

DATABASE MANAGEMENT SYSTEM

HOTEL MANAGEMENT

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ABSTARCT

This project aims to develop a computerized system for seamless booking and management of rooms and maintaining bills of the customers in the hotels. This project is equipped with menu options to perform various managerial tasks regarding everything from room booking to bills management. Most hotel management application are very limited in terms of functionality and applicability and the hotel management tasks has to be done across various other software, but our project aims to deliver a software that can be used across all domains of hotel management business. This application helps us in viewing all the rooms booked in the hotels under the owner. These records can't be deleted from inside the software making it tamper-proof too. Overall, this project of ours is being developed to help hoteliers manage their hotels in a seamless manner.

INTRODUCTION

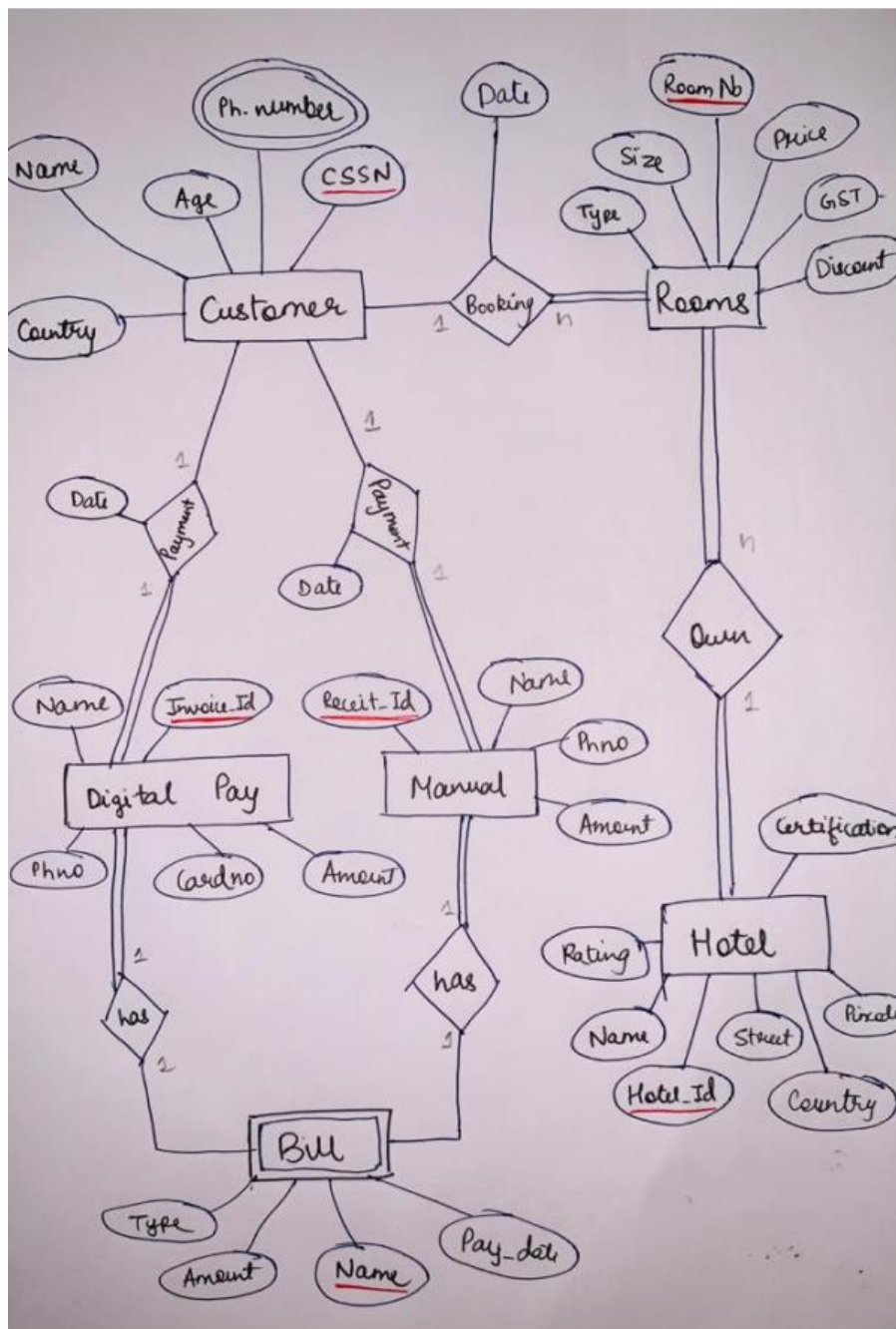
The project, Hotel management System is a mobile- based application that allows the manager to handle all hotel activities. This application gives him the power to manage the entire system. Interactive interface and the ability to manage various hotel booking and rooms make this system very flexible and convenient. Hotel management project allow manager to view the bills, room booking, type of payment and other necessary management features.

The project has a wide scope, which can be applied by any business organizations. This project is designed for employers. It has room booking service which can keep track of reservations and room availability and also have tracking of bills which can help finance department. The service can be used by hotel manager and owner to access any room booking system and bill tracking system.

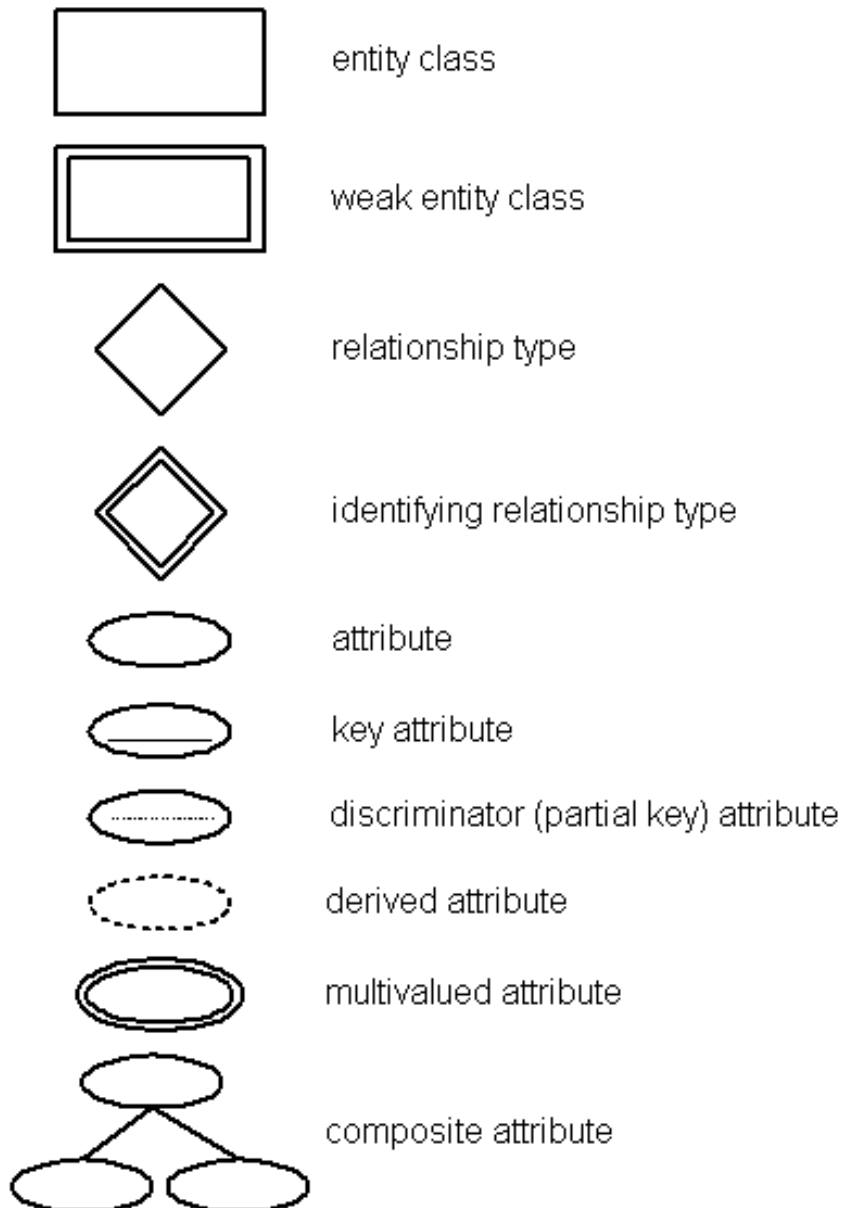
TECHNOLOGIES USED:

