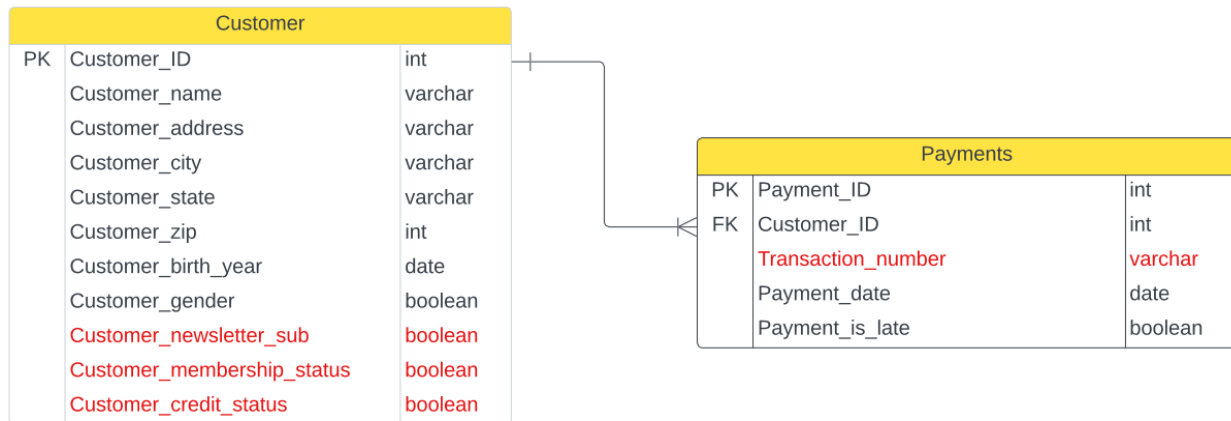


NoSQL Assignment

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Q1. Design an ERD that represents the entities and relationships of the database that contains the data from those two files. (Note: some fields in the txt file have “no-explanation”. What do you think they stand for? Give them “meaning” in your ERD...)



This is an ERD diagram representing the entities and relationship of our two files, one as customer and the other as payments. The attributes highlighted in red font are the fields that had no explanation so we have given them a name and meaning that can be relatable to the database. We have customer_id as primary key for customer table and payment_id for payment table as primary key. Both tables have been connected through the customer_id so customer_id becomes a foreign key in payments table. We have given one to many relationship between customer and payments because one customer can have multiple payments.

Q2. Store the records in a key-value format in Redis.

The following is the syntax to record the data in key-value format in Redis. I have attached along screen shots for redis recording for first 2 customers and payments to show how it is done and what is the output message. The syntax for all customers and payments are written below that can be just put into Redis and executed.

Customer data

```
SET customer:171 '{"Customer_name": "Madelyn Hensley", "Customer_address": "10075 Thierer Plaza", "Customer_city": "New York", "Customer_state": "New York", "Customer_zip": 81377,
```

"Customer_birth_year": 1976, "Customer_gender": "M", "Customer_newsletter_sub": true,
"Customer_membership_status": false, "Customer_credit_status": false}'

SET customer:172 '{"Customer_name": "Lonny Foster", "Customer_address": "23901 Park Meadow Dr",
"Customer_city": "Austin", "Customer_state": "Texas", "Customer_zip": 13498, "Customer_birth_year":
1981, "Customer_gender": "F", "Customer_newsletter_sub": true, "Customer_membership_status":
false, "Customer_credit_status": false}'

SET customer:173 '{"Customer_name": "Karina Livingston", "Customer_address": "95 Anderson Park",
"Customer_city": "Chattanooga", "Customer_state": "Tennessee", "Customer_zip": 94518,
"Customer_birth_year": 1977, "Customer_gender": "F", "Customer_newsletter_sub": true,
"Customer_membership_status": true, "Customer_credit_status": true}'

SET customer:174 '{"Customer_name": "Avery McCormick", "Customer_address": "09992 Sunfield
Parkway", "Customer_city": "Chicago", "Customer_state": "Illinois", "Customer_zip": 38300,
"Customer_birth_year": 1992, "Customer_gender": "F", "Customer_newsletter_sub": true,
"Customer_membership_status": false, "Customer_credit_status": false}'

SET customer:175 '{"Customer_name": "Peter King", "Customer_address": "0486 Dryden Road",
"Customer_city": "Chicago", "Customer_state": "Illinois", "Customer_zip": 21012,
"Customer_birth_year": 1991, "Customer_gender": "M", "Customer_newsletter_sub": true,
"Customer_membership_status": false, "Customer_credit_status": true}'

SET customer:176 '{"Customer_name": "Bret Ibarra", "Customer_address": "14 Transport Place",
"Customer_city": "San Diego", "Customer_state": "California", "Customer_zip": 12865,
"Customer_birth_year": 1984, "Customer_gender": "M", "Customer_newsletter_sub": true,
"Customer_membership_status": false, "Customer_credit_status": false}'

SET customer:177 '{"Customer_name": "Leonardo Wheeler", "Customer_address": "806 Corry Crossing",
"Customer_city": "New York", "Customer_state": "New York", "Customer_zip": 44464,
"Customer_birth_year": 1972, "Customer_gender": "F", "Customer_newsletter_sub": false,
"Customer_membership_status": false, "Customer_credit_status": true}'

SET customer:178 '{"Customer_name": "Bennett Noble", "Customer_address": "8 South Terrace",
"Customer_city": "Hixson", "Customer_state": "Tennessee", "Customer_zip": 52890,
"Customer_birth_year": 1989, "Customer_gender": "F", "Customer_newsletter_sub": false,
"Customer_membership_status": false, "Customer_credit_status": true}'

SET customer:179 '{"Customer_name": "Marcia Mathews", "Customer_address": "0380 Knutson Road", "Customer_city": "Dallas", "Customer_state": "Texas", "Customer_zip": 80477, "Customer_birth_year": 1967, "Customer_gender": "F", "Customer_newsletter_sub": true, "Customer_membership_status": false, "Customer_credit_status": true}'

SET customer:180 '{"Customer_name": "Avis Kramer", "Customer_address": "49624 Hanover Junction", "Customer_city": "New York", "Customer_state": "New York", "Customer_zip": 62542, "Customer_birth_year": 1965, "Customer_gender": "M", "Customer_newsletter_sub": true, "Customer_membership_status": false, "Customer_credit_status": true}'

SET customer:181 '{"Customer_name": "Lynnette Tate", "Customer_address": "30741 Paget Court", "Customer_city": "New York", "Customer_state": "New York", "Customer_zip": 34886, "Customer_birth_year": 1987, "Customer_gender": "M", "Customer_newsletter_sub": true, "Customer_membership_status": false, "Customer_credit_status": true}'

