



Parking Management System

Database Management System

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Course : DBMS

Course Code : 2CS505

Innovative Assignment - Report

Introduction / Problem Statement:

- Parking Management System is a system that provides us with reserving parking area , checking whether the parking are vacant or not etc by using online browsing. This system is very useful to all, especially for business people. For Business people they don't have sufficient time for these then they can use these types of online parking Management Systems. Parking Management system is not allowed wapon and not responsibility of your expansive Thing.
- In conclusion, the Parking Management System in DBMS project aims to address the growing parking challenges in urban areas by offering an efficient, user-friendly, and data-driven solution. This system will not only benefit parking operators but also improve the overall urban mobility experience, making cities more accessible and sustainable.

Normalization :

Before Normalization

R1=(login)

R2=(payment)

**R3=(employee , parking , parking_block , customer , vehicle , two_wheeler,
four_wheeler , booking)**

R1(login_id , username , password)

FDs : login_id \rightarrow (username,password)

CK : {login_id}

**R2 (pay_id, customer_id , pay_method , pay_date ,
pay_amount)**

FDs : pay_id \rightarrow (customer_id, pay_method , pay_date , pay_amount)

CK : {pay_id}

R3 (employee_id , parking_id , e_f_name , e_l_name , e_gender , salary , annual income , p_address , cur_bal , slot_id , slot_status , capacity , availability , customer_id , c_f_name , c_l_name , phone_no , c_gender, age , city , state , postal_code, v_num , v_name , color , model_year , t_id , average , f_id , fueltype , no_of_doors , date , check_in_time , check_out_time)

FDs:

Employee_id \rightarrow (parking_id , e_f_name , e_l_name , e_gender , salary)

parking_id \rightarrow (annual income , p_address , cur_bal)

Parking_id,slot_id \rightarrow (slot_status , capacity , availability)

Slot_id,customer_id \rightarrow (c_f_name , c_l_name , phone_no , c_gender, age , city , state , postal_code , date , check_in_time , check_out_time)

customer_id,v_num \rightarrow (v_name , color , model_year)

t_id,v_num \rightarrow average

f_id,v_num \rightarrow (fueltype , no_of_doors)

CK : { employee_id,slot_id,customer_id,v_num,f_id,t_id }

Checking for 1NF :

All Attributes are atomic in nature hence, relations are in 1NF .

Checking for 2NF :

R1 and R2 are already in 2NF as no partial dependencies are present.

R3 : FD violating 2NF condition are

Employee_id \rightarrow (parking_id , e_f_name , e_l_name , e_gender , salary)

Slot_id,customer_id \rightarrow (c_f_name , c_l_name , phone_no , c_gender, age , city , state , postal_code , date , check_in_time , check_out_time)

customer_id,v_num \rightarrow (v_name , color , model_year)

t_id,v_num \rightarrow average

f_id,v_num \rightarrow (fueltype , no_of_doors)

now New entities obtains are after decomposition

R3(parking_id, , annual income , p_address , cur_bal , slot_id , slot_status , capacity , availability)

parking_id \rightarrow (annual income , p_address , cur_bal)

parking_id , slot_id \rightarrow (slot_status , capacity , availability)

CK : { parking_id , slot_id }

R4(employee_id , parking_id , e_f_name , e_l_name , e_gender , salary)

Employee_id \rightarrow (parking_id , e_f_name , e_l_name , e_gender , salary)

CK : { employee_id }

R5(slot_id , customer_id , c_f_name , c_l_name , phone_no , c_gender, age , city , state , postal_code)

FDs : slot_id,customer_id \rightarrow (c_f_name , c_l_name , phone_no , c_gender, age , city , state , postal_code , date , check_in_time , check_out_time)

CK : { slot_id,customer_id }

R6(customer_id, v_num , v_name , color , model_year)

FDs :customer_id,v_num \rightarrow (v_name , color , model_year)

CK : { customer_id,v_num }

R7(t_id,v_num,average)

FDs : t_id,v_num \rightarrow average

CK : { t_id,v_num }

R8(f_id , v_num , fueltype , no_of_doors)

FDs : f_id, , v_num \rightarrow (fueltype , no_of_doors)

CK : { f_id, , v_num }

➔ Now again checking for 2NF in Entities R3.

R3(parking_id, , annual income , p_address , cur_bal , slot_id , slot_status , capacity , availability)

parking_id → (annual income , p_address , cur_bal)

parking_id , slot_id → (slot_status , capacity , availability)

CK : {slot_id, parking_id}

FD violating 2NF condition is

parking_id → (annual income , p_address , cur_bal)

now New entities obtains are after decomposition

R3(slot_id, parking_id, slot_status , capacity , availability)

FDs : parking_id , slot_id → (slot_status , capacity , availability)

CK ; { parking_id , slot_id }

R9 (parking_id, annual income , p_address , cur_bal)

FDs : parking_id → (annual income , p_address , cur_bal)

CK : { parking_id }

➔ Now , All 9 entities are in 2NF.

Checking for 3NF :

No transitive dependencies should be present in entity means left side should be candidate key/super key or right side should have prime attribute.

→ Here we derive all entities which doesn't have any transitive dependencies so all entities are in 3NF.

Checking for BCNF :

No trivial dependencies should be present in entity means left side should be candidate key/super key.

→ Here we derive all entities which have candidate/super key at right side so they are in BCNF.

Checking for 4NF :

- No multi valued dependencies should be present in entity.
- Here we derive all entities which doesn't have multivalued dependency (means $X \twoheadrightarrow Y$) present so all entities are 4NF.

Relational Model:

Login(login_id , username , password)

Employee (employee_id ,parking_id, f_name , l_name , gender , salary)

Parking (parking_id , annual income , p_address , cur_bal)

Parking_block (slot_id ,paking_id , slot_status , capacity, Availability)

Payment (pay_id , customer_id , pay_method , pay_date , pay_amount)

Customer (customer_id ,sloat_id, f_name , l_name , phone_no , gender, age , city , state , postal_code)

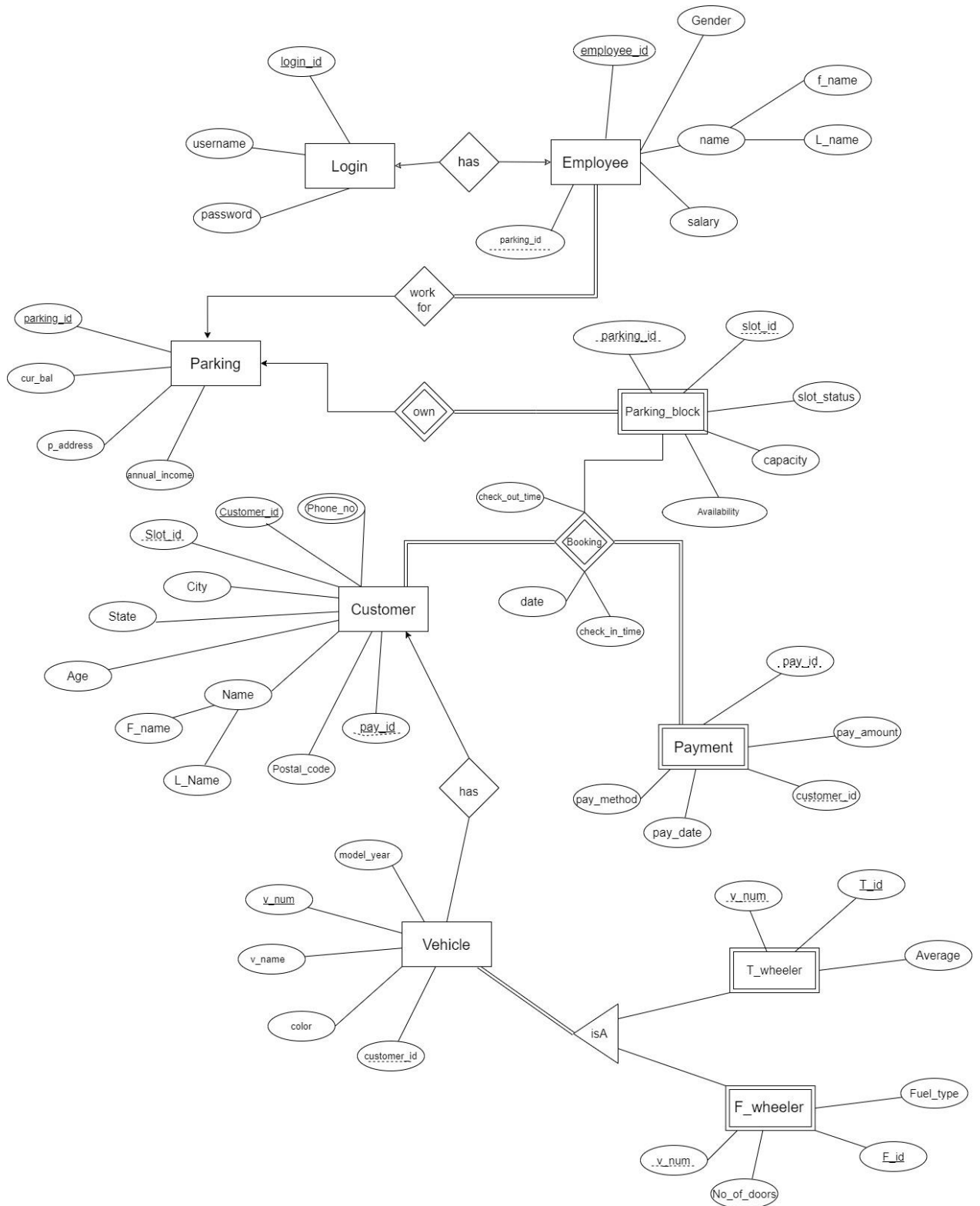
Booking (customer_id,sloat_id, date , check_in_time , check_out_time)