- FLUTTER
- NODE JS
- MONGO DB

ER DIAGRAM



Notations used in ER diagram:



Conclusion:

Strong Entities:

In the ER diagram hotel, customer, rooms, digital payment, bill, Location. They all act as strong entities since they have respective unique attributes known as keys, by which we could identify them.

Weak Entities:

Manual and Price are the weak entities in ER diagram. Since they don't have a definite key they only have a partial key.

Primary keys:

customer-(cssn); digital- (invoice.id); bill-(receipt.id); hotel-(hotel.id); rooms-(room.no); Location-(address)

Foreign keys:

price-(type/size); Invoice-(email/ph-num); Manual-(name/ph.num); Bill-(invoice.id/recipt.id)

Relationships:

Customer->payment->digital Customer->payment->manual Customer->booking->rooms Digital->has->bill Manual->has->bill Hotel->owns->rooms Price ->of->Rooms

ER DIAGRAM TO SCHEMA

CONVERSION

1.CUSTOMER (CSSN, NAME, AGE, PHNO, COUNTRY)

2.MANUAL (AMOUNT, PHNO, NAME, CSSN, DATE, RECEIPTID) - Foreign key=(CSSN)

3.DIGITAL PAY (NAME, PHNO, CARDNO, AMOUNT, DATE, CSSN, INVOICEID) – Foreign key=(CSSN)

4.BILL (AMOUNT, NAME, TYPE, PAYDATE, RECEIPTID, INVOICEID) – Foreign key = (RECEIPTID, INVOICEID)

5.ROOM (TYPE, SIZE, DISCOUNT, GST, PRICE, SDATE, EDATE, HOTELID, CSSN, ROOMNO) Foreign keys=(CSSN, HOTELID), HERE
(CHECK_IN_DATE,CHECK_OUT_DATE)=BOOKING_DATE

6.HOTEL (NAME, CERTIFICATION, HOTEL ID, RATING, COUNTRY, STREET, PINCODE)

CREATION OF RELATIONAL TABLES

1. Customers:

```
SQL> SELECT * FROM CUSTOMER;
```

CSSN	NAME	AGE	PH_NUMBER	COUNTRY
12345	RAHUL	34	9083453123	INDIA
64532	RAVI	21	8919023456	INDIA
43251	JOHN	23	4567890321	ENGLAND
23456	SOHAIL	45	4325678901	BANGLADESH

2. Bills:

```
SQL> SELECT * FROM BILL;
```

NAME		DUE	DISCOUNT STATUS
HOTEL_ID	CSSN		
RAHUL		5000	10 NOT PAID
5436721890	12345		
RAVI		2000	0 NOT PAID
5436721890	64532		
JOHN		0	0 PAID
2345678903	43251		
NAME		DUE	DISCOUNT STATUS
HOTEL_ID	CSSN		
SOHAIL		0	0 PAID
2345678903	23456		

3. Manual Payments

```
SQL> SELECT * FROM MANUAL;
```

AMOUNT	PHNO NAME	CSSN PAY_DATE	RECEIPT_ID
13137.29	9083453123 RAHUL	12345 13-AUG-20	87654
12546.34	8919023456 RAVI	64532 24-AUG-20	765421

4. Digital Payments:

```
SQL> SELECT * FROM DIGITAL_PAY;
```

NAME	PHNO	CARDNO	AMOUNT
JOHN	4567890321	1234 4567 8901 3456	34567.8
06-SEP-20	43251	786123	
SOHAIL	4325678901	3456 9876 0956 3241	45673.45
04-SEP-20	23456	123456	

5. Hotels:

```
SQL> SELECT * FROM HOTEL;
```

NAME	CERTIFICATION	HOTEL_ID	RATING
STREET	COUNTRY	PINCODE	
CITY GRAND INDIA	ISO CERTIFICATE	5436721890	4
LAWYERS STREET	INDIA	503003	
RESIDENCY HOTEL FORT	ISO CERTIFICATE	2345678903	3
PODE STREET	INDIA	230532	

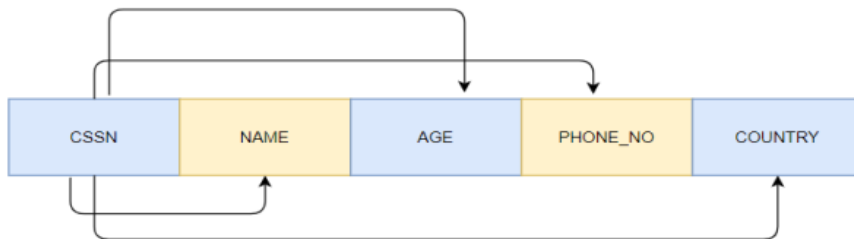
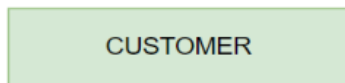
6. Rooms:

```
SQL> SELECT * FROM ROOM;
```

TYPE			SIZE_OF_ROOM			ROOM_NO	CSSN
	DISCOUNT	GST	PRICE	HOTEL_ID	CHECK_IN_	CHECK_OUT	
AC	0	7	SINGLE BED 6500.34	5436721890	12-AUG-20	13-AUG-20	203 12345
AC	10	7	SINGLE BED 5849.97	5436721890	23-AUG-20	24-AUG-20	304 64532
NON-AC	0	7	DOUBLE BED 6700.54	2345678903	04-SEP-20	05-SEP-20	103 43251