SET customer:182 '{"Customer_name": "Lakisha Estrada", "Customer_address": "50 Dahle Crossing", "Customer_city": "Dallas", "Customer_state": "Texas", "Customer_zip": 16042, "Customer_birth_year": 1991, "Customer_gender": "F", "Customer_newsletter_sub": false, "Customer_membership_status": true, "Customer_credit_status": false}'

SET customer:183 '{"Customer_name": "Bill Silva", "Customer_address": "4 McBride Crossing", "Customer_city": "Detroit", "Customer_state": "Michigan", "Customer_zip": 15871, "Customer_birth_year": 1968, "Customer_gender": "M", "Customer_newsletter_sub": true, "Customer_membership_status": true, "Customer_credit_status": true}'

Payment data

SET payment:1 '{"Customer_id": 181, "Transaction_number": "146268743-8", "Payment_date": "23-8-2020", "Payment_is_late": true}'

SET payment:2 '{"Customer_id": 172, "Transaction_number": "396589804-7", "Payment_date": "28-9-2020", "Payment_is_late": false}'

SET payment:3 '{"Customer_id": 183, "Transaction_number": "553753031-8", "Payment_date": "25-9-2020", "Payment_is_late": false}'

SET payment:4 '{"Customer_id": 183, "Transaction_number": "559786593-4", "Payment_date": "13-12-2018", "Payment_is_late": true}'

SET payment:5 '{"Customer_id": 175, "Transaction_number": "108659198-9", "Payment_date": "13-9-2016", "Payment_is_late": true}'

SET payment:6 '{"Customer_id": 176, "Transaction_number": "360007723-2", "Payment_date": "27-9-2016", "Payment_is_late": false}'

SET payment:7 '{"Customer_id": 177, "Transaction_number": "238309554-X", "Payment_date": "28-11-2014", "Payment_is_late": false}'

SET payment:8 '{"Customer_id": 178, "Transaction_number": "694690715-8", "Payment_date": "31-5-2014", "Payment_is_late": true}'

SET payment:9 '{"Customer_id": 179, "Transaction_number": "318241713-5", "Payment_date": "15-7-2016", "Payment_is_late": true}'

SET payment:10 '{"Customer_id": 180, "Transaction_number": "84360172-2", "Payment_date": "07-06-2017", "Payment_is_late": false}'

SET payment:11 '{"Customer_id": 181, "Transaction_number": "807633856-8", "Payment_date": "07-05-2018", "Payment_is_late": false}'

SET payment:12 '{"Customer_id": 182, "Transaction_number": "845886260-4", "Payment_date": "23-4-2014", "Payment_is_late": false}'

SET payment:13 '{"Customer_id": 183, "Transaction_number": "270161074-X", "Payment_date": "19-7-2016", "Payment_is_late": true}'

SET payment:14 '{"Customer_id": 171, "Transaction_number": "887428332-0", "Payment_date": "07-04-2020", "Payment_is_late": false}'

SET payment:15 '{"Customer_id": 172, "Transaction_number": "401129380-4", "Payment_date": "23-8-2015", "Payment_is_late": true}'

SET payment:16 '{"Customer_id": 173, "Transaction_number": "277406266-7", "Payment_date": "27-12-2019", "Payment_is_late": false}'

SET payment:17 '{"Customer_id": 174, "Transaction_number": "851112155-2", "Payment_date": "12-04-2019", "Payment_is_late": true}'



```
redis> SET customer:171 '{"Customer_name": "Madelyn  
Hensley", "Customer_address": "10075 Thierer Plaza",  
"Customer_city": "New York", "Customer_state": "New  
York", "Customer_zip": 81377, "Customer_birth_year":  
1976, "Customer_gender": "M", "Customer_newsletter_sub":  
true, "Customer_membership_status": false,  
"Customer_credit_status": false}'  
"OK"  
redis> SET payment:14 '{"Customer_id": 171,  
"Transaction_number": "887428332-0", "Payment_date":  
"07-04-2020", "Payment_is_late": false}'  
"OK"  
redis> |
```



```
redis> SET customer:172 '{"Customer_name": "Lonny  
Foster", "Customer_address": "23901 Park Meadow Dr",  
"Customer_city": "Austin", "Customer_state": "Texas",  
"Customer_zip": 13498, "Customer_birth_year": 1981,  
"Customer_gender": "F", "Customer_newsletter_sub": true,  
"Customer_membership_status": false,  
"Customer_credit_status": false}'  
"OK"  
redis> SET payment:2 '{"Customer_id": 172,  
"Transaction_number": "396589804-7", "Payment_date":  
"28-9-2020", "Payment_is_late": false}'  
"OK"
```

```
redis> SET payment:15 '{"Customer_id": 172,  
"Transaction_number": "401129380-4", "Payment_date":  
"23-8-2015", "Payment_is_late": true}'  
"OK"  
redis>
```

Q3. Write the first two records into a JSON document and store in MongoDB.

We have created a new database in MongoDB compass with the name of Customer_DBMS and given under it two collections named as customer and payments. Below are attached the screen shots for this step.

The screenshot shows the MongoDB Compass interface for the **Customer_DBMS** database. The left sidebar shows the database structure with **Customer** selected. The main panel displays the **Customer_DBMS.Customer** collection with 13 documents and 1 index. The first document is shown in the main view:

```
{
  "_id": ObjectId("6563fc026968297823cc10b4"),
  "Customer_ID": 171,
  "Customer_name": "Madelyn Hensley",
  "Customer_address": "10075 Thierer Plaza",
  "Customer_city": "New York",
  "Customer_state": "New York",
  "Customer_zip": 81377,
  "Customer_birth_year": 1976,
  "Customer_gender": "M",
  "Customer_newsletter_sub": true,
  "Customer_membership_status": false,
  "Customer_credit_status": false
}
```

The screenshot shows the MongoDB Compass interface for the **Customer_DBMS** database. The left sidebar shows the database structure with **Payment** selected. The main panel displays the **Customer_DBMS.Payment** collection with 17 documents and 1 index. The first two documents are shown in the main view:

```
{
  "_id": ObjectId("6563fc146968297823cc10c2"),
  "Payment_ID": 1,
  "Customer_ID": 181,
  "Transaction_number": "146268743-8",
  "Payment_date": "23-8-2020",
  "Payment_is_late": true
}
```

```
{
  "_id": ObjectId("6563fc146968297823cc10c3"),
  "Payment_ID": 2,
  "Customer_ID": 172,
  "Transaction_number": "396589804-7",
  "Payment_date": "28-9-2020",
  "Payment_is_late": false
}
```

