('MALE', 'FEMALE')));
```

Results Explain Describe Saved SQL History

Table created.


0.08 seconds


1 DESC STAFF;


2

ResultsExplainDescribeSaved SQLHistory

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
STAFF	STAFF_ID	NUMBER	-	20	0	1	-	-	-
	SNAME	VARCHAR2	30	-	-	-	-	-	-
	CONTACT_NUMBER	NUMBER	-	14	0	-	-	-	-
	ADDRESS	VARCHAR2	50	-	-	-	-	-	-
	GENDER	VARCHAR2	10	-	-	-	✓	-	-
	QUALIFICATIONS	VARCHAR2	20	-	-	-	-	-	-
	DEPARTMENT	NUMBER	-	20	0	-	-	-	-
	HIRE_DATE	DATE	7	-	-	-	-	-	-

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 en

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DEPARTMENT

CREATE TABLE DEPARTMENT

(DEPARTMENT_NO NUMBER (20) NOT NULL,

SCHEDULE VARCHAR2 (30) NOT NULL,

SALARY NUMBER (10) NOT NULL,

WORKING_HOURS NUMBER (10) NOT NULL,




CONSTRAINTS DEPARTMENT_DEPARTMENT_NO_PK PRIMARY
KEY(DEPARTMENT_NO));


```
1 CREATE TABLE DEPARTMENT
2 (DEPARTMENT_NO NUMBER (20) NOT NULL,
3 SCHEDULE VARCHAR2 (30) NOT NULL,
4 SALARY NUMBER (10) NOT NULL,
5 WORKING_HOURS NUMBER (10) NOT NULL,
6 CONSTRAINT DEPARTMENT_DEPARTMENT_NO_PK PRIMARY KEY(DEPARTMENT_NO));
7
8
9
```

Results Explain Describe Saved SQL History

Table created.

0.06 seconds

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```
1 DESC DEPARTMENT;
2
3
```

Results Explain Describe Saved SQL History

Object Type **TABLE**  Object **DEPARTMENT** 

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
DEPARTMENT	DEPARTMENT_NO	NUMBER	-	20	0	1	-	-	-
	SCHEDULE	VARCHAR2	30	-	-	-	-	-	-
	SALARY	NUMBER	-	10	0	-	-	-	-
	WORKING_HOURS	NUMBER	-	10	0	-	-	-	-

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