TYPE			SIZE_OF_ROOM			ROOM_NO	CSSN
	DISCOUNT	GST	PRICE	HOTEL_ID	CHECK_IN_	CHECK_OUT	
AC	0	7	SINGLE BED 6427.84	2345678903	02-SEP-20	03-SEP-20	506 23456

NORMALIZATION OF THE TABLE



Functional Dependencies:

$CSSN \rightarrow NAME, AGE, PHONE_NO, COUNTRY$

$PHONE_NO \rightarrow CSSN, NAME, AGE, COUNTRY$ (since here phone_no is unique)

$CSSN^+ = \{CSSN, NAME, AGE, PHONE_NO, COUNTRY\}$

$PHONE_NO^+ = \{CSSN, NAME, AGE, PHONE_NO, COUNTRY\}$

Candidate keys = $\{CSSN, PHONE_NO\}$

PRIMARY ATTRIBUTES = $\{CSSN, PHONE_NO\}$

NON-PRIMARY ATTRIBUTES = $\{NAME, AGE, COUNTRY\}$

1NF:

Here all the attributes are single valued. So, it is in 1NF.

2NF:

It is in 1NF and there are no partial dependency. So, it is in 2NF.

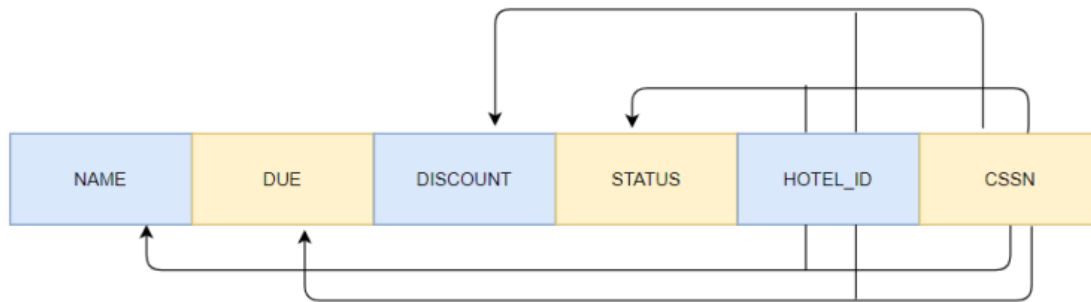
3NF:

It is in 1NF, 2NF and there are no transitive dependency. So, it is in 3NF

BCNF:

Here the LHS of the FD are candidate keys

So, as the table is in BCNF.



Functional Dependencies:

$CSSN \text{ } HOTEL_ID \rightarrow NAME, DUE, DISCOUNT, STATUS$

$CSSN \text{ } HOTEL_ID^+ = \{ NAME \text{ } DUE \text{ } DISCOUNT \text{ } STATUS \text{ } CSSN \text{ } HOTEL_ID \}$

Candidate keys = $\{ CSSN \text{ } HOTEL_ID \}$

PRIMARY ATTRIBUTES = $\{ CSSN, HOTEL_ID \}$

NON-PRIMARY ATTRIBUTES = $\{ NAME, DUE, DISCOUNT, STATUS \}$

1NF:

Here all the attributes are single valued. So, it is in 1NF.

2NF:

It is in 1NF and there is no partial dependency. So, it is in 2NF.

3NF:

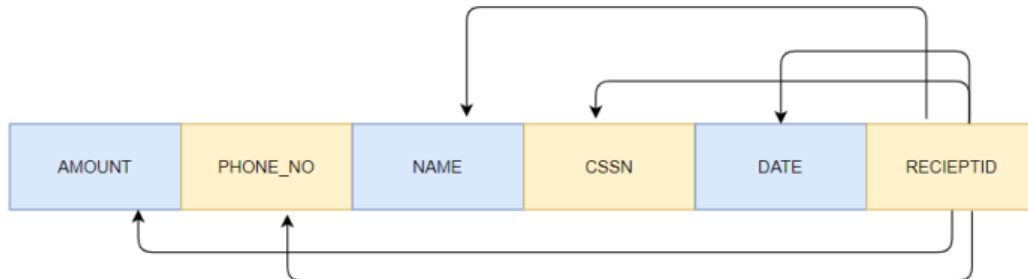
It is in 1NF, 2NF and there is no transitive dependency. So, it is in 3NF

BCNF:

Here the LHS of the FD ($CSSN \text{ } HOTEL_ID$) is candidate keys

So, as the table is in BCNF.

MANUAL



Functional Dependencies:

RECIEPT_ID \rightarrow AMOUNT, PHONE_NO, NAME, CSSN, DATE

RECIEPT_ID⁺ = { AMOUNT PHONE_NO NAME CSSN DATE RECIEPT_ID }

Candidate keys = { RECIEPT_ID }

PRIMARY ATTRIBUTES = { RECIEPT_ID }

NON-PRIMARY ATTRIBUTES = { AMOUNT PHONE_NO NAME CSSN DATE }

1NF:

Here all the attributes are single valued. So, it is in 1NF.

2NF:

It is in 1NF and there is no partial dependency. So, it is in 2NF.

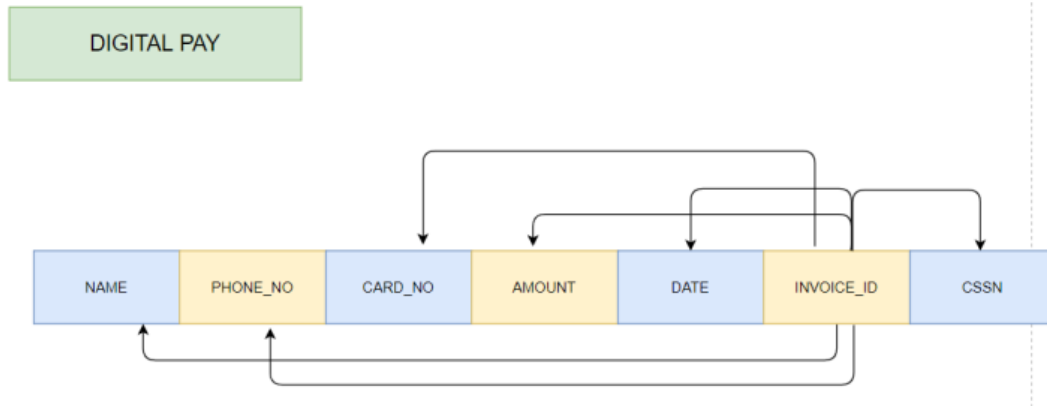
3NF:

It is in 1NF, 2NF and there is no transitive dependency. So, it is in 3NF

BCNF:

Here the LHS of the FD RECIEPT_ID is candidate keys

So, as the table is in BCNF.