Vehicle (customer_id, v_num , v_name , color , model_year)

Two_wheeler(t_id , v_num, average)

Four_wheeler(f_id , v_num, fueltype , no_of_doors)

ER diagram:



Data Dictionary:

Login:

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/> 1	login_id	varchar(255)	utf8mb4_general_ci		No	None			Change Drop More
<input type="checkbox"/> 2	username	varchar(255)	utf8mb4_general_ci		Yes	NULL			Change Drop More
<input type="checkbox"/> 3	password	varchar(255)	utf8mb4_general_ci		Yes	NULL			Change Drop More

Employee:

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/> 1	EMPLOYEE_ID	decimal(10,0)			No	None			Change Drop More
<input type="checkbox"/> 2	PARKING_ID	decimal(10,0)			Yes	NULL			Change Drop More
<input type="checkbox"/> 3	F_NAME	varchar(255)	utf8mb4_general_ci		No	None			Change Drop More
<input type="checkbox"/> 4	L_NAME	varchar(255)	utf8mb4_general_ci		No	None			Change Drop More
<input type="checkbox"/> 5	GENDER	char(1)	utf8mb4_general_ci		Yes	NULL			Change Drop More
<input type="checkbox"/> 6	SALARY	decimal(10,2)			Yes	NULL			Change Drop More

Parking:

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/> 1	PARKING_ID	decimal(10,0)			No	None			Change Drop More
<input type="checkbox"/> 2	ANNUAL_INCOME	decimal(10,2)			Yes	NULL			Change Drop More
<input type="checkbox"/> 3	P_ADDRESS	varchar(255)	utf8mb4_general_ci		Yes	NULL			Change Drop More
<input type="checkbox"/> 4	CUR_BALANCE	decimal(10,2)			Yes	NULL			Change Drop More

Parking_block:

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/> 1	SLOT_ID	decimal(10,0)			No	None			Change Drop More
<input type="checkbox"/> 2	PARKING_ID	decimal(10,0)			No	None			Change Drop More
<input type="checkbox"/> 3	SLOT_STATUS	varchar(50)	utf8mb4_general_ci		Yes	NULL			Change Drop More
<input type="checkbox"/> 4	CAPACITY	decimal(10,0)			Yes	NULL			Change Drop More
<input type="checkbox"/> 5	AVAILABILITY	decimal(60,0)			Yes	`CAPACITY`			Change Drop More

Payment:

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/>	1 CUSTOMER_ID	decimal(10,0)			Yes	<i>NULL</i>			Change Drop More
<input type="checkbox"/>	2 PAY_METHOD	varchar(50)	utf8mb4_general_ci		Yes	<i>NULL</i>			Change Drop More
<input type="checkbox"/>	3 PAY_DATE	date			No	<i>None</i>			Change Drop More
<input type="checkbox"/>	4 PAY_AMOUNT	decimal(10,2)			Yes	<i>NULL</i>			Change Drop More
<input type="checkbox"/>	5 pay_id	int(11)			No	<i>None</i>		AUTO_INCREMENT	Change Drop More

Customer:

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/>	1 CUSTOMER_ID	decimal(10,0)			No	<i>None</i>			Change Drop More
<input type="checkbox"/>	2 SLOT_ID	decimal(10,0)			Yes	<i>NULL</i>			Change Drop More
<input type="checkbox"/>	3 F_NAME	varchar(255)	utf8mb4_general_ci		Yes	<i>NULL</i>			Change Drop More
<input type="checkbox"/>	4 L_NAME	varchar(255)	utf8mb4_general_ci		Yes	<i>NULL</i>			Change Drop More
<input type="checkbox"/>	5 PHONE_NO	decimal(10,0)			No	<i>None</i>			Change Drop More
<input type="checkbox"/>	6 GENDER	char(1)	utf8mb4_general_ci		Yes	<i>NULL</i>			Change Drop More
<input type="checkbox"/>	7 AGE	decimal(10,0)			Yes	<i>NULL</i>			Change Drop More
<input type="checkbox"/>	8 CITY	varchar(255)	utf8mb4_general_ci		No	<i>None</i>			Change Drop More
<input type="checkbox"/>	9 STATE	varchar(255)	utf8mb4_general_ci		No	<i>None</i>			Change Drop More
<input type="checkbox"/>	10 POSTAL_CODE	varchar(20)	utf8mb4_general_ci		Yes	<i>NULL</i>			Change Drop More

Booking:

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/>	1 CUSTOMER_ID	decimal(10,0)			Yes	<i>NULL</i>			Change Drop More
<input type="checkbox"/>	2 SLOT_ID	decimal(10,0)			Yes	<i>NULL</i>			Change Drop More
<input type="checkbox"/>	3 DATE1	date			Yes	<i>NULL</i>			Change Drop More
<input type="checkbox"/>	4 CHECK_IN_TIME	time			Yes	<i>NULL</i>			Change Drop More
<input type="checkbox"/>	5 CHECK_OUT_TIME	time			Yes	<i>NULL</i>			Change Drop More

Vehicle:

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/>	1 CUSTOMER_ID	decimal(10,0)			Yes	<i>NULL</i>			Change Drop More
<input type="checkbox"/>	2 V_NUM	varchar(20)	utf8mb4_general_ci		No	<i>None</i>			Change Drop More
<input type="checkbox"/>	3 V_NAME	varchar(255)	utf8mb4_general_ci		Yes	<i>NULL</i>			Change Drop More
<input type="checkbox"/>	4 COLOR	varchar(50)	utf8mb4_general_ci		Yes	<i>NULL</i>			Change Drop More
<input type="checkbox"/>	5 MODEL_YEAR	decimal(10,0)			Yes	<i>NULL</i>			Change Drop More
<input type="checkbox"/>	6 VEHICLE_TYPE	varchar(20)	utf8mb4_general_ci		Yes	<i>NULL</i>			Change Drop More

Two_wheeler:

	#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/>	1	T_ID	decimal(10,0)			No	None			Change Drop More
<input type="checkbox"/>	2	AVERAGE	decimal(10,2)			Yes	NULL			Change Drop More
<input type="checkbox"/>	3	V_NUM	varchar(20)	utf8mb4_general_ci		Yes	NULL			Change Drop More

Four_wheeler:

	#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/>	1	F_ID	decimal(10,0)			No	None			Change Drop More
<input type="checkbox"/>	2	V_NUM	varchar(20)	utf8mb4_general_ci		Yes	NULL			Change Drop More
<input type="checkbox"/>	3	FUEL_TYPE	varchar(50)	utf8mb4_general_ci		Yes	NULL			Change Drop More
<input type="checkbox"/>	4	NO_OF_DOORS	decimal(4,0)			Yes	NULL			Change Drop More

Data Implementation:

A) Schema

Login:

```
CREATE TABLE login (login_id VARCHAR(255) PRIMARY KEY, username VARCHAR(255), password VARCHAR(255));
```