Customer

Now we will record the first 2 records of customer in JSON format in mongosh MongoDB through the code given below. Screenshots have also been attached to show this step.

```
use Customer_DBMS
```

```
db.Customer.insertMany([
```

```
{
```

```
  Customer_ID: 171,
```

```
  Customer_name: 'Madelyn Hensley',
```

```
  Customer_address: '10075 Thierer Plaza',
```

```
  Customer_city: 'New York',
```

```
  Customer_state: 'New York',
```

```
  Customer_zip: 81377,
```

```
  Customer_birth_year: 1976,
```

```
  Customer_gender: 'M',
```

```
  Customer_newsletter_sub: true,
```

```
  Customer_membership_status: false,
```

```
  Customer_credit_status: false
```

```
},
```

```
{
```

```
  Customer_ID: 172,
```

```
  Customer_name: 'Lonny Foster',
```

```
  Customer_address: '23901 Park Meadow Dr',
```

```
  Customer_city: 'Austin',
```

```
  Customer_state: 'Texas',
```

```
  Customer_zip: 13498,
```

```
  Customer_birth_year: 1981,
```

```
  Customer_gender: 'F',
```

```
  Customer_newsletter_sub: true,
```

```
Customer_membership_status: false,  
Customer_credit_status: false  
}  
]);
```

```
>_MONGOSH  
  
> use Customer_DBMS  
< switched to db Customer_DBMS  
> db.Customer.insertMany([  
  {  
    Customer_ID: 171,  
    Customer_name: 'Madelyn Hensley',  
    Customer_address: '10075 Thierer Plaza',  
    Customer_city: 'New York',  
    Customer_state: 'New York',  
    Customer_zip: 81377,  
    Customer_birth_year: 1976,  
    Customer_gender: 'M',  
    Customer_newsletter_sub: true,  
    Customer_membership_status: false,  
    Customer_credit_status: false  
  },
```

```
>_MONGOSH  
  
  {  
    Customer_ID: 172,  
    Customer_name: 'Lonny Foster',  
    Customer_address: '23901 Park Meadow Dr',  
    Customer_city: 'Austin',  
    Customer_state: 'Texas',  
    Customer_zip: 13498,  
    Customer_birth_year: 1981,  
    Customer_gender: 'F',  
    Customer_newsletter_sub: true,  
    Customer_membership_status: false,  
    Customer_credit_status: false  
  }  
]);
```



```
< {  
  acknowledged: true,  
  insertedIds: {  
    '0': ObjectId("6563fe4c55f0eb89de87c5ba"),  
    '1': ObjectId("6563fe4c55f0eb89de87c5bb")  
  }  
}
```

Payment

Now we will record the first 2 records of payment in JSON format in mongosh MongoDB through the code given below. Screenshots have also been attached to show this step.

```
use Customer_DBMS
```

```
db.Payment.insertMany([
```

```
{
```

```
  Payment_id: 1,
```

```
  Customer_id: 181,
```

```
  Transaction_number: '146268743-8',
```

```
  Payment_date: '23-8-2020',
```

```
  Payment_is_late: true
```

```
},
```

```
{
```

```
  Payment_id: 2,
```

```
  Customer_id: 172,
```

```
  Transaction_number: '396589804-7',
```

```
  Payment_date: '28-9-2020',
```

```
  Payment_is_late: false
```

```
}
```

```
]);
```

>_MONGOSH

```
> db.Payment.insertMany([
  {
    Payment_id: 1,
    Customer_id: 181,
    Transaction_number: '146268743-8',
    Payment_date: '23-8-2020',
    Payment_is_late: true
  },
  {
    Payment_id: 2,
    Customer_id: 172,
    Transaction_number: '396589804-7',
    Payment_date: '28-9-2020',
    Payment_is_late: false
  }
]);
```

>_MONGOSH

```
,,
{
  Payment_id: 2,
  Customer_id: 172,
  Transaction_number: '396589804-7',
  Payment_date: '28-9-2020',
  Payment_is_late: false
}
]);

< {
  acknowledged: true,
  insertedIds: {
    '0': ObjectId("6563ff6055f0eb89de87c5bc"),
    '1': ObjectId("6563ff6055f0eb89de87c5bd")
  }
}
```

Q4. Delete the collection(s) from point 3, rewrite them into an XML document, and store again in MongoDB.

Now we have deleted the old collections and database and now have made a new database with the name of NewDB and have added two collections, one with the name of customer and the other with the name of payment. Below is attached screenshot for this step.

The image displays two screenshots of the MongoDB Compass web interface, showing the structure and data of two collections in a new database named 'NewDB'.

Top Screenshot: NewDB.Customer

- Database:** NewDB
- Collection:** Customer
- Documents Count:** 13
- Indexes Count:** 1
- Document Fields:**
 - _id: ObjectId('65665e04378b1fb20156d5c2')
 - Customer_ID: 171
 - Customer_name: "Madelyn Hensley"
 - Customer_address: "10075 Thierer Plaza"
 - Customer_city: "New York"
 - Customer_state: "New York"
 - Customer_zip: 81377
 - Customer_birth_year: 1976
 - Customer_gender: "M"
 - Customer_newsletter_sub: true
 - Customer_membership_status: false
 - Customer_credit_status: false

Bottom Screenshot: NewDB.Payment

- Database:** NewDB
- Collection:** Payment
- Documents Count:** 17
- Indexes Count:** 1
- Document Fields (Sample 1):**
 - _id: ObjectId('65665e52378b1fb20156d5e3')
 - Payment_ID: 1
 - Customer_ID: 181
 - Transaction_number: "146268743-8"
 - Payment_date: "23-8-2020"
 - Payment_is_late: true
- Document Fields (Sample 2):**
 - _id: ObjectId('65665e52378b1fb20156d5e4')
 - Payment_ID: 2
 - Customer_ID: 172
 - Transaction_number: "396589804-7"
 - Payment_date: "28-9-2020"
 - Payment_is_late: false

Customer

Now we will record the first 2 records of customer in XML format in mongosh MongoDB through the code given below. We must keep in mind that XML is not supported by MongoDB so we must come up with a way where we can save the records in MongoDB but use the code in XML format. For that we have assigned variable names to every data and attributes and this way we can successfully record the data in MongoDB through XML format. Screenshots have also been attached to show this step.