Functional Dependencies:

INVOICE_ID → AMOUNT, PHONE_NO, NAME, CSSN, DATE, CARD_NO

INVOICE_ID⁺ = { INVOICE_ID AMOUNT PHONE_NO NAME CSSN DATE CARD_NO }

Candidate keys = { INVOICE_ID }

PRIMARY ATTRIBUTES = { INVOICE_ID }

NON-PRIMARY ATTRIBUTES = { AMOUNT PHONE_NO NAME CSSN DATE CARD_NO }

1NF:

Here all the attributes are single valued. So, it is in 1NF.

2NF:

It is in 1NF and there is no partial dependency. So, it is in 2NF.

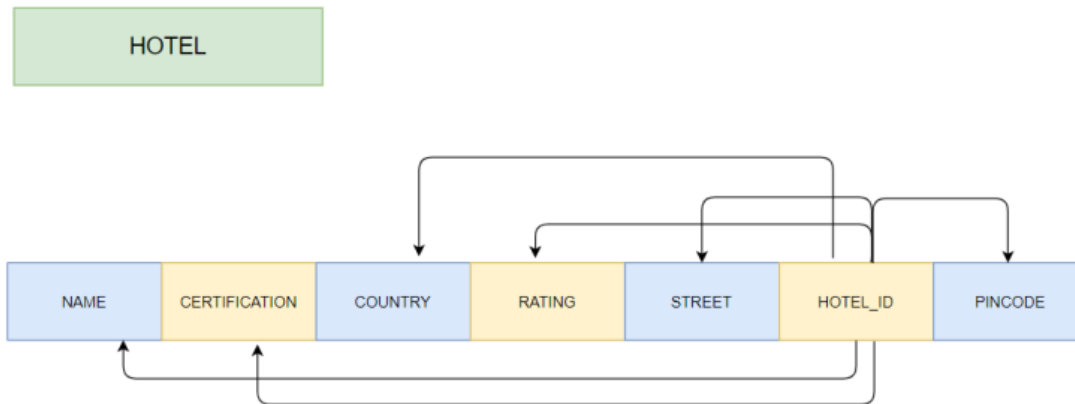
3NF:

It is in 1NF, 2NF and there is no transitive dependency. So, it is in 3NF

BCNF:

Here the LHS of the FD INVOICE_ID is candidate keys

So, as the table is in BCNF.



Functional Dependencies:

$HOTEL_ID \rightarrow NAME, CERTIFICATION, COUNTRY, RATING, STREET, PINCODE$

$HOTEL_ID^+ = \{NAME, CERTIFICATION, COUNTRY, RATING, STREET, HOTEL_ID, PINCODE\}$

Candidate keys = { $HOTEL_ID$ }

PRIMARY ATTRIBUTES = { $HOTEL_ID$ }

NON-PRIMARY ATTRIBUTES = { NAME, CERTIFICATION, COUNTRY, RATING, STREET, PINCODE }

1NF:

Here all the attributes are single valued. So, it is in 1NF.

2NF:

It is in 1NF and there is no partial dependency. So, it is in 2NF.

3NF:

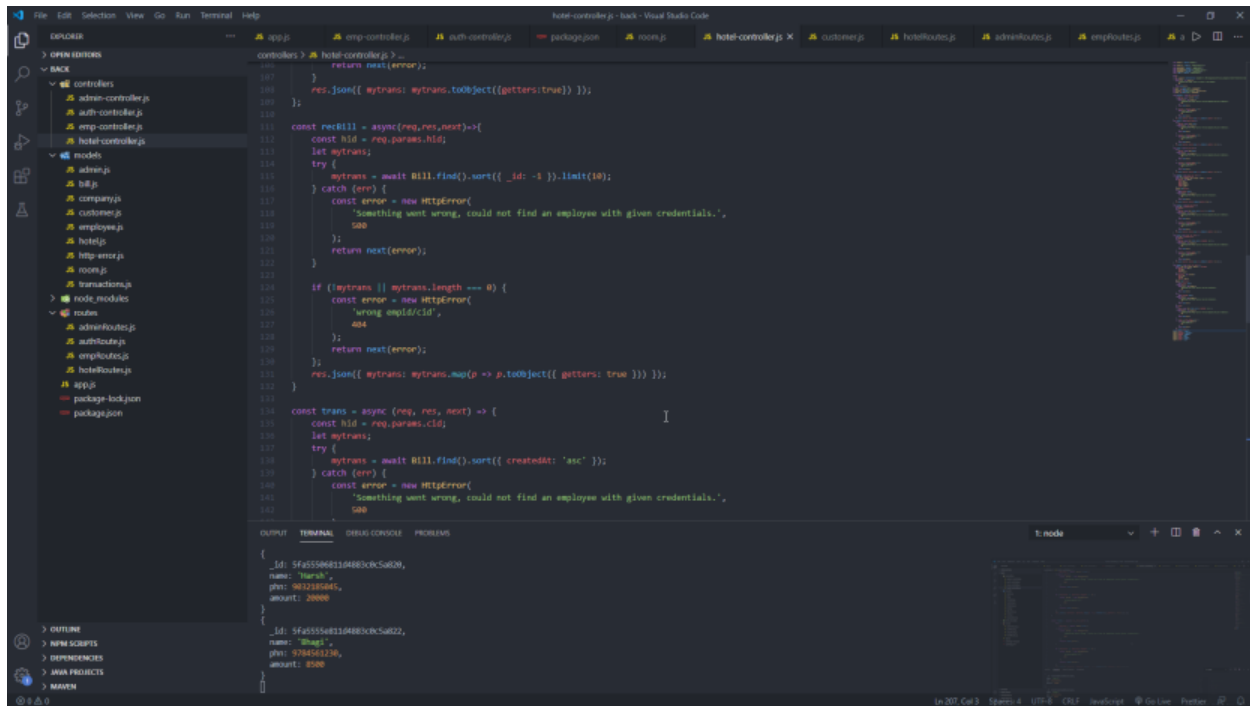
It is in 1NF, 2NF and there is no transitive dependency. So, it is in 3NF

BCNF:

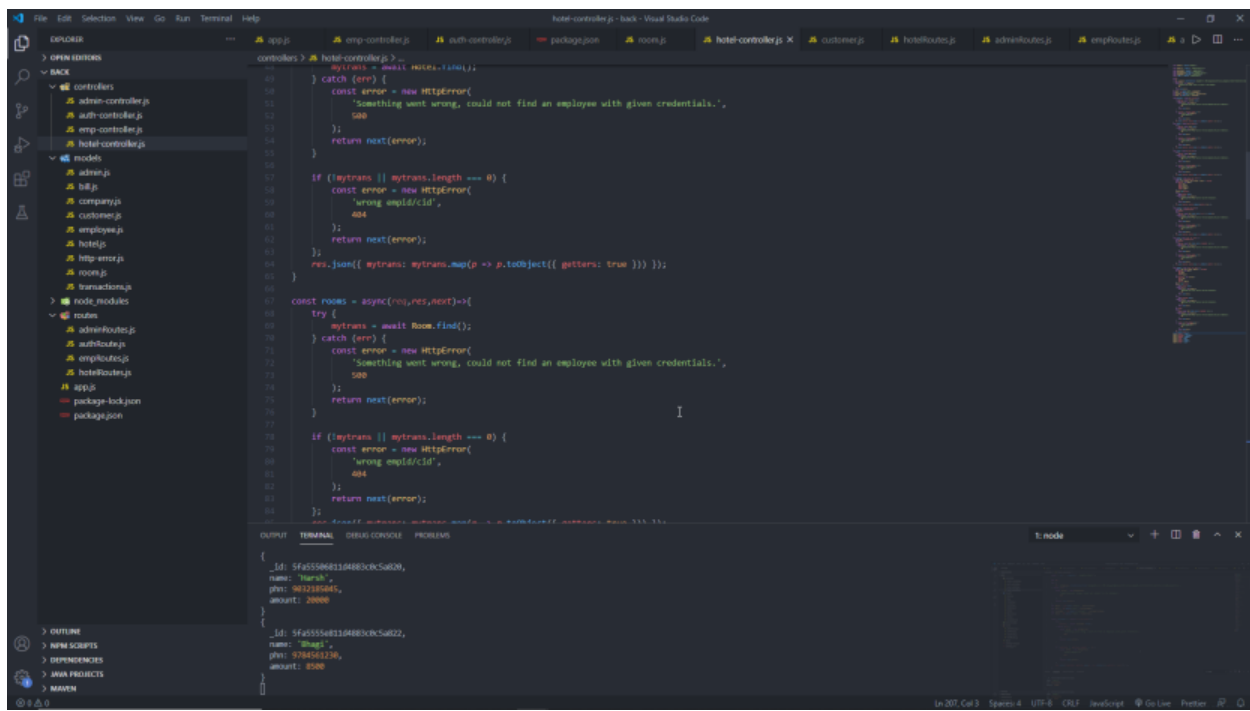
Here the LHS of the FD $HOTEL_ID$ is candidate keys

So, as the table is in BCNF.

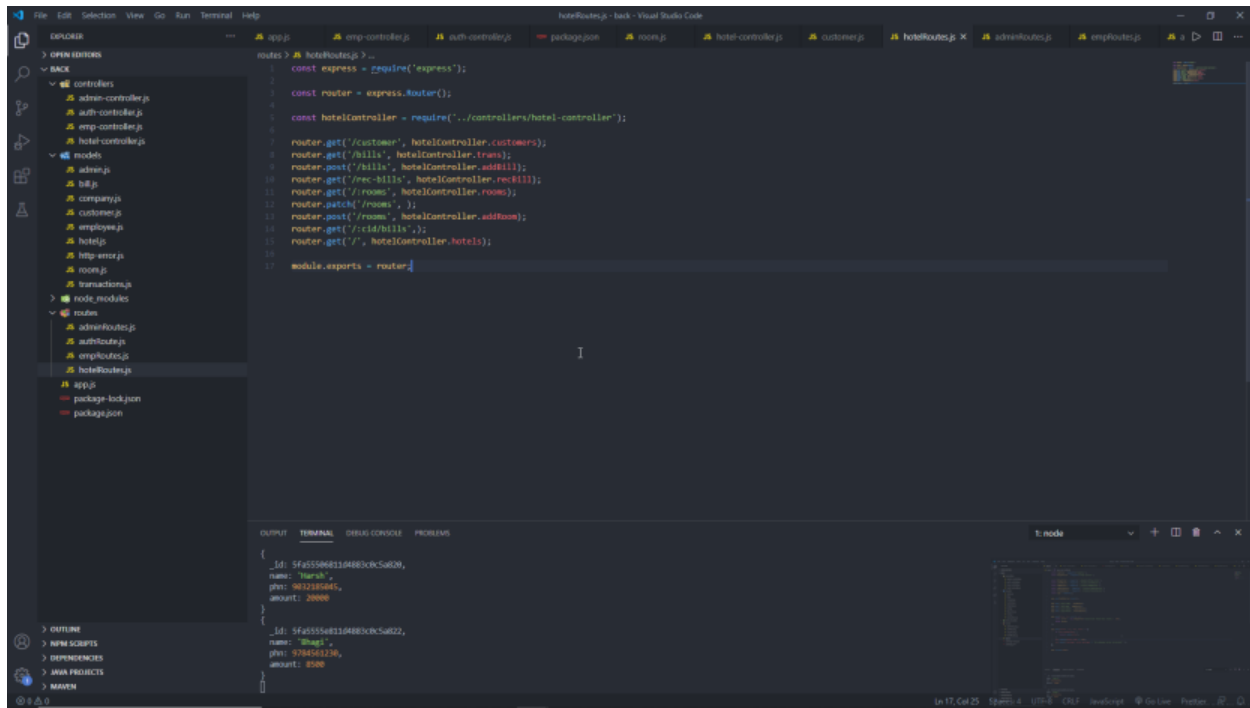
CODE FOR DATABASE AND FRONTEND CONNECTIVITY