Employee:

```
CREATE TABLE employee (EMPLOYEE_ID NUMERIC(10) PRIMARY KEY, PARKING_ID NUMERIC(10), F_NAME VARCHAR(255) NOT NULL, L_NAME VARCHAR(255) NOT NULL, GENDER CHAR(1), SALARY NUMERIC(10, 2), FOREIGN KEY (PARKING_ID) REFERENCES PARKING(PARKING_ID));
```

Parking:

```
CREATE TABLE PARKING (PARKING_ID NUMERIC(10) PRIMARY KEY, ANNUAL_INCOME NUMERIC(10, 2), P_ADDRESS VARCHAR(255), CUR_BALANCE NUMERIC(10, 2));
```

Parking_block:

```
CREATE TABLE PARKING_BLOCK (SLOT_ID NUMERIC, PARKING_ID NUMERIC (10),  
SLOT_STATUS VARCHAR(50), CAPACITY NUMERIC(10), Availability NUMERIC(10),  
PRIMARY KEY (SLOT_ID, PARKING_ID), FOREIGN KEY (PARKING_ID) REFERENCES  
PARKING(PARKING_ID));
```

Payment:

```
CREATE TABLE PAYMENT (CUSTOMER_ID NUMERIC (10), PAY_METHOD VARCHAR(50),  
PAY_DATE DATE NOT NULL , PAY_AMOUNT NUMERIC(10, 2), PAY_ID NUMERIC (10)  
AUTO_INCREMENT PRIMARY KEY);
```

Customer:

```
CREATE TABLE CUSTOMER (CUSTOMER_ID NUMERIC (10) PRIMARY KEY, SLOT_ID  
NUMERIC (10), F_NAME VARCHAR(255), L_NAME VARCHAR(255), PHONE_NO NUMERIC  
(10) NOT NULL, GENDER CHAR(1), AGE NUMERIC (10), CITY VARCHAR(255) NOT  
NULL , STATE VARCHAR(255) NOT NULL , POSTAL_CODE VARCHAR(20), FOREIGN KEY  
(SLOT_ID) REFERENCES PARKING_BLOCK(SLOT_ID));
```

Vehicle:

```
CREATE TABLE VEHICLE (CUSTOMER_ID NUMERIC(10), V_NUM VARCHAR(20) PRIMARY  
KEY, V_NAME VARCHAR(255), COLOR VARCHAR(50), MODEL_YEAR NUMERIC(10),  
FOREIGN KEY (CUSTOMER_ID) REFERENCES CUSTOMER(CUSTOMER_ID));
```

Two_wheeler:

```
CREATE TABLE TWO_WHEELER (T_ID NUMERIC(10) PRIMARY KEY, AVERAGE  
NUMERIC(10, 2), V_NUM VARCHAR(20), FOREIGN KEY (V_NUM) REFERENCES  
VEHICLE(V_NUM));
```

Four_wheeler:

```
CREATE TABLE FOUR_WHEELER (F_ID NUMERIC(10) PRIMARY KEY, V_NUM  
VARCHAR(20), FUEL_TYPE VARCHAR(50), NO_OF_DOORS NUMERIC(4), FOREIGN KEY  
(V_NUM) REFERENCES VEHICLE(V_NUM));
```

Booking:

```
CREATE TABLE BOOKING (CUSTOMER_ID NUMERIC(10), SLOT_ID NUMERIC(10), DATE1  
DATE, CHECK_IN_TIME TIME, CHECK_OUT_TIME TIME, FOREIGN KEY (CUSTOMER_ID)  
REFERENCES CUSTOMER(CUSTOMER_ID), FOREIGN KEY (SLOT_ID) REFERENCES  
PARKING_BLOCK(SLOT_ID));
```

B) Data Insertion

Login:

```
INSERT INTO LOGIN (LOGIN_ID, USERNAME, PASSWORD) VALUES ('L1', 'user1',  
'pass1'), ('L2', 'user2', 'pass2'), ('L3', 'user3', 'pass3'), ('L4',  
'user4', 'pass4'), ('L5', 'user5', 'pass5'), ('L6', 'user6', 'pass6'),  
( 'L7', 'user7', 'pass7'), ('L8', 'user8', 'pass8'), ('L9', 'user9',  
'pass9');
```

Employee:

```
INSERT INTO employee (employee_id, parking_id, f_name, l_name, gender,  
salary) VALUES (1, 101, 'John', 'Doe', 'M', 50000), (2, 102, 'Jane',  
'Smith', 'F', 60000), (3, 101, 'Michael', 'Johnson', 'M', 55000), (4, 103,  
'smit', 'patel', 'M', 15000 ), (5, 102, 'jimesh', 'shah', 'M', 56000  
) , (6, 104, 'shivani', 'mehta', 'F', 10000 ), (7, 101, 'Michael',  
'Johnson', 'M', 59000), (8, 104, 'shivani', 'mehta', 'F', 10000 ), (9,  
105, 'tirth', 'doe', 'M', 89000 ), (10, 102, 'Jenish', 'Smith', 'M',  
48000), (11, 103, 'travis', 'head', 'M', 63000 );
```

Parking:

```
INSERT INTO parking (PARKING_ID, ANNUAL_INCOME,P_ADDRESS , CUR_BALANCE)  
VALUES (101, 50000,'', 10000), (102, 60000, '', 15000), (103, 800000,'',  
30000), (104, 80000,'', 30000), (105, 90000,'', 40000);
```

Payment:

```
INSERT INTO PAYMENT (CUSTOMER_ID, PAY_METHOD,PAY_DATE , PAY_AMOUNT ,  
PAY_ID) VALUES (1001 , 'cash' , '2008-09-11' , '1000' , 111 ), (1002 ,  
'online', '2020-12-09' , '1500' , 112 ), (1003 , 'cash' , '2022-04-02' ,
```

```
'3000' , 113), (1004 , 'NEFT' , '2021-11-09' , '1500' , 114 ), (1005 ,  
'online', '2008-01-19' , '6000' , 115), (1006 , 'NEFT' , '2009-03-09' ,  
'3500' , 116 ), (1007 , 'online' , '2001-09-12' , '2500' , 117), (1008 ,  
'NEFT' , '2012-10-25' , '6300' , 118 ), (1009 , 'NEFT' , '2019-11-29' ,  
'2750' , 119);
```

Parking_block:

```
INSERT INTO parking_block (SLOT_ID, PARKING_ID, SLOT_STATUS,  
CAPACITY)VALUES (1, 101, 'Occupied', 50), (2, 101, 'Available', 150), (3,  
102, 'Available', 200), (4, 102, 'Occupied', 80), (5, 103, 'Available',  
40), (6, 104, 'Occupied', 60), (7, 105, 'Occupied', 100);
```

Customer:

```
INSERT INTO customer (CUSTOMER_ID, SLOT_ID, F_NAME, L_NAME, PHONE_NO,  
GENDER, AGE, CITY, STATE, POSTAL_CODE)VALUES (1001 , 1 , 'John' , 'Doe' ,  
'1234567890' , 'M' , 30 , 'SURAT' , 'GUJRAT' , '10001'), (1002 , 2 ,  
'Jane' , 'Smith' , '0987654321' , 'F' , 25 , 'RAJKOT' , 'GUJRAT' ,  
'90001'), (1003 , 3 , 'shlok' , 'tagadiya', '5551234567' , 'M' , 40 ,  
'MORBI' , 'GUJRAT' , '60601'), (1004 , 4 , 'krunal', 'Dudhatra',  
'1112223333' , 'F' , 35 , 'JAIPUR' , 'RAJASTHAN' , '77001'), (1005 , 5 ,  
'David' , 'Wilson' , '9998887777' , 'M' , 45 , 'SURAT' , 'GUJRAT' ,  
'10001'), (1006 , 6 , 'Sarah' , 'Taylor' , '3334445555' , 'F' , 28 ,  
'PUNE' , 'MAHARASHTRA', '19101'), (1007 , 7 , 'jay' , 'borda' ,  
'6667778888' , 'M' , 32 , 'AHMEDABAD', 'GUJRAT' , '78201'), (1008 , 1 ,  
'gazal' , 'gajera' , '2223334444' , 'F' , 50 , 'SURAT' , 'GUJRAT' ,  
'10001'), (1009 , 2 , 'dax' , 'adroja' , '7778889999' , 'M' , 38 ,  
'RAJKOT' , 'GUJRAT' , '90001');
```