use NewDB

```
db.Customer.insertMany ([
```

```
{
```

```
  "ID": "<Customer_ID>171</Customer_ID>",
```

```
  "Name": "<Customer_name>Madelyn Hensley</Customer_name>",
```

```
  "Address": "<Customer_address>10075 Thierer Plaza</Customer_address>",
```

```
  "City": "<Customer_city>New York</Customer_city>",
```

```
  "State": "<Customer_state>New York</Customer_state>",
```

```
  "Zipcode": "<Customer_zip>81377</Customer_zip>",
```

```
  "Birthyear": "<Customer_birth_year>1976</Customer_birth_year>",
```

```
  "Gender": "<Customer_gender>M</Customer_gender>",
```

```
  "Subscription": "<Customer_newsletter_sub>TRUE</Customer_newsletter_sub>",
```

```
  "Membership": "<Customer_membership_status>FALSE</Customer_membership_status>",
```

```
  "Creditstatus": "<Customer_credit_status>FALSE</Customer_credit_status>"
```

```
},
```

```
{
```

```
  "ID": "<Customer_ID>172</Customer_ID>",
```

```
  "Name": "<Customer_name>Lonny Foster</Customer_name>",
```

```
  "Address": "<Customer_address>23901 Park Meadow Dr</Customer_address>",
```

```
  "City": "<Customer_city>Austin</Customer_city>",
```

```
  "State": "<Customer_state>Texas</Customer_state>",
```

```
  "Zipcode": "<Customer_zip>13498</Customer_zip>",
```

```
  "Birthyear": "<Customer_birth_year>1981</Customer_birth_year>",
```

```

"Gender": "<Customer_gender>F</Customer_gender>",
"Subscription": "<Customer_newsletter_sub>TRUE</Customer_newsletter_sub>",
"Membership": "<Customer_membership_status>FALSE</Customer_membership_status>",
"Creditstatus": "<Customer_credit_status>FALSE</Customer_credit_status>"
}
])

```

```

> use NewDB
< switched to db NewDB
> db.Customer.insertMany ([
  {
    "ID": "<Customer_ID>171</Customer_ID>",
    "Name": "<Customer_name>Madelyn Hensley</Customer_name>",
    "Address": "<Customer_address>10075 Thierer Plaza</Customer_address>",
    "City": "<Customer_city>New York</Customer_city>",
    "State": "<Customer_state>New York</Customer_state>",
    "Zipcode": "<Customer_zip>81377</Customer_zip>",
    "Birthyear": "<Customer_birth_year>1976</Customer_birth_year>",
    "Gender": "<Customer_gender>M</Customer_gender>",
    "Subscription": "<Customer_newsletter_sub>TRUE</Customer_newsletter_sub>",
    "Membership": "<Customer_membership_status>FALSE</Customer_membership_status>",
    "Creditstatus": "<Customer_credit_status>FALSE</Customer_credit_status>"
  },

```

```

>_MONGOSH
{
  "ID": "<Customer_ID>172</Customer_ID>",
  "Name": "<Customer_name>Lonny Foster</Customer_name>",
  "Address": "<Customer_address>23901 Park Meadow Dr</Customer_address>",
  "City": "<Customer_city>Austin</Customer_city>",
  "State": "<Customer_state>Texas</Customer_state>",
  "Zipcode": "<Customer_zip>13498</Customer_zip>",
  "Birthyear": "<Customer_birth_year>1981</Customer_birth_year>",
  "Gender": "<Customer_gender>F</Customer_gender>",
  "Subscription": "<Customer_newsletter_sub>TRUE</Customer_newsletter_sub>",
  "Membership": "<Customer_membership_status>FALSE</Customer_membership_status>",
  "Creditstatus": "<Customer_credit_status>FALSE</Customer_credit_status>"
}
])

```

```
< {
  acknowledged: true,
  insertedIds: {
    '0': ObjectId("65666794307139061cf1d99d"),
    '1': ObjectId("65666794307139061cf1d99e")
  }
}
```

Payment

Now we will record the first 2 records of payment data in XML format in mongosh MongoDB through the code given below. Same way as before we must keep in mind that XML is not supported by MongoDB so we must come up with a way where we can save the records in MongoDB but use the code in XML format. For that we have assigned variable names to every data and attributes and this way we can successfully record the data in MongoDB through XML format. Screenshots have also been attached to show this step.

use NewDB

```
db.Payment.insertMany ([
{
  "PaymentID": "<Payment_id>1</Payment_id>",
  "CustomerID": "<Customer_id>181</Customer_id>",
  "Transaction#": "<Transaction_number>146268743-8</Transaction_number>",
  "PaymentDate": "<Payment_date>23-8-2020</Payment_date>",
  "Latepayment": "<Payment_is_late>TRUE</Payment_is_late>"
},
{
  "PaymentID": "<Payment_id>2</Payment_id>",
  "CustomerID": "<Customer_id>172</Customer_id>",
  "Transaction#": "<Transaction_number>396589804-7</Transaction_number>",
  "PaymentDate": "<Payment_date>28-9-2020</Payment_date>",
  "Latepayment": "<Payment_is_late>FALSE</Payment_is_late>"
}
])
```

```

>_MONGOSH
> db.Payment.insertMany ([
  {
    "PaymentID": "<Payment_id>1</Payment_id>",
    "CustomerID": "<Customer_id>181</Customer_id>",
    "Transaction#": "<Transaction_number>146268743-8</Transaction_number>",
    "PaymentDate": "<Payment_date>23-8-2020</Payment_date>",
    "Latepayment": "<Payment_is_late>TRUE</Payment_is_late>"
  },
  {
    "PaymentID": "<Payment_id>2</Payment_id>",
    "CustomerID": "<Customer_id>172</Customer_id>",
    "Transaction#": "<Transaction_number>396589804-7</Transaction_number>",
    "PaymentDate": "<Payment_date>28-9-2020</Payment_date>",
    "Latepayment": "<Payment_is_late>FALSE</Payment_is_late>"
  }
])

```

```

< {
  acknowledged: true,
  insertedIds: {
    '0': ObjectId("656669ad307139061cf1d99f"),
    '1': ObjectId("656669ad307139061cf1d9a0")
  }
}

```

Q5. Design a graph-based diagram. Use nodes to represent entities and edges to represent relationships.

We have made a graph-based diagram as below where we have two nodes, one for customer and the other for payment. We have added 6 attributes for customers in the customer node that shows customer id, name, state, birth year, gender, and credit approval status. Then in the payment node we have added four nodes mainly as payment id, transaction number, due date and finally the payment status if it is delayed for a specific customer or not. We have connected payments with each respective customer through customer id being a common factor between both entities and this relationship is shown by the edges in the graph-based diagram.