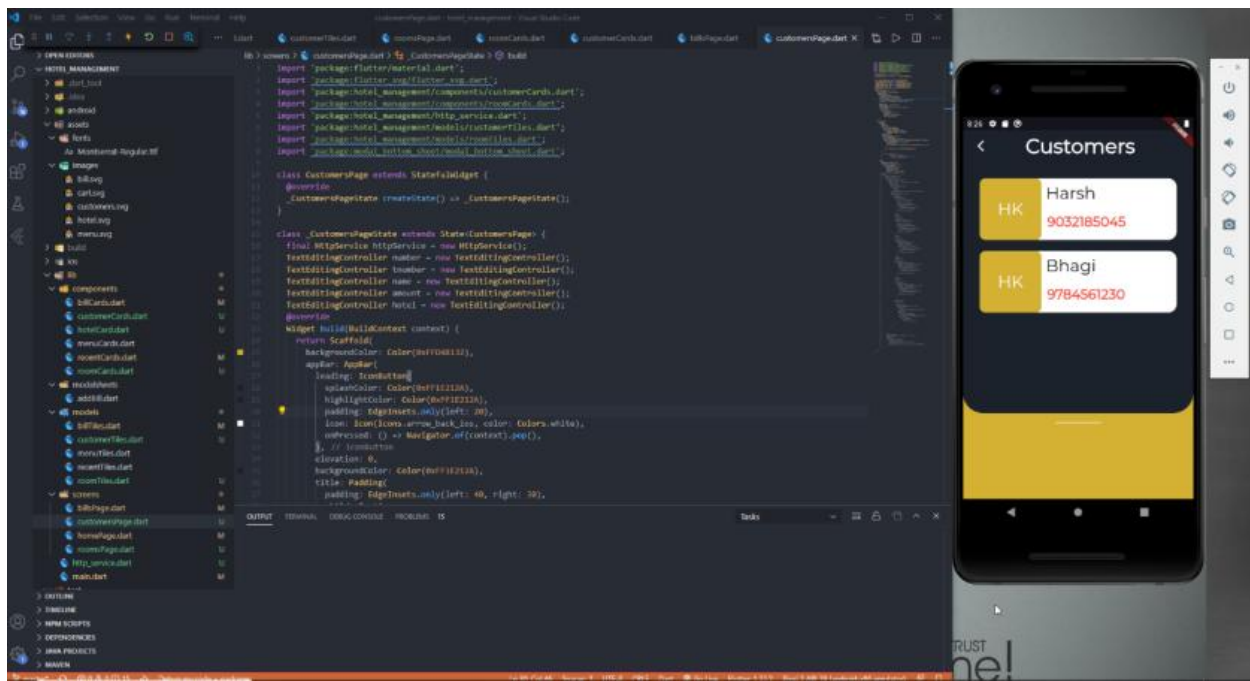


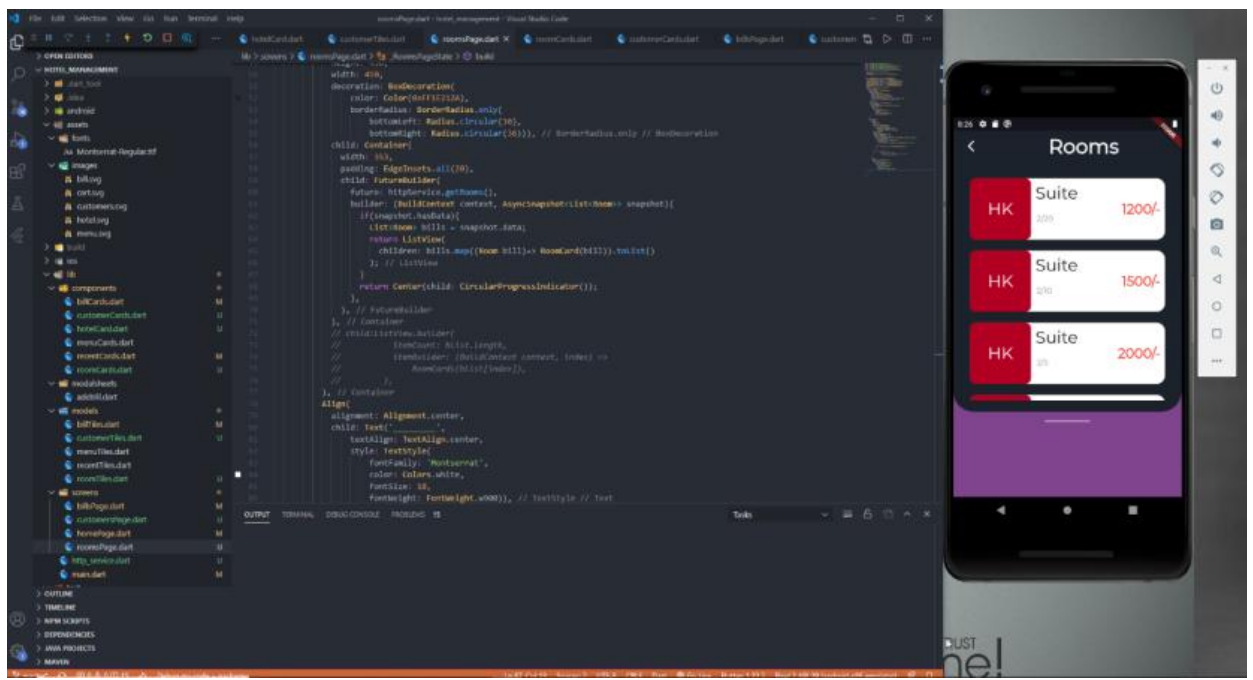
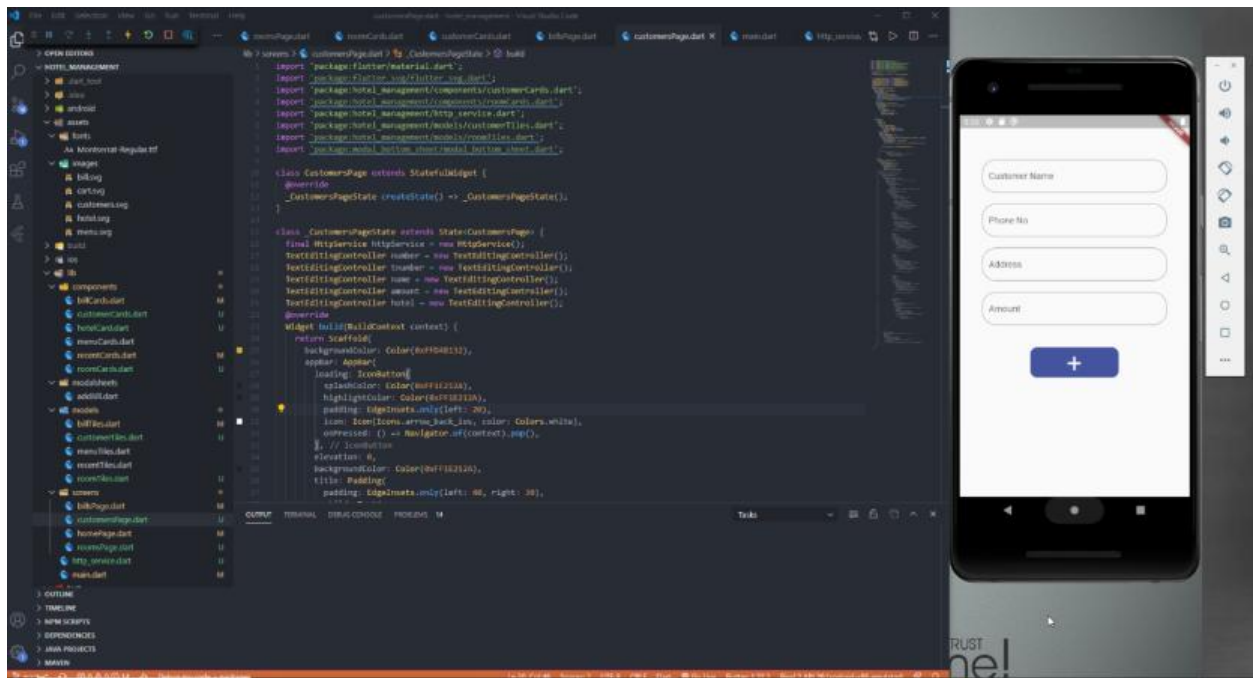
```
107     return next(error);
108   }
109   res.json({ mytrans: mytrans.toObject({ getters: true }) });
110 }
111
112 const recBill = async (req, res, next) => {
113   const hid = req.params.hid;
114   let mytrans;
115   try {
116     mytrans = await Bill.find().sort({ _id: -1 }).limit(10);
117   } catch (err) {
118     const error = new HTTPError(
119       'Something went wrong, could not find an employee with given credentials.',
120       500
121     );
122     return next(error);
123   }
124
125   if (!mytrans || mytrans.length === 0) {
126     const error = new HTTPError(
127       'wrong empId/cid',
128       404
129     );
130     return next(error);
131   }
132   res.json({ mytrans: mytrans.map(p => p.toObject({ getters: true })) });
133 }
134
135 const trans = async (req, res, next) => {
136   const hid = req.params.cid;
137   let mytrans;
138   try {
139     mytrans = await Bill.find().sort({ createdAt: 'asc' });
140   } catch (err) {
141     const error = new HTTPError(
142       'Something went wrong, could not find an employee with given credentials.',
143       500
144     );
145     return next(error);
146   }
147 }
148
149 {
150   _id: '5fa550681104803c5a00',
151   name: 'Narash',
152   phn: '961204045',
153   amount: 20000
154 },
155 {
156   _id: '5fa555a81104803c5a022',
157   name: 'Shagi',
158   phn: '9784561230',
159   amount: 8000
160 }
161 ]
162 }
```