Booking:

```
INSERT INTO booking (CUSTOMER_ID , SLOT_ID , DATE1 , CHECK_IN_TIME ,  
CHECK_OUT_TIME)VALUES (1001, 1, '2024-02-20', '09:00:00', '17:00:00'),  
(1002, 2, '2024-02-21', '10:00:00', '18:00:00'), (1003, 3, '2024-02-22',  
'11:00:00', '19:00:00'), (1004, 4, '2024-02-23', '12:00:00', '20:00:00'),  
(1005, 5, '2024-02-24', '13:00:00', '21:00:00'), (1006, 3, '2024-01-28',  
'18:00:00', '20:00:00'), (1007, 4, '2024-01-15', '09:00:00', '12:00:00'),  
(1008, 2, '2024-02-02', '20:00:00', '23:00:00');
```

Vehicle:

```
INSERT INTO vehicle (customer_id, v_num, v_name, color, model_year)VALUES
(1001 , 'GJ-05-AB-0123' , 'Toyota Camry' , 'Blue' , 2022), (1001 , 'GJ-05-
DE-1456' , 'Splender' , 'Red' , 2020), (1002 , 'GJ-03-GH-0789' , 'Ford
Fusion' , 'Black' , 2024), (1002 , 'GJ-03-JK-8012' , 'Chevrolet Malibu' ,
'Silver', 2017), (1003 , 'GJ-36-MN-1345' , 'Nissan Altima' , 'White' ,
2016), (1003 , 'GJ-36-PQ-2678' , 'BMW 3 Series' , 'Gray' , 2021), (1004 ,
'RJ-01-ST-7901' , 'shine' , 'Black' , 2015), (1004 , 'RJ-01-VW-9234' ,
'Audi A4' , 'Silver', 2014), (1005 , 'GJ-05-YZ-5567' , 'dream yuga' ,
'White' , 2022), (1005 , 'GJ-05-BC-0890' , 'Lexus ES' , 'Blue' , 2019),
(1006 , 'MH-01-GH-7123' , 'Figo Ford' , 'Gray' , 2019), (1007 , 'GJ-01-MK-
6456' , 'Nissan Altima' , 'Red' , 2016), (1008 , 'GJ-05-MK-8012' ,
'Yamaha' , 'Black' , 2020);
```

Two_wheeler:






























```
insert INTO two_wheeler (T_ID , AVERAGE , V_NUM) VALUES (11 , 65 , 'GJ-05-
AB-0123'), (12 , 36 , 'GJ-05-MK-8012' ), (13 , 54 , 'GJ-05-YZ-5567' ), (14
, 72 , 'RJ-01-ST-7901'), (15 , 45 , 'GJ-05-YZ-5567' ), (16 , 35 , 'RJ-01-
ST-7901'), (17 , 62 , 'GJ-05-AB-0123'), (18 , 72 , 'GJ-05-MK-8012' );
```

Four_wheeler:










































```
INSERT INTO FOUR_WHEELER(F_ID,V_NUM,FUEL_TYPE,NO_OF_DOORS)VALUES (21 ,
'GJ-05-AB-0123' , 'CNG' , 4), (22 , 'GJ-05-AB-0123' , 'PETROL' , 4), (23 ,
'GJ-03-JK-8012' , 'ELECTRIC', 5), (24 , 'GJ-36-MN-1345' , 'CNG' , 4), (25
, 'GJ-36-PQ-2678' , 'CNG' , 5), (26 , 'GJ-05-AB-0123' , 'PETROL' , 4), (27
, 'GJ-05-BC-0890' , 'CNG' , 6);
```

C) Insertion output


















Login:

 					login_id	username	password
<input type="checkbox"/>					L1	user1	pass1
<input type="checkbox"/>					L2	user2	pass2
<input type="checkbox"/>					L3	user3	pass3
<input type="checkbox"/>					L4	user4	pass4
<input type="checkbox"/>					L5	user5	pass5
<input type="checkbox"/>					L6	user6	pass6
<input type="checkbox"/>					L7	user7	pass7
<input type="checkbox"/>					L8	user8	pass8
<input type="checkbox"/>					L9	user9	pass9

Employee:

 					EMPLOYEE_ID	PARKING_ID	F_NAME	L_NAME	GENDER	SALARY
<input type="checkbox"/>					1	101	John	Doe	M	50000.00
<input type="checkbox"/>					2	102	Jane	Smith	F	60000.00
<input type="checkbox"/>					3	101	Michael	Johnson	M	55000.00
<input type="checkbox"/>					4	103	smit	patel	M	15000.00
<input type="checkbox"/>					5	102	jimesh	shah	M	56000.00
<input type="checkbox"/>					6	104	shivani	mehta	F	10000.00
<input type="checkbox"/>					7	101	Michael	Johnson	M	59000.00
<input type="checkbox"/>					8	104	shivani	mehta	F	10000.00
<input type="checkbox"/>					9	105	tirth	doe	M	89000.00
<input type="checkbox"/>					10	102	Jenish	Smith	M	48000.00
<input type="checkbox"/>					11	103	travis	head	M	63000.00
<input type="checkbox"/>					13	101	john	doe	m	400000.00
<input type="checkbox"/>					25	101	darsh	jodhani	M	300000.00

Parking:

 					PARKING_ID	ANNUAL_INCOME	P_ADDRESS	CUR_BALANCE
<input type="checkbox"/>					101	50000.00		10000.00
<input type="checkbox"/>					102	60000.00		15000.00
<input type="checkbox"/>					103	800000.00		30000.00
<input type="checkbox"/>					104	80000.00		30000.00
<input type="checkbox"/>					105	90000.00		40000.00

Parking_block:

			SLOT_ID	PARKING_ID	SLOT_STATUS	CAPACITY	AVAILABILITY
<input type="checkbox"/>		Edit		Copy		Delete	
			1	101	Occupied	10	0
<input type="checkbox"/>		Edit		Copy		Delete	
			1	102	Available	9	9
<input type="checkbox"/>		Edit		Copy		Delete	
			1	103	Occupied	20	0
<input type="checkbox"/>		Edit		Copy		Delete	
			1	104	Available	5	5
<input type="checkbox"/>		Edit		Copy		Delete	
			1	105	Occupied	2	1
<input type="checkbox"/>		Edit		Copy		Delete	
			2	101	Available	15	15
<input type="checkbox"/>		Edit		Copy		Delete	
			2	102	Occupied	10	0
<input type="checkbox"/>		Edit		Copy		Delete	
			2	103	Available	150	20
<input type="checkbox"/>		Edit		Copy		Delete	
			2	104	Available	200	20
<input type="checkbox"/>		Edit		Copy		Delete	
			2	105	Occupied	80	0
<input type="checkbox"/>		Edit		Copy		Delete	
			3	102	Available	200	20
<input type="checkbox"/>		Edit		Copy		Delete	
			4	102	Occupied	80	0
<input type="checkbox"/>		Edit		Copy		Delete	
			5	103	Occupied	40	0
<input type="checkbox"/>		Edit		Copy		Delete	
			6	104	Available	60	5
<input type="checkbox"/>		Edit		Copy		Delete	
			7	105	Occupied	100	0







































Payment:

			CUSTOMER_ID	PAY_METHOD	PAY_DATE	PAY_AMOUNT	pay_id
<input type="checkbox"/>		Edit		Copy		Delete	
			2020	online	2024-04-13	40000.00	1
<input type="checkbox"/>		Edit		Copy		Delete	
			1001	cash	2008-09-11	1000.00	111
<input type="checkbox"/>		Edit		Copy		Delete	
			1002	online	2020-12-09	1500.00	112
<input type="checkbox"/>		Edit		Copy		Delete	
			1003	cash	2022-04-02	3000.00	113
<input type="checkbox"/>		Edit		Copy		Delete	
			1004	NEFT	2021-11-09	1500.00	114
<input type="checkbox"/>		Edit		Copy		Delete	
			1005	online	2008-01-19	6000.00	115
<input type="checkbox"/>		Edit		Copy		Delete	
			1006	NEFT	2009-03-09	3500.00	116
<input type="checkbox"/>		Edit		Copy		Delete	
			1007	online	2001-09-12	2500.00	117
<input type="checkbox"/>		Edit		Copy		Delete	
			1008	NEFT	2012-10-25	6300.00	118
<input type="checkbox"/>		Edit		Copy		Delete	
			1009	NEFT	2019-11-29	2750.00	119
<input type="checkbox"/>		Edit		Copy		Delete	
			1029	online	2023-04-03	30000.00	120

Customer:

			CUSTOMER_ID	SLOT_ID	F_NAME	L_NAME	PHONE_NO	GENDER	AGE	CITY	STATE	POSTAL_CODE
<input type="checkbox"/>		Edit		Copy		Delete						
			1001	1	John	Doe	1234567890	M	30	SURAT	GUJRAT	10001
<input type="checkbox"/>		Edit		Copy		Delete						
			1002	2	Jane	Smith	9876543210	F	25	RAJKOT	GUJRAT	90001
<input type="checkbox"/>		Edit		Copy		Delete						
			1003	3	shlok	tagadiya	5551234567	M	40	MORBI	GUJRAT	60601
<input type="checkbox"/>		Edit		Copy		Delete						
			1004	4	krunal	Dudhatra	1112223333	F	35	JAIPUR	RAJASTHAN	77001
<input type="checkbox"/>		Edit		Copy		Delete						
			1005	5	David	Wilson	9998887777	M	45	SURAT	GUJRAT	10001
<input type="checkbox"/>		Edit		Copy		Delete						
			1006	6	Sarah	Taylor	3334445555	F	28	PUNE	MAHARASHTRA	19101
<input type="checkbox"/>		Edit		Copy		Delete						
			1007	7	jay	borda	6667778888	M	32	AHMEDABAD	GUJRAT	78201
<input type="checkbox"/>		Edit		Copy		Delete						
			1008	1	gazal	gajera	2223334444	F	50	SURAT	GUJRAT	10001
<input type="checkbox"/>		Edit		Copy		Delete						
			1029	7	darsh	jodhani	1234534542	M	19	botad	gujarat	234557
<input type="checkbox"/>		Edit		Copy		Delete						
			1202	3	dad	dwd	2345678654	M	23	dsg	eds	234567
<input type="checkbox"/>		Edit		Copy		Delete						
			1303	3	proyal	bhinde	1234565432	M	24	mumbai	maharashtra	345676
<input type="checkbox"/>		Edit		Copy		Delete						
			1330	5	dev	patel	2356789543	M	13	surat	gujarat	345678
<input type="checkbox"/>		Edit		Copy		Delete						
			2020	3	samarth	pansala	3456789765	M	19	surat	gujarat	345678

























Vehicle:

		CUSTOMER_ID		V_NUM	V_NAME	COLOR	MODEL_YEAR	VEHICLE_TYPE
<input type="checkbox"/>	 Edit	 Copy	 Delete	1007	GJ-01-MK-6456	Nissan Altima	Red	2016 NULL
<input type="checkbox"/>	 Edit	 Copy	 Delete	1002	GJ-03-GH-0789	Ford Fusion	Black	2024 NULL
<input type="checkbox"/>	 Edit	 Copy	 Delete	1002	GJ-03-JK-8012	Chevrolet Malibu	Silver	2017 NULL
<input type="checkbox"/>	 Edit	 Copy	 Delete	1001	GJ-05-AB-0123	Toyota Camry	Blue	2022 NULL
<input type="checkbox"/>	 Edit	 Copy	 Delete	1005	GJ-05-BC-0890	Lexus ES	Blue	2019 NULL
<input type="checkbox"/>	 Edit	 Copy	 Delete	1001	GJ-05-DE-1456	Splender	Red	2020 NULL
<input type="checkbox"/>	 Edit	 Copy	 Delete	1008	GJ-05-MK-8012	Yamaha	Black	2020 NULL
<input type="checkbox"/>	 Edit	 Copy	 Delete	1005	GJ-05-YZ-5567	dream yuga	White	2022 NULL
<input type="checkbox"/>	 Edit	 Copy	 Delete	1003	GJ-36-MN-1345	Nissan Altima	White	2016 NULL
<input type="checkbox"/>	 Edit	 Copy	 Delete	1003	GJ-36-PQ-2678	BMW 3 Series	Gray	2021 NULL
<input type="checkbox"/>	 Edit	 Copy	 Delete	1006	MH-01-GH-7123	Figo Ford	Gray	2019 NULL
<input type="checkbox"/>	 Edit	 Copy	 Delete	1004	RJ-01-ST-7901	shine	Black	2015 NULL
<input type="checkbox"/>	 Edit	 Copy	 Delete	1004	RJ-01-VW-9234	Audi A4	Silver	2014 NULL






















Booking:

CUSTOMER_ID	SLOT_ID	DATE1	CHECK_IN_TIME	CHECK_OUT_TIME
1001	1	2024-02-20	09:00:00	17:00:00
1002	2	2024-02-21	10:00:00	18:00:00
1003	3	2024-02-22	11:00:00	19:00:00
1004	4	2024-02-23	12:00:00	20:00:00
1005	5	2024-02-24	13:00:00	21:00:00
1006	3	2024-01-28	18:00:00	20:00:00
1007	4	2024-01-15	09:00:00	12:00:00
1008	2	2024-02-02	20:00:00	23:00:00

Two_wheeler:

		T_ID	AVERAGE	V_NUM
<input type="checkbox"/>	 Edit	 Copy	 Delete	11 65.00 GJ-05-AB-0123
<input type="checkbox"/>	 Edit	 Copy	 Delete	12 36.00 GJ-05-MK-8012
<input type="checkbox"/>	 Edit	 Copy	 Delete	13 54.00 GJ-05-YZ-5567
<input type="checkbox"/>	 Edit	 Copy	 Delete	14 72.00 RJ-01-ST-7901
<input type="checkbox"/>	 Edit	 Copy	 Delete	15 45.00 GJ-05-YZ-5567
<input type="checkbox"/>	 Edit	 Copy	 Delete	16 35.00 RJ-01-ST-7901
<input type="checkbox"/>	 Edit	 Copy	 Delete	17 62.00 GJ-05-AB-0123
<input type="checkbox"/>	 Edit	 Copy	 Delete	18 72.00 GJ-05-MK-8012

Four_wheeler:

				F_ID	V_NUM	FUEL_TYPE	NO_OF_DOORS
<input type="checkbox"/>				21	GJ-05-AB-0123	CNG	4
<input type="checkbox"/>				22	GJ-05-AB-0123	PETROL	4
<input type="checkbox"/>				23	GJ-03-JK-8012	ELECTRIC	5
<input type="checkbox"/>				24	GJ-36-MN-1345	CNG	4
<input type="checkbox"/>				25	GJ-36-PQ-2678	CNG	5
<input type="checkbox"/>				26	GJ-05-AB-0123	PETROL	4
<input type="checkbox"/>				27	GJ-05-BC-0890	CNG	6

Functionalities of database:

```
PS C:\Users\DELL\OneDrive\Desktop\DBMS_Innovative> node database.js
1. Register a new customer
2. Authenticate employee login
3. Input employee details
4. View unfilled parking slots
5. Allocate a parking slot
6. Process payment
0. Exit
Enter option: █
```

1) Register a new customer

```

function insertCustomer() {
  rl.question("Enter Customer id: ", (customer_id) => {
    rl.question("Enter first name: ", (firstName) => {
      rl.question("Enter last name: ", (lastName) => {
        rl.question("Enter phone number: ", (phoneNo) => {
          rl.question("Enter gender: ", (gender) => {
            rl.question("Enter age: ", (age) => {
              rl.question("Enter city: ", (city) => {
                rl.question("Enter state: ", (state) => {
                  rl.question("Enter postal code: ", (postalCode) => {
                    const query = `INSERT INTO Customer (customer_id, f_name, l_name, phone_no, gender, age, city, state, postal_code) VALUES (${customer_id}, '${firstName}', '${lastName}', '${phoneNo}', '${gender}', ${age}, '${city}', '${state}', '${postalCode}')`;
                    const query1 = `INSERT INTO Booking (customer_id) VALUES (${customer_id})`;
                    connection.query(query, (err, result) => {
                      if (err) throw err;
                      console.log("Customer inserted successfully!");
                      rl.close();
                    });
                    connection.query(query1, (err, result) => {
                      if (err) throw err;
                      rl.close();
                    });
                  });
                });
              });
            });
          });
        });
      });
    });
  });
}

```

```

Enter option: 1
Enter Customer id: 2025
Enter first name: Ansh
Enter last name: Pansala
Enter phone number: 2345678987
Enter gender: M
Enter age: 13
Enter city: surat
Enter state: gujarat
Enter postal code: 234567
Customer inserted successfully!