Customer 171

Name: Madelyn Hensley

State: New York

Birth Year: 1976

Gender: Male

No Credit Approval

has payment

Payment 14

Transaction #: 887428332-0

Due Date: 07-04-2020

Payment is on time

Customer 172

Name: Lonny Foster

State: Texas

Birth Year: 1981

Gender: Female

No Credit Approval

has payment

Payment 2

Transaction #: 396589804-7

Due Date: 28-09-2020

Payment is on time

has payment

Payment 15

Transaction #: 401129380-4

Due Date: 23-08-2015

Payment is late

Customer 173

Name: Karina Livingston

State: Tennessee

Birth Year: 1977

Gender: Female

Have Credit Approval

has payment

Payment 16

Transaction #: 277406266-7

Due Date: 27-12-2019

Payment is on time

Customer 174

Name: Avery Mccoormick

State: Illinois

Birth Year: 1992

Gender: Female

No Credit Approval

has payment

Payment 17

Transaction #: 851112155-2

Due Date: 12-04-2019

Payment is on time

Customer 175

Name: Peter King

State: Illinois

Birth Year: 1991

Gender: Male

Have Credit Approval

has payment

Payment 5

Transaction #: 108659198-9

Due Date: 13-09-2016

Payment is late

Customer 176

Name: Bret Ibarra

State: California

Birth Year: 1984

Gender: Male

No Credit Approval

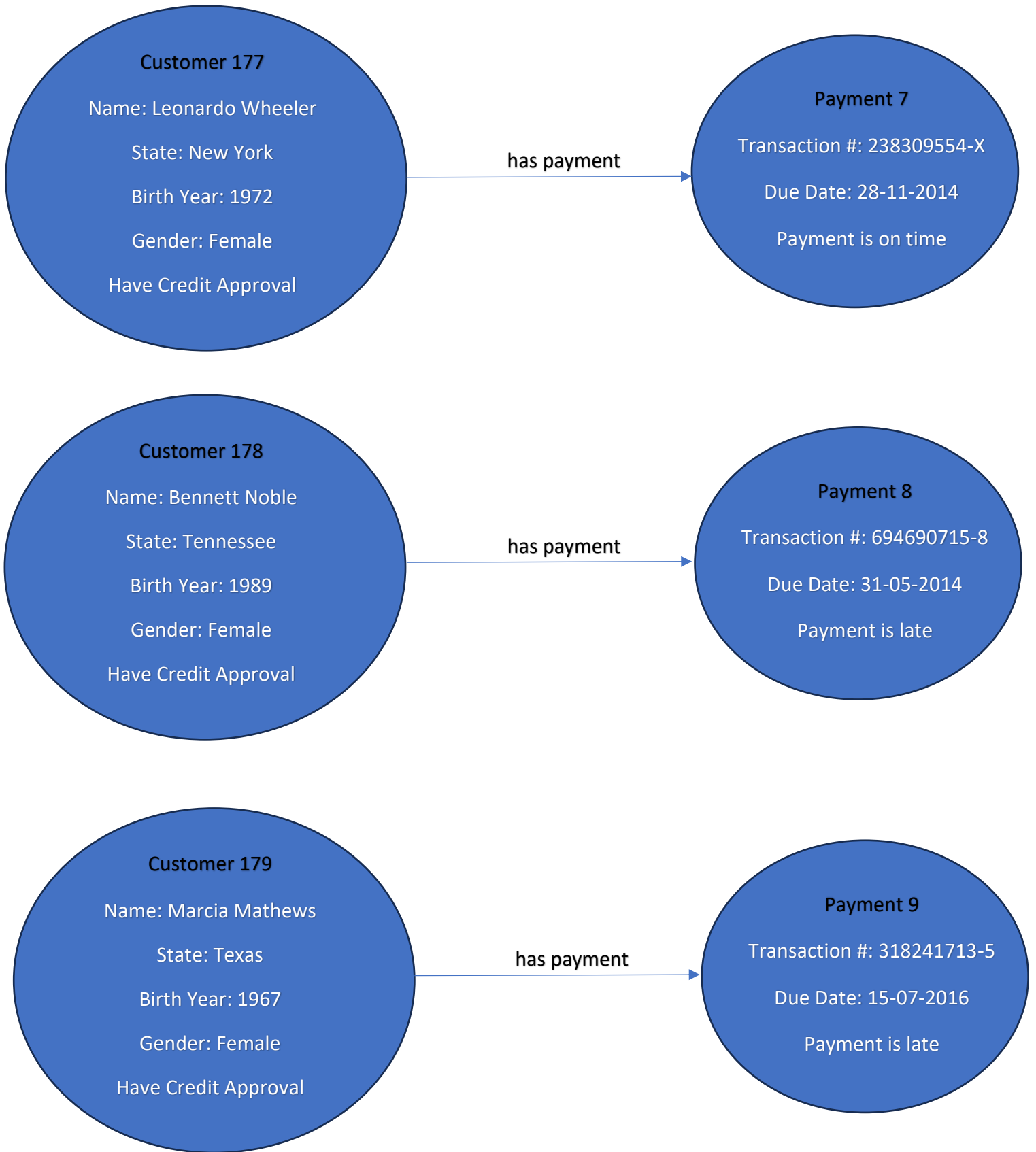
has payment

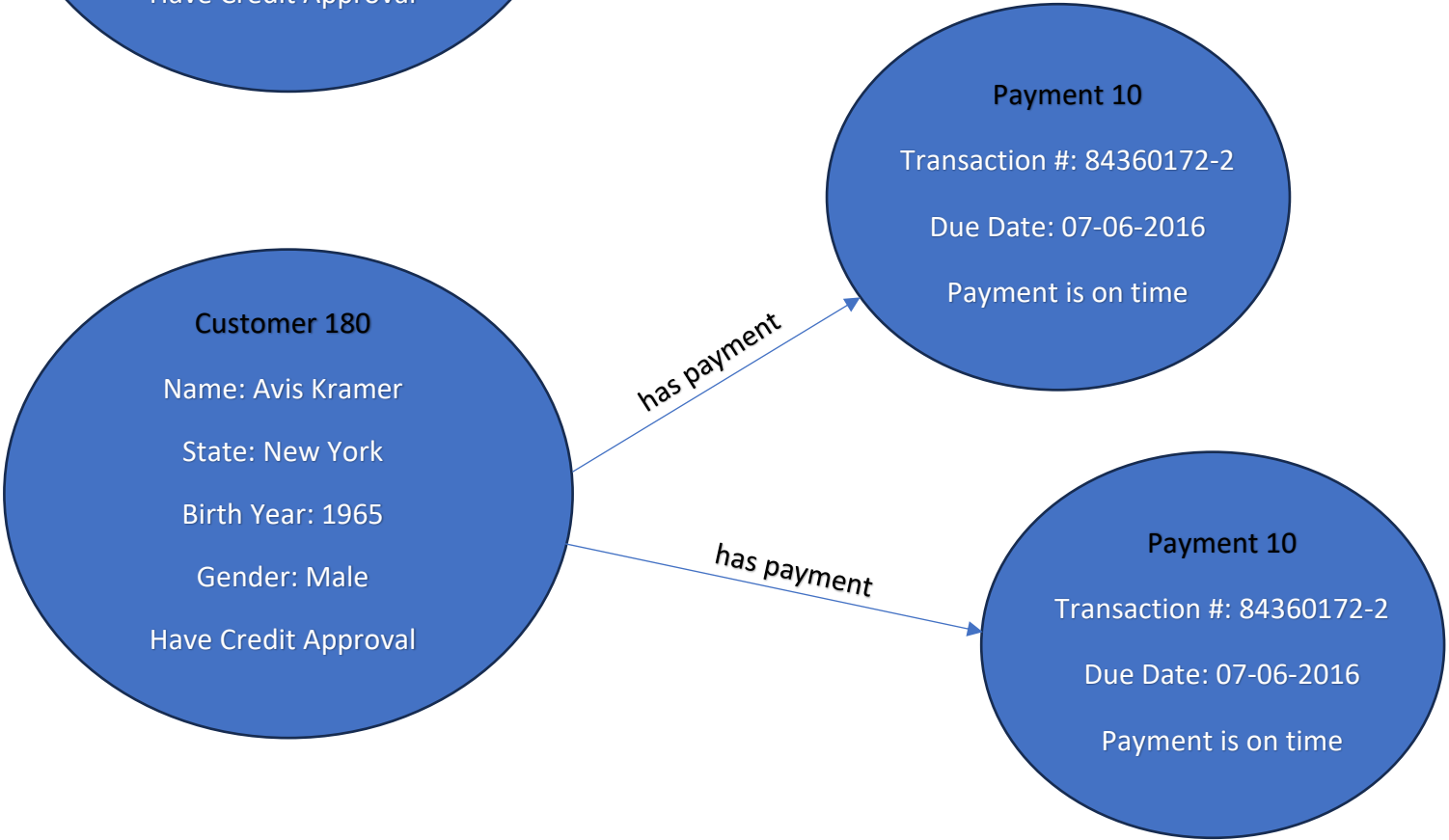
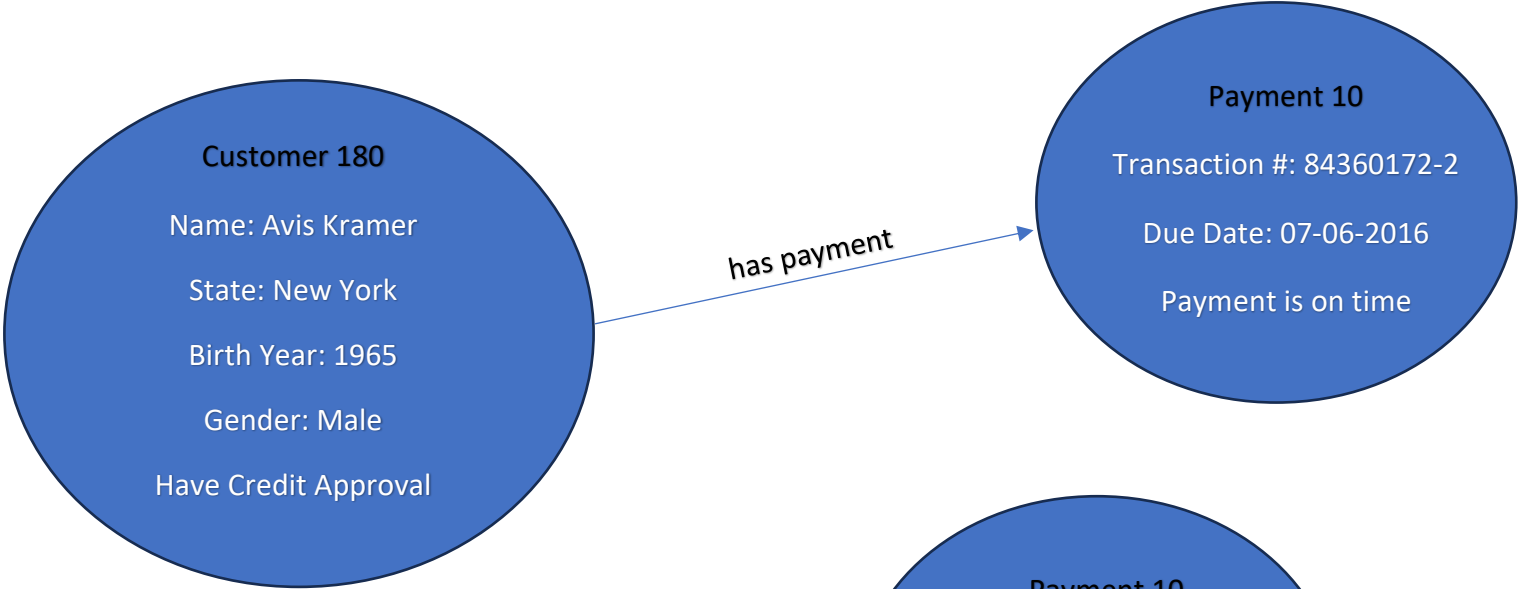
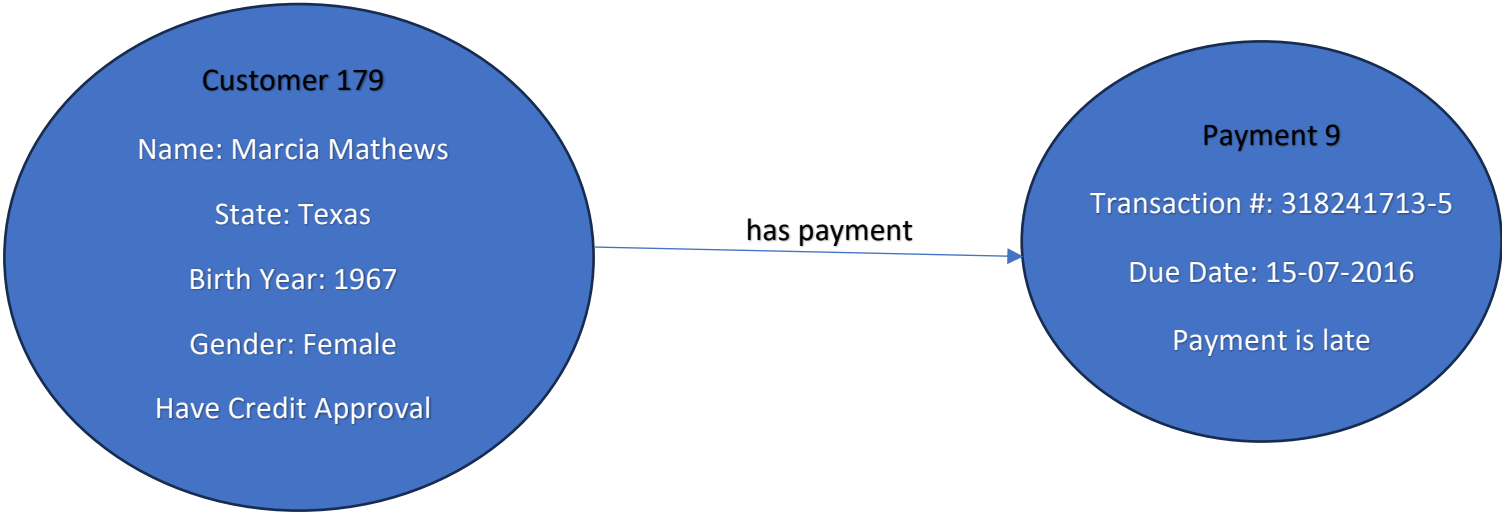
Payment 6