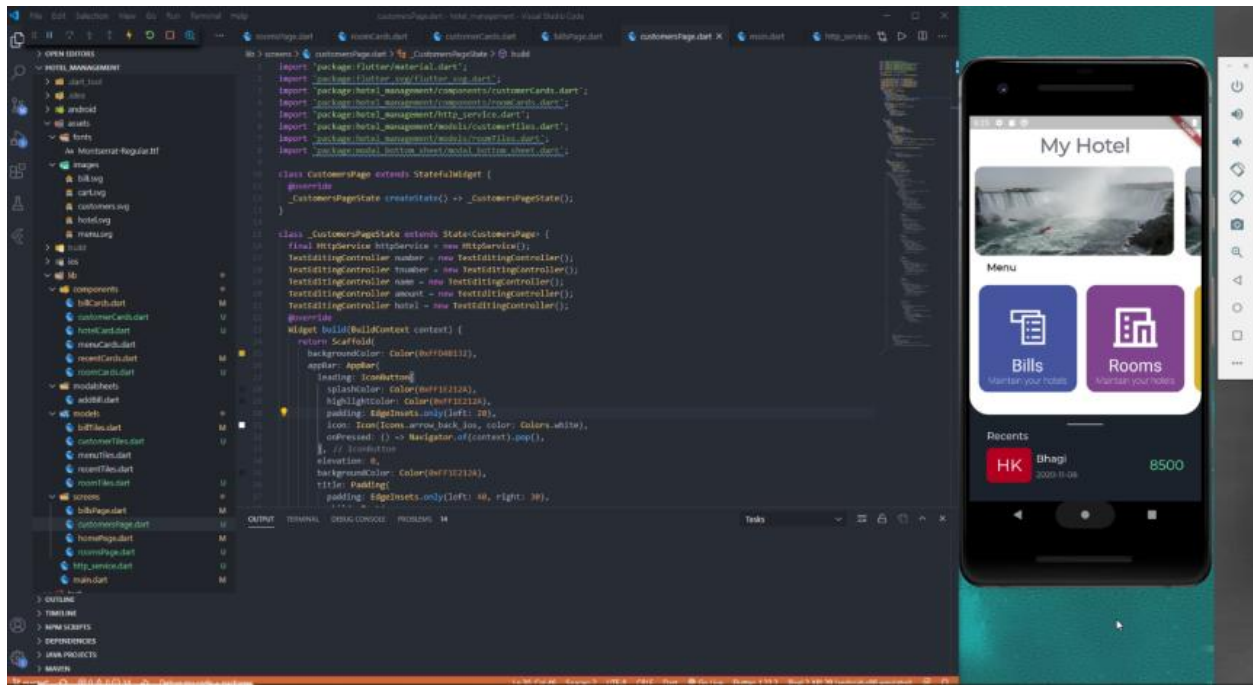
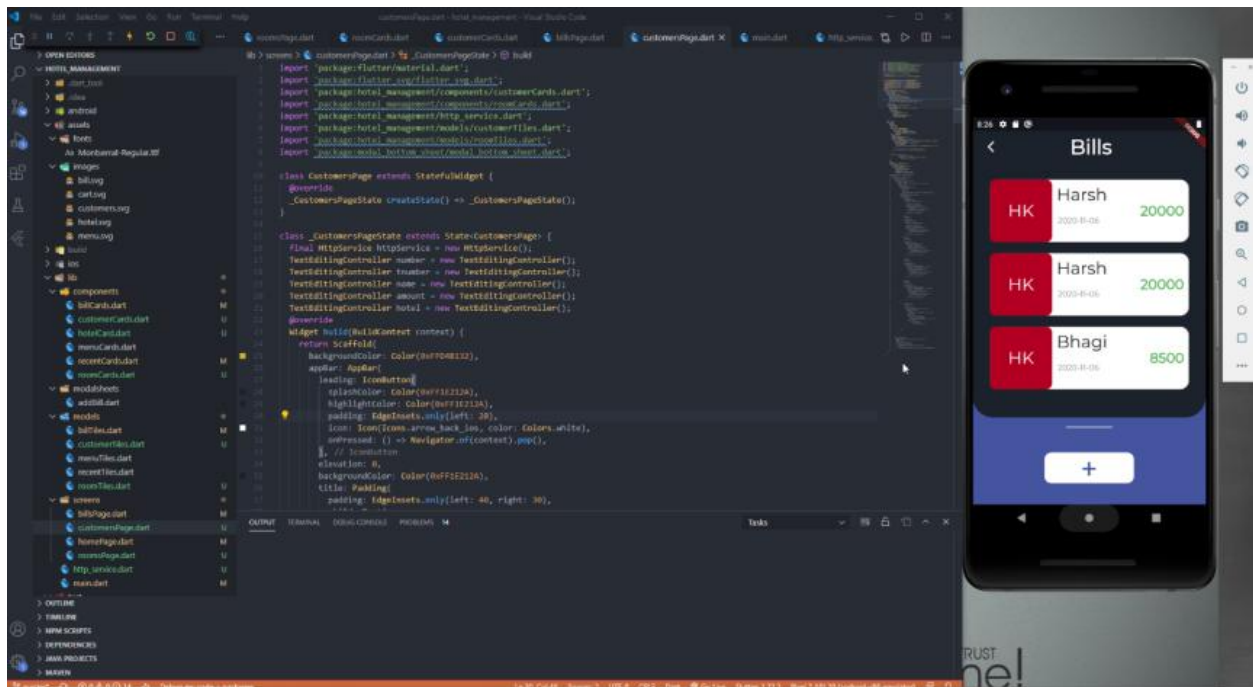


```
107     mytrans = await Room.find();
108   } catch (err) {
109     const error = new HTTPError(
110       'Something went wrong, could not find an employee with given credentials.',
111       500
112     );
113     return next(error);
114   }
115
116   if (!mytrans || mytrans.length === 0) {
117     const error = new HTTPError(
118       'wrong empId/cid',
119       404
120     );
121     return next(error);
122   }
123   res.json({ mytrans: mytrans.map(p => p.toObject({ getters: true })) });
124 }
125
126 const rooms = async (req, res, next) => {
127   try {
128     mytrans = await Room.find();
129   } catch (err) {
130     const error = new HTTPError(
131       'Something went wrong, could not find an employee with given credentials.',
132       500
133     );
134     return next(error);
135   }
136
137   if (!mytrans || mytrans.length === 0) {
138     const error = new HTTPError(
139       'wrong empId/cid',
140       404
141     );
142     return next(error);
143   }
144 }
145
146 {
147   _id: '5fa550681104803c5a00',
148   name: 'Narash',
149   phn: '961204045',
150   amount: 20000
151 },
152 {
153   _id: '5fa555a81104803c5a022',
154   name: 'Shagi',
155   phn: '9784561230',
156   amount: 8000
157 }
158 ]
159 }
```