```

	CUSTOMER_ID	SLOT_ID	F_NAME	L_NAME	PHONE_NO	GENDER	AGE	CITY	STATE	POSTAL_CODE
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	1001	1	John	Doe	1234567890	M	30	SURAT	GUJRAT	10001
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	1002	2	Jane	Smith	9876543210	F	25	RAJKOT	GUJRAT	90001
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	1003	3	shlok	tagadiya	5551234567	M	40	MORBI	GUJRAT	60601
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	1004	4	krunal	Dudhatra	1112223333	F	35	JAIPUR	RAJASTHAN	77001
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	1005	5	David	Wilson	9998887777	M	45	SURAT	GUJRAT	10001
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	1006	6	Sarah	Taylor	3334445555	F	28	PUNE	MAHARASHTRA	19101
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	1007	7	jay	borda	6667778888	M	32	AHMEDABAD	GUJRAT	78201
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	1008	1	gazal	gajera	2223334444	F	50	SURAT	GUJRAT	10001
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	1029	7	darsh	jodhani	1234534542	M	19	botad	gujarat	234557
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	1202	3	dad	dwd	2345678654	M	23	dsg	eds	234567
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	1303	3	proyal	bhinde	1234565432	M	24	mumbai	maharashtra	345676
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	1330	5	dev	patel	2356789543	M	13	surat	gujarat	345678
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	2020	3	samarth	pansala	3456789765	M	19	surat	gujarat	345678
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	2025	NULL	Ansh	Pansala	2345678987	M	13	surat	gujarat	234567

2) Authenticate employee login

```
function authenticateEmployee() {
  rl.question("Enter username: ", (username) => {
    rl.question("Enter password: ", (password) => {
      const query = `SELECT * FROM Login WHERE username = '${username}' AND password = '${password}'`;
      connection.query(query, (err, result) => {
        if (err) throw err;
        if (result.length > 0) {
          console.log("Authentication successful!");
        } else {
          console.log("Authentication failed!");
        }
        rl.close();
      });
    });
  });
}
```

```
Enter option: 2
Enter username: user2
Enter password: pass2
Authentication successful!
```

```
Enter option: 2
Enter username: user
Enter password: pass
Authentication failed!
```

3) Input employee details

```
function generateRandomSlotId1() {
  return Math.floor(Math.random() * (105 - 101 + 1)) + 101;
}

function inputEmployeeDetails() {
  const parkingid = generateRandomSlotId1();
  rl.question("Enter employee id: ", (employee_id) => {
    rl.question("Enter first name: ", (firstName) => {
      rl.question("Enter last name: ", (lastName) => {
        rl.question("Enter gender: ", (gender) => {
          rl.question("Enter salary: ", (salary) => {
            const query = `INSERT INTO Employee (employee_id, parking_id, f_name, l_name, gender, salary)
VALUES (${employee_id}, ${parkingid}, '${firstName}', '${lastName}', '${gender}', ${salary})`;
            connection.query(query, (err, result) => {
              if (err) throw err;
              console.log("Employee details inserted successfully!");
              rl.close();
            });
          });
        });
      });
    });
  });
}
```

```
Enter option: 3
Enter employee id: 204
Enter first name: dev
Enter last name: patel
Enter gender: M
Enter salary: 400000
Employee details inserted successfully!
```

	EMPLOYEE_ID	PARKING_ID	F_NAME	L_NAME	GENDER	SALARY
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	1	101	John	Doe	M	50000.00
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	2	102	Jane	Smith	F	60000.00
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	3	101	Michael	Johnson	M	55000.00
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	4	103	smit	patel	M	15000.00
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	5	102	jimesh	shah	M	56000.00
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	6	104	shivani	mehta	F	10000.00
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	7	101	Michael	Johnson	M	59000.00
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	8	104	shivani	mehta	F	10000.00
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	9	105	tirth	doe	M	89000.00
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	10	102	Jenish	Smith	M	48000.00
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	11	103	travis	head	M	63000.00
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	13	101	john	doe	m	400000.00
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	25	101	darsh	jodhani	M	300000.00
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	204	101	dev	patel	M	400000.00

4) View unfilled parking slots

```
function viewUnfilledParkingSlots() {
  const query = `SELECT * FROM Parking_block WHERE slot_status = 'Available'`;
  connection.query(query, (err, results) => {
    if (err) throw err;
    console.log("Unfilled parking slots:");
    console.log(results);
    rl.close();
  });
}
```

```
Enter option: 4
Unfilled parking slots:
[
  RowDataPacket {
    SLOT_ID: 2,
    PARKING_ID: 101,
    SLOT_STATUS: 'Available',
    CAPACITY: 150
  },
  RowDataPacket {
    SLOT_ID: 3,
    PARKING_ID: 102,
    SLOT_STATUS: 'Available',
    CAPACITY: 200
  },
  RowDataPacket {
    SLOT_ID: 5,
    PARKING_ID: 103,
    SLOT_STATUS: 'Available',
    CAPACITY: 40
  }
]
```

5) Allocate a parking slot

```
function allocateParkingSlot() {
  rl.question("Enter your Customer id: ", (customer_id) => {
    rl.question("Enter parking slot ID to allocate: ", (slotId) => {
      rl.question("Enter parking parking ID to allocate: ", (parkingid) => {
        connection.query(`UPDATE customer SET slot_id = ${slotId} WHERE customer_id = ${customer_id}` , (err, result) => {
          if(err) throw err;

          rl.close();
        });
        connection.query(`UPDATE booking SET slot_id = ${slotId} WHERE customer_id = ${customer_id}` , (err, result) => {
          if(err) throw err;

          rl.close();
        });
        connection.query(`UPDATE PARKING_BLOCK SET AVAILABILITY = AVAILABILITY - 1 WHERE SLOT_ID = ${slotId} AND PARKING_ID = ${parkingid}` , (err, result) => {
          if(err) throw err;

          rl.close();
        });
      });
    });
  });

  return new Promise((resolve, reject) => {
    connection.query(
      'SELECT SLOT_STATUS FROM PARKING_BLOCK WHERE PARKING_ID = ? AND SLOT_ID = ?',
      [parkingid, slotId],
      (error, results) => {
        if (error) {
          reject(error);
          return;
        }

        if (results.length === 0) {
```

```
        if (results.length === 0) {
          console.log('Invalid parking ID or slot ID');
          return;
        }

        const slotStatus = results[0].SLOT_STATUS;
        if (slotStatus === 'Occupied') {
          console.log('No slot available');
        } else {
          console.log('Slot Allocated');
        }
      });
    connection.query(`UPDATE PARKING_BLOCK SET SLOT_STATUS = 'Occupied' WHERE AVAILABILITY = 0;` , (err, result) => {
      if(err) throw err;

      rl.close();
    });
  });
}
```

```
Enter option: 5
Enter your Customer id: 1001
Enter parking slot ID to allocate: 1
Enter parking parking ID to allocate: 101
No slot available
█
```

```
Enter option: 5
Enter your Customer id: 2025
Enter parking slot ID to allocate: 5
Parking slot allocated successfully!
█
```


		CUSTOMER_ID	SLOT_ID	F_NAME	L_NAME	PHONE_NO	GENDER	AGE	CITY	STATE	POSTAL_CODE
<input type="checkbox"/>	Edit Copy Delete	1001	1	John	Doe	1234567890	M	30	SURAT	GUJRAT	10001
<input type="checkbox"/>	Edit Copy Delete	1002	2	Jane	Smith	9876543210	F	25	RAJKOT	GUJRAT	90001
<input type="checkbox"/>	Edit Copy Delete	1003	3	shlok	tagadiya	5551234567	M	40	MORBI	GUJRAT	60601
<input type="checkbox"/>	Edit Copy Delete	1004	4	krunal	Dudhatra	1112223333	F	35	JAIPUR	RAJASTHAN	77001
<input type="checkbox"/>	Edit Copy Delete	1005	5	David	Wilson	9998887777	M	45	SURAT	GUJRAT	10001
<input type="checkbox"/>	Edit Copy Delete	1006	6	Sarah	Taylor	3334445555	F	28	PUNE	MAHARASHTRA	19101
<input type="checkbox"/>	Edit Copy Delete	1007	7	jay	borda	6667778888	M	32	AHMEDABAD	GUJRAT	78201
<input type="checkbox"/>	Edit Copy Delete	1008	1	gazal	gajera	2223334444	F	50	SURAT	GUJRAT	10001
<input type="checkbox"/>	Edit Copy Delete	1029	7	darsh	jodhani	1234534542	M	19	botad	gujarat	234557
<input type="checkbox"/>	Edit Copy Delete	1202	3	dad	dwd	2345678654	M	23	dsg	eds	234567
<input type="checkbox"/>	Edit Copy Delete	1303	3	proyal	bhinde	1234565432	M	24	mumbai	maharashtra	345676
<input type="checkbox"/>	Edit Copy Delete	1330	5	dev	patel	2356789543	M	13	surat	gujarat	345678
<input type="checkbox"/>	Edit Copy Delete	2020	3	samarth	pansala	3456789765	M	19	surat	gujarat	345678
<input type="checkbox"/>	Edit Copy Delete	2025	5	Ansh	Pansala	2345678987	M	13	surat	gujarat	234567