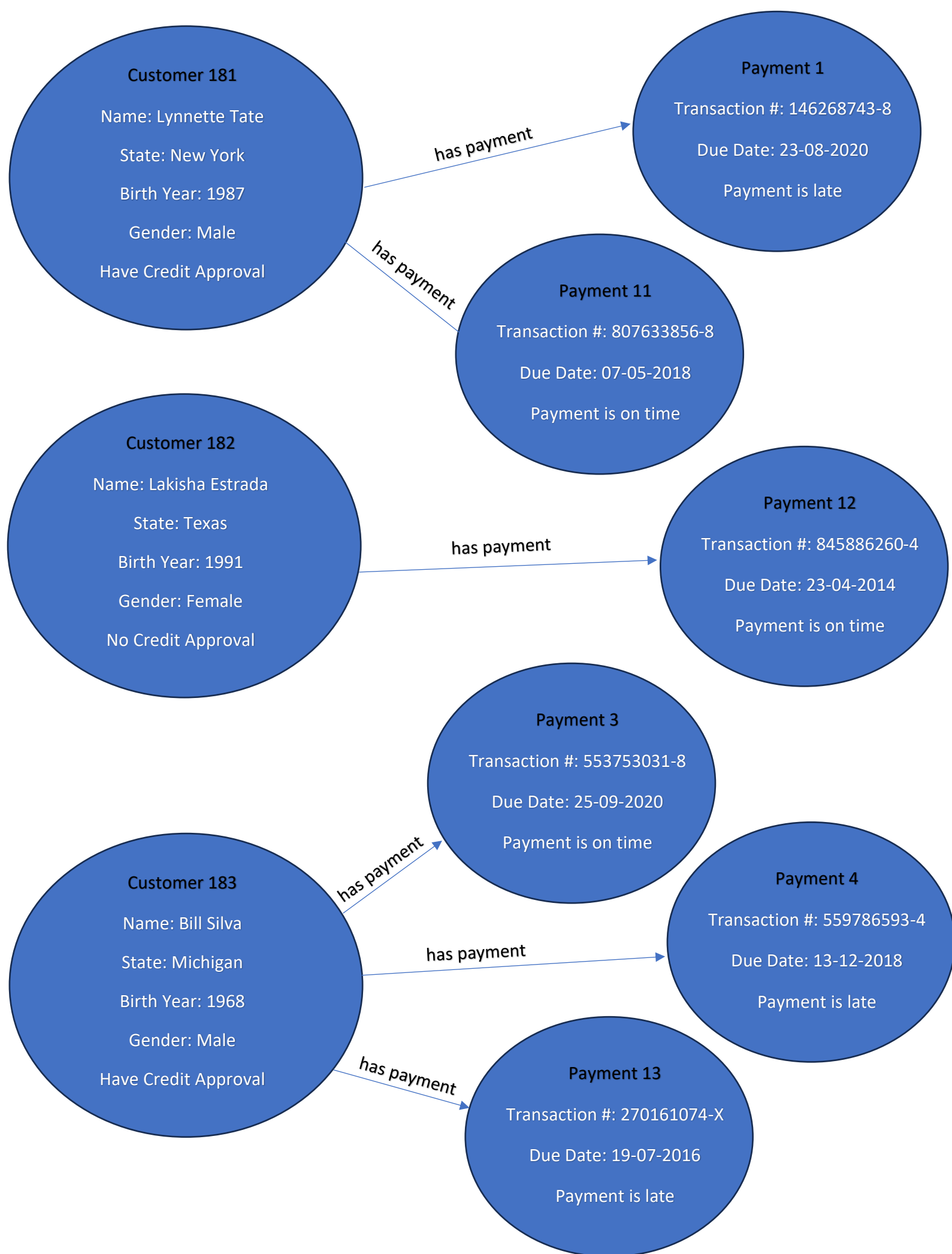
Transaction #: 360007723-2

Due Date: 27-09-2016

Payment is on time







Q6. Use create statements to implement the nodes and relationships for the diagram you have designed in Neo4j.

In this part we have basically created nodes for all the customers that include the detail for their attributes as well but node is mainly displayed by the customer name. Then we created payment node and included all its attributes and payment node is displayed by payment id. Then we used match function to connect each payment with the respective customer and this is similar to what we have done in the previous part and we have replicated that in Neo4j. Attached below is the code to execute this and also screenshot have been posted below to show how the graph diagram looks in Neo4j and how the edges represent the function between two nodes like in this case it shows that customer shown by customer name made bill which is shown by the payment id.

Customer

```
CREATE (:Customer {id: 171, name: 'Madelyn Hensley', city: 'New York', state: 'New York', birth_year: 1976, gender: 'M', credit_status: FALSE})
```

```
CREATE (:Customer {id: 172, name: 'Lonny Foster', city: 'Austin', state: 'Texas', birth_year: 1981, gender: 'F', credit_status: FALSE})
```

```
CREATE (:Customer {id: 173, name: 'Karina Livingston', city: 'Chattanooga', state: 'Tennessee', birth_year: 1977, gender: 'F', credit_status: TRUE})
```

```
CREATE (:Customer {id: 174, name: 'Avery McCormick', city: 'Chicago', state: 'Illinois', birth_year: 1992, gender: 'F', credit_status: FALSE})
```

```
CREATE (:Customer {id: 175, name: 'Peter King', city: 'Chicago', state: 'Illinois', birth_year: 1991, gender: 'M', credit_status: TRUE})
```

```
CREATE (:Customer {id: 176, name: 'Bret Ibarra', city: 'San Diego', state: 'California', birth_year: 1984, gender: 'M', credit_status: FALSE})
```

```
CREATE (:Customer {id: 177, name: 'Leonardo Wheeler', city: 'New York', state: 'New York', birth_year: 1972, gender: 'F', credit_status: TRUE})
```

```
CREATE (:Customer {id: 178, name: 'Bennett Noble', city: 'Hixson', state: 'Tennessee', birth_year: 1989, gender: 'F', credit_status: TRUE})
```

```
CREATE (:Customer {id: 179, name: 'Marcia Mathews', city: 'Dallas', state: 'Texas', birth_year: 1967, gender: 'F', credit_status: TRUE})
```

```
CREATE (:Customer {id: 180, name: 'Avis Kramer', city: 'New York', state: 'New York', birth_year: 1965, gender: 'M', credit_status: TRUE})
```

```
CREATE (:Customer {id: 181, name: 'Lynnette Tate', city: 'New York', state: 'New York', birth_year: 1987, gender: 'M', credit_status: TRUE})
```

```
CREATE (:Customer {id: 182, name: 'Lakisha Estrada', city: 'Dallas', state: 'Texas', birth_year: 1991, gender: 'F', credit_status: FALSE})
```

```
CREATE (:Customer {id: 183, name: 'Bill Silva', city: 'Detroit', state: 'Michigan', birth_year: 1968, gender: 'M', credit_status: TRUE});
```