Local

4 DBS 10 COLLECTIONS

☆ FAVORITE

HOSTS

- cluster0-shard-00-02.3uliq...
- cluster0-shard-00-01.3uliq...
- cluster0-shard-00-00.3uliq...

CLUSTER

Replica Set (atlas-hmxdup-...)

3 Nodes

EDITION

MongoDB 4.2.10 Enterprise

Q Filter your data

- > GARG
- > admin
- ✓ hotel
 - bills
 - customers
 - rooms
- > inventory
- > local

+>_MongoSH Beta

hotel.rooms Documents

DOCUMENTS 4 TOTAL SIZE 407B AVG. SIZE 102B INDEXES 1 TOTAL SIZE 36.0KB AVG. SIZE 36.0KB

Documents Aggregations Schema Explain Plan Indexes Validation

0 FILTER

ADD DATA VIEW

Displaying documents 1 - 4 of 4

REFRESH

```
{
  "_id": ObjectId("5fa5322a591d8f2f28d32751"),
  "size": "2-bedded",
  "amount": 1200,
  "type": "Suite",
  "tnumber": 20,
  "number": 2,
  "__v": 0
}
```

```
{
  "_id": ObjectId("5fa5323d591d8f2f28d32752"),
  "size": "3-bedded",
  "amount": 1500,
  "type": "Suite",
  "tnumber": 10,
  "number": 2,
  "__v": 0
}
```

```
{
  "_id": ObjectId("5fa53248591d8f2f28d32753"),
  "size": "4-bedded",
  "amount": 2000,
  "type": "Suite",
  "tnumber": 5,
  "number": 2,
  "__v": 0
}
```

```
{
  "_id": ObjectId("5fa551f9811d4883c0c5a81d"),
  "size": "2",
  "amount": 2100,
  "type": "Economy",
  "tnumber": 21
}
```

Local

4 DBS 10 COLLECTIONS

☆ FAVORITE

HOSTS

- cluster0-shard-00-02.3uliq...
- cluster0-shard-00-01.3uliq...
- cluster0-shard-00-00.3uliq...

CLUSTER

Replica Set (atlas-hmxdup-...)

3 Nodes

EDITION

MongoDB 4.2.10 Enterprise

Q Filter your data

- > GARG
- > admin
- ✓ hotel
 - bills
 - customers
 - rooms
- > inventory
- > local

+>_MongoSH Beta

hotel.customers Documents

DOCUMENTS 2 TOTAL SIZE 186B AVG. SIZE 93B INDEXES 1 TOTAL SIZE 36.0KB AVG. SIZE 36.0KB

Documents Aggregations Schema Explain Plan Indexes Validation

0 FILTER

ADD DATA VIEW

Displaying documents 1 - 2 of 2

REFRESH

```
{
  "_id": ObjectId("5fa55506811d4883c0c5a821"),
  "name": "Harsh",
  "phn": 9832185045,
  "address": "Vellore, Tamil Nadu",
  "__v": 0
}
```

```
{
  "_id": ObjectId("5fa5555e811d4883c0c5a823"),
  "name": "bhagi",
  "phn": 9794561230,
  "address": "Vellore, Tamil Nadu",
  "__v": 0
}
```


Local

4 DBS10 COLLECTIONS

☆ FAVORITE

HOSTS

cluster0-shard-00-02.3uliq...

cluster0-shard-00-01.3uliq...

cluster0-shard-00-00.3uliq...

CLUSTER

Replica Set (atlas-hmxdup-...

3 Nodes

EDITION

MongoDB 4.2.10 Enterprise

Q Filter your data

> GARG

> admin

▼ hotel

bills

customers

rooms

> inventory

> local

+

> _MongoSH Beta

hotel.billsDocuments

hotel.bills

DOCUMENTS3TOTAL SIZE330BTOTAL SIZE36.0KB

AVG. SIZE110B

INDEXES1TOTAL SIZE36.0KB

AVG. SIZE36.0KB

DocumentsAggregationsSchemaExplain PlanIndexesValidation

0 FILTER

OPTIONS

FIND

RESET

...

ADD DATA

VIEW

Displaying documents 1 - 3 of 3

REFRESH

>

```
_id: ObjectId("5fa5549a81104883c0c5a81e")
name: "Harsh"
phn: 9032185045
amount: 20000
createdAt: 2020-11-06T13:50:18.417+00:00
updatedAt: 2020-11-06T13:50:18.417+00:00
__v: 0
```

>

```
_id: ObjectId("5fa5550681104883c0c5a820")
name: "harsh"
phn: 9032185045
amount: 20000
createdAt: 2020-11-06T13:52:06.460+00:00
updatedAt: 2020-11-06T13:52:06.460+00:00
__v: 0
```

>

```
_id: ObjectId("5fa5555e81104883c0c5a822")
name: "Bhagi"
phn: 9784561230
amount: 8500
createdAt: 2020-11-06T13:53:34.768+00:00
updatedAt: 2020-11-06T13:53:34.768+00:00
__v: 0
```

REFERENCES

During the development of the project, we have used many resources and for that we are grateful to all the people concerned.

Given below are the names of some websites, which we have consulted during the development and documentation of the project.

Websites:

- <https://www.google.com/>
- <https://www.w3schools.com/>
- <https://stackoverflow.com/>
- <https://www.geeksforgeeks.org/>