6) Process payment

```
function processPayment() {
  rl.question("Enter customer ID: ", (customerId) => {
    rl.question("Enter payment method: ", (payMethod) => {
      rl.question("Enter payment date (YYYY-MM-DD): ", (payDate) => {
        rl.question("Enter payment amount: ", (payAmount) => {
          const query = `INSERT INTO Payment (customer_id, pay_method, pay_date, pay_amount)
VALUES (${customerId}, '${payMethod}', '${payDate}', ${payAmount})`;
          connection.query(query, (err, result) => {
            if (err) throw err;
            console.log("Payment processed successfully!");
            rl.close();
          });
        });
      });
    });
  });
}
```

```
Enter option: 6
Enter customer ID: 2025
Enter payment method: online
Enter payment date (YYYY-MM-DD): 2024-04-21
Enter payment amount: 40000
Payment processed successfully!
```

		CUSTOMER_ID	PAY_METHOD	PAY_DATE	PAY_AMOUNT	pay_id
<input type="checkbox"/>	Edit Copy Delete	2020	online	2024-04-13	40000.00	1
<input type="checkbox"/>	Edit Copy Delete	1001	cash	2008-09-11	1000.00	111
<input type="checkbox"/>	Edit Copy Delete	1002	online	2020-12-09	1500.00	112
<input type="checkbox"/>	Edit Copy Delete	1003	cash	2022-04-02	3000.00	113
<input type="checkbox"/>	Edit Copy Delete	1004	NEFT	2021-11-09	1500.00	114
<input type="checkbox"/>	Edit Copy Delete	1005	online	2008-01-19	6000.00	115
<input type="checkbox"/>	Edit Copy Delete	1006	NEFT	2009-03-09	3500.00	116
<input type="checkbox"/>	Edit Copy Delete	1007	online	2001-09-12	2500.00	117
<input type="checkbox"/>	Edit Copy Delete	1008	NEFT	2012-10-25	6300.00	118
<input type="checkbox"/>	Edit Copy Delete	1009	NEFT	2019-11-29	2750.00	119
<input type="checkbox"/>	Edit Copy Delete	1029	online	2023-04-03	30000.00	120
<input type="checkbox"/>	Edit Copy Delete	2025	online	2024-04-21	40000.00	121

Queries using DBMS constructs join and subqueries:

- 1) Find the total amount paid by each customer and display it along with their name.

```
SELECT c.customer_id, c.f_name, c.l_name, SUM(p.pay_amount) AS  
total_amount_paid FROM customer c JOIN payment p ON c.customer_id =  
p.customer_id GROUP BY c.customer_id, c.f_name, c.l_name;
```

customer_id	f_name	l_name	total_amount_paid
1001	John	Doe	1000.00
1002	Jane	Smith	1500.00
1003	shlok	tagadiya	3000.00
1004	krunal	Dudhatra	1500.00
1005	David	Wilson	6000.00
1006	Sarah	Taylor	3500.00
1007	jay	borda	2500.00
1008	gazal	gajera	6300.00
1029	darsh	jodhani	30000.00
2020	samarth	pansala	40000.00
2025	Ansh	Pansala	40000.00

- 2) Get all customers who have made payments, along with their payment details, assigned parking slot, and vehicle information.

```
SELECT c.customer_id, c.f_name, c.l_name, c.phone_no, c.gender, c.age,  
c.city, c.state, c.postal_code, p.pay_id, p.pay_method, p.pay_date,  
p.pay_amount, cb.slot_id, cb.slot_status, v.v_num, v.v_name, v.color,  
v.model_year FROM Customer c JOIN Payment p ON c.customer_id =  
p.customer_id LEFT JOIN Parking_block cb ON c.slot_id = cb.slot_id LEFT  
JOIN Vehicle v ON c.customer_id = v.customer_id;
```

customer_id	f_name	l_name	phone_no	gender	age	city	state	postal_code	pay_id	pay_method	pay_date	pay_amount	slot_id	slot_status	v_num	v_name	color	model_year
2020	samarth	pansala	3456789012	M	19	surat	gujarat	345678	1	online	2024-04-13	40000.00	3	Available	NULL	NI		
1001	John	Doe	1234567890	M	30	SURAT	GUJARAT	10001	111	cash	2008-09-11	1000.00	1	Occupied	AB-0123	TG		
1001	John	Doe	1234567890	M	30	SURAT	GUJARAT	10001	111	cash	2008-09-11	1000.00	1	Occupied	GL-05-DE-1456	ST		
1002	Jane	Smith	9876543210	F	25	RAJKOT	GUJARAT	90001	112	online	2020-12-09	1500.00	2	Available	GL-03-CH-0789	FL		
1002	Jane	Smith	9876543210	F	25	RAJKOT	GUJARAT	90001	112	online	2020-12-09	1500.00	2	Available	GL-03-JK-8012	ML		
1003	shlok	tagadiya	5551234567	M	40	MORBI	GUJARAT	60001	113	cash	2022-04-02	3000.00	3	Available	GL-36-MR-1345	NI		
1003	shlok	tagadiya	5551234567	M	40	MORBI	GUJARAT	60001	113	cash	2022-04-02	3000.00	3	Available	GL-36-PQ-2678	SC		
1004	krunal	Dudhatra	1112223333	F	35	JAIPUR	RAJASTHAN	77001	114	NEFT	2021-11-09	1500.00	4	Occupied	TL-01-ST-7001	SH		
1004	krunal	Dudhatra	1112223333	F	35	JAIPUR	RAJASTHAN	77001	114	NEFT	2021-11-09	1500.00	4	Occupied	RJ-01-VW-9234	AL		
1005	David	Wilson	9999887777	M	45	SURAT	GUJARAT	10001	115	online	2008-01-19	6000.00	5	Available	GL-05-BC-0980	LE		
1005	David	Wilson	9999887777	M	45	SURAT	GUJARAT	10001	115	online	2008-01-19	6000.00	5	Available	GL-05-VZ-5567	YU		
1006	Sarah	Taylor	3334445555	F	28	PUNE	MAHARASHTRA	19101	116	NEFT	2009-03-09	3500.00	6	Occupied	MH-01-CH-7123	FR		
1007	jay	borda	6667778888	M	32	AHMEDABAD	GUJARAT	78201	117	online	2001-09-12	2500.00	7	Occupied	GL-01-MR-4567	NI		

phone_no	gender	age	city	state	postal_code	pay_id	pay_method	pay_date	pay_amount	slot_id	slot_status	v_num	v_name	color	model_year
345678901	M	30	SURAT	GUJARAT	345678	1	online	2024-04-13	40000.00	3	Available	NULL	NULL	NULL	NULL
1234567890	M	30	SURAT	GUJARAT	10001	111	cash	2008-09-11	1000.00	1	Occupied	GJ-05-AB-0123	Toyota Camry	Blue	2022
1234567890	M	30	SURAT	GUJARAT	10001	111	cash	2008-09-11	1000.00	1	Occupied	GJ-05-DE-1456	Splender	Red	2020
9876543210	F	25	RAJKOT	GUJARAT	90001	112	online	2020-12-09	1500.00	2	Available	GJ-03-GH-0789	Ford Fusion	Black	2024
9876543210	F	25	RAJKOT	GUJARAT	90001	112	online	2020-12-09	1500.00	2	Available	GJ-03-JK-8012	Chevrolet Malibu	Silver	2017
5551234567	M	40	MORBI	GUJARAT	60601	113	cash	2022-04-02	3000.00	3	Available	GJ-36-MN-1345	Nissan Altima	White	2016
5551234567	M	40	MORBI	GUJARAT	60601	113	cash	2022-04-02	3000.00	3	Available	GJ-36-PQ-2678	BMW 3 Series	Gray	2021
1112223333	F	35	JAIPUR	RAJASTHAN	77001	114	NEFT	2021-11-09	1500.00	4	Occupied	RJ-01-ST-7901	shine	Black	2015
1112223333	F	35	JAIPUR	RAJASTHAN	77001	114	NEFT	2021-11-09	1500.00	4	Occupied	RJ-01-VW-9234	Audi A4	Silver	2014
9998887777	M	45	SURAT	GUJARAT	10001	115	online	2008-01-19	6000.00	5	Available	GJ-05-BC-0890	Lexus ES	Blue	2019
9998887777	M	45	SURAT	GUJARAT	10001	115	online	2008-01-19	6000.00	5	Available	GJ-05-YZ-5567	dream yuga	White	2022
3334445555	F	28	PUNE	MAHARASHTRA	19101	116	NEFT	2009-03-06	3500.00	6	Occupied	MH-01-GH-7123	Figgo Ford	Gray	2010
9991112222	M	32	AHMEDABAD	GUJARAT	78201	117	online	2001-09-12	2500.00	7	Occupied	GJ-01-MK-XXXX	Nissan Altima	Red	2016

- 3) Get all customers along with their vehicle details and the average fuel consumption for each two-wheeler they own.

```
SELECT c.customer_id, c.f_name, c.l_name, c.phone_no, c.gender, c.age,
c.city, c.state, c.postal_code, v.v_num, v.v_name, v.color, v.model_year,
tw.average AS two_wheeler_avg_fuel_consumption FROM Customer c LEFT JOIN
Vehicle v ON c.customer_id = v.customer_id LEFT JOIN Two_wheeler tw ON
v.v_num = tw.v_num;
```

customer_id	f_name	l_name	phone_no	gender	age	city	state	postal_code	v_num	v_name	color	model_year	two_wheeler_avg_fuel_consumption
1001	John	Doe	1234567890	M	30	SURAT	GUJARAT	10001	GJ-05-AB-0123	Toyota Camry	Blue	2022	65.00
1001	John	Doe	1234567890	M	30	SURAT	GUJARAT	10001	GJ-05-AB-0123	Toyota Camry	Blue	2022	62.00
1001	John	Doe	1234567890	M	30	SURAT	GUJARAT	10001	GJ-05-DE-1456	Splender	Red	2020	NULL
1002	Jane	Smith	9876543210	F	25	RAJKOT	GUJARAT	90001	GJ-03-GH-0789	Ford Fusion	Black	2024	NULL
1002	Jane	Smith	9876543210	F	25	RAJKOT	GUJARAT	90001	GJ-03-JK-8012	Chevrolet Malibu	Silver	2017	NULL
1003	shlok	tagadiya	5551234567	M	40	MORBI	GUJARAT	60601	GJ-36-MN-1345	Nissan Altima	White	2016	NULL
1003	shlok	tagadiya	5551234567	M	40	MORBI	GUJARAT	60601	GJ-36-PQ-2678	BMW 3 Series	Gray	2021	NULL
1004	krunal	Dudhatra	1112223333	F	35	JAIPUR	RAJASTHAN	77001	RJ-01-ST-7901	shine	Black	2015	72.00
1004	krunal	Dudhatra	1112223333	F	35	JAIPUR	RAJASTHAN	77001	RJ-01-ST-7901	shine	Black	2015	35.00
1004	krunal	Dudhatra	1112223333	F	35	JAIPUR	RAJASTHAN	77001	RJ-01-VW-9234	Audi A4	Silver	2014	NULL
1005	David	Wilson	9998887777	M	45	SURAT	GUJARAT	10001	GJ-05-BC-0890	Lexus ES	Blue	2019	NULL
1005	David	Wilson	9998887777	M	45	SURAT	GUJARAT	10001	GJ-05-YZ-5567	dream yuga	White	2022	54.00

Advance Concepts:

PL/SQL(VIEWS):

- 1) Create view with employee id and name and display all details from it.

```
CREATE VIEW employee_view AS SELECT EMPLOYEE_ID, CONCAT(F_NAME, " ", L_NAME) AS NAME FROM employee;
```

	EMPLOYEE_ID	NAME
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	1	John Doe
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	2	Jane Smith
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	3	Michael Johnson
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	4	smit patel
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	5	jimesh shah
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	6	shivani mehta
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	7	Michael Johnson
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	8	shivani mehta
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	9	firth doe
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	10	Jensh Smith
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	11	travis head
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	13	john doe
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	25	darsh jodhani
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	204	dev patel

- 2) Create view with customer id and name and display all details from it.

```
CREATE VIEW customer_view AS SELECT CUSTOMER_ID, CONCAT(F_NAME, " ", L_NAME) AS NAME, PHONE_NO, GENDER, AGE, STATE FROM CUSTOMER;
```

	CUSTOMER_ID	NAME	PHONE_NO	GENDER	AGE	STATE
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	1001	John Doe	1234567890	M	30	GUJRAT
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	1002	Jane Smith	9876543210	F	25	GUJRAT
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	1003	shlok tagadiya	5551234567	M	40	GUJRAT
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	1004	krunal Dudhatra	1112223333	F	35	RAJASTHAN
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	1005	David Wilson	9998887777	M	45	GUJRAT
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	1006	Sarah Taylor	3334445555	F	28	MAHARASHTRA
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	1007	jay borda	6667778888	M	32	GUJRAT
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	1008	gazal gajera	2223334444	F	50	GUJRAT
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	1029	darsh jodhani	1234534542	M	19	gujarat
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	1202	dad dwd	2345678654	M	23	eds
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	1303	proyal bhinde	1234565432	M	24	maharashtra
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	1330	dev patel	2356789543	M	13	gujarat
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	2020	samarth pansala	3456789765	M	19	gujarat
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	2025	Ansh Pansala	2345678987	M	13	gujarat

TRIGGERS:

- 1) Create a trigger to get new salary input which should not be less than 50000.


```
CREATE TRIGGER salary_check BEFORE INSERT ON employee FOR EACH ROW BEGIN
IF NEW.SALARY < 50000 THEN SIGNAL SQLSTATE "45000" SET MESSAGE_TEXT =
"Salary cannot be less than 50000"; END IF; END;
```

Check: insert into employee values (12 , 101 , "john" , "doe" , "m" , 40000);

Error

SQL query: [Copy](#)

```
insert into employee values (12 , 101 , "john" , "doe" , "m" , 40000);
```

MySQL said: 

#1644 - Salary cannot be less than 50000

- 2) Create a trigger to get new mobile no. input which should must be 10 digit.


```
CREATE TRIGGER check_mobile_number BEFORE INSERT ON customer FOR EACH ROW
BEGIN IF CHAR_LENGTH(NEW.phone_no) != 10 THEN SIGNAL SQLSTATE "45000" SET
MESSAGE_TEXT = "Mobile number must be 10 digits"; END IF; END;
```

Check: INSERT INTO customer (CUSTOMER_ID, SLOT_ID, F_NAME, L_NAME, PHONE_NO, GENDER, AGE, CITY, STATE, POSTAL_CODE)VALUES (1020 , 1 , "Samarth" , "Pansala" , "123456789" , "M" , 30 , "SURAT" , "GUJRAT" , "10001");

Error

SQL query: [Copy](#)

```
INSERT INTO customer (CUSTOMER_ID, SLOT_ID, F_NAME, L_NAME, PHONE_NO, GENDER, AGE, CITY, STATE, POSTAL_CODE)VALUES (1020 , 1 , "Samarth" , "Pansala" , "123456789
```

MySQL said: 

#1644 - Mobile number must be 10 digits

- 3) Create a trigger that checks availability is must less or equal to capacity while inserting new record into parking_block.

```
'CREATE TRIGGER check_availability BEFORE INSERT ON PARKING_BLOCK FOR EACH
ROW BEGIN IF NEW.AVAILABILITY > NEW.CAPACITY THEN SIGNAL SQLSTATE "45000"
```


```
SET MESSAGE_TEXT = "Availability must be less than or equal to Capacity";  
END IF; END;
```

```
Check: INSERT INTO `parking_block`(`SLOT_ID`, `PARKING_ID`, `SLOT_STATUS`,  
`CAPACITY`, `AVAILABILITY`) VALUES (4, 104, "Available", 10, 12);
```

Error

SQL query: [Copy](#)

```
INSERT INTO `parking_block`(`SLOT_ID`, `PARKING_ID`, `SLOT_STATUS`, `CAPACITY`, `AVAILABILITY`) VALUES (4, 104, 'Available', 10, 12);
```

MySQL said: 

#1644 - Availability must be less than or equal to Capacity