Query: MATCH (n) OPTIONAL MATCH (n)-[r]-() DELETE n, r

Query took 1 ms and returned no rows.
Updated the graph - deleted 13 nodes [Result Details](#)

Query: MATCH (n) OPTIONAL MATCH (n)-[r]-() DELETE n, r

Query took 3 ms and returned no rows. [Result Details](#)

Query: CREATE (:Customer {id: 171, name: 'Madelyn Hensley', city: 'New York', state: 'New York', birth_year: 1976, gender: 'M', credit_status: FALSE}) CREATE (:Customer {id: 172, name: 'Lonny Foster', city: 'Austin', state: 'Texas', birth_year: 1981, gender: 'F', credit_status: FALSE}) CREATE (:Customer {id: 173, name: 'Karina Livingston', city: 'Chattanooga', state: 'Tennessee', birth_year: 1977, gender: 'F', credit_status: TRUE}) CREATE (:Customer {id: 174, name: 'Avery McCormick', city: 'Chicago', state: 'Illinois', birth_year: 1991, gender: 'M', credit_status: TRUE}) CREATE (:Customer {id: 175, name: 'Peter King', city: 'Chicago', state: 'Illinois', birth_year: 1991, gender: 'M', credit_status: TRUE}) CREATE (:Customer {id: 176, name: 'Bret Ibarra', city: 'San Diego', state: 'California', birth_year: 1984, gender: 'M', credit_status: FALSE}) CREATE (:Customer {id: 177, name: 'Leonardo Wheeler', city: 'New York', state: 'New York', birth_year: 1972, gender: 'F', credit_status: TRUE}) CREATE (:Customer {id: 178, name: 'Bennett Noble', city: 'Hixson', state: 'Tennessee', birth_year: 1989, gender: 'F', credit_status: TRUE}) CREATE (:Customer {id: 179, name: 'Marcia Mathews', city: 'Dallas', state: 'Texas', birth_year: 1967, gender: 'F', credit_status: TRUE}) CREATE (:Customer {id: 180, name: 'Avis Kramer', city: 'New York', state: 'New York', birth_year: 1965, gender: 'M', credit_status: TRUE}) CREATE (:Customer {id: 181, name: 'Lynnette Tate', city: 'New York', state: 'New York', birth_year: 1987, gender: 'M', credit_status: FALSE}) CREATE (:Customer {id: 183, name: 'Bill Silva', city: 'Detroit', state: 'Michigan', birth_year: 1968, gender: 'M', credit_status: TRUE});

Query took 1 ms and returned no rows.
Updated the graph - created 13 nodes set 91 properties [Result Details](#)

Payment and Match function

```
MATCH (c:Customer {id: 171})
```

```
CREATE (p:Payment {Payment_ID: 1, transaction_id: '146268743-8', date: '23-8-2020', status: TRUE})-[:MADE]->(c)
```

```
MATCH (c:Customer {id: 172})
```

```
CREATE (p:Payment {Payment_ID: 2, transaction_id: '396589804-7', date: '28-9-2020', status: FALSE})-[:MADE]->(c)
```

```
MATCH (c:Customer {id: 183})
```

```
CREATE (p:Payment {Payment_ID: 3, transaction_id: '553753031-8', date: '25-9-2020', status: FALSE})-[:MADE]->(c)
```

MATCH (c:Customer {id: 183})

CREATE (p:Payment {Payment_ID: 4, transaction_id: '559786593-4', date: '13-12-2018', status: TRUE})-[:MADE]->(c)

MATCH (c:Customer {id: 175})

CREATE (p:Payment {Payment_ID: 5, transaction_id: '108659198-9', date: '13-9-2016', status: TRUE})-[:MADE]->(c)

MATCH (c:Customer {id: 176})

CREATE (p:Payment {Payment_ID: 6, transaction_id: '360007723-2', date: '27-9-2016', status: FALSE})-[:MADE]->(c)

MATCH (c:Customer {id: 177})

CREATE (p:Payment {Payment_ID: 7, transaction_id: '238309554-X', date: '28-11-2014', status: FALSE})-[:MADE]->(c)

MATCH (c:Customer {id: 178})

CREATE (p:Payment {Payment_ID: 8, transaction_id: '694690715-8', date: '31-5-2014', status: TRUE})-[:MADE]->(c)

MATCH (c:Customer {id: 179})

CREATE (p:Payment {Payment_ID: 9, transaction_id: '318241713-5', date: '15-7-2016', status: TRUE})-[:MADE]->(c)

MATCH (c:Customer {id: 180})

CREATE (p:Payment {Payment_ID: 10, transaction_id: '84360172-2', date: '6-7-2016', status: FALSE})-[:MADE]->(c)

MATCH (c:Customer {id: 181})

CREATE (p:Payment {Payment_ID: 11, transaction_id: '807633856-8', date: '5-7-2018', status: FALSE})-[:MADE]->(c)

MATCH (c:Customer {id: 182})

CREATE (p:Payment {Payment_ID: 12, transaction_id: '845886260-4', date: '23-4-2014', status: FALSE})-[:MADE]->(c)

MATCH (c:Customer {id: 183})

CREATE (p:Payment {Payment_ID: 13, transaction_id: '270161074-X', date: '19-7-2016', status: TRUE})-[:MADE]->(c)

MATCH (c:Customer {id: 171})

CREATE (p:Payment {Payment_ID: 14, transaction_id: '887428332-0', date: '4-7-2020', status: FALSE})-[:MADE]->(c)

MATCH (c:Customer {id: 172})

CREATE (p:Payment {Payment_ID: 15, transaction_id: '401129380-4', date: '23-8-2015', status: TRUE})-[:MADE]->(c)

MATCH (c:Customer {id: 173})

CREATE (p:Payment {Payment_ID: 16, transaction_id: '277406266-7', date: '27-12-2019', status: FALSE})-[:MADE]->(c)

MATCH (c:Customer {id: 174})

CREATE (p:Payment {Payment_ID: 17, transaction_id: '851112155-2', date: '4-12-2019', status: TRUE})-[:MADE]->(c)

Clear DBHelpShareToggle VizOptions

Query:
MATCH (c:Customer {id: 171}) CREATE (p:Payment {Payment_ID: 14, transaction_id: '887428332-0', date: '4-7-2020', status: FALSE})-[:MADE]->(c)

Query took 4 ms and returned no rows.
Updated the graph - created 1 node and 1 relationship set 4 properties [Result Details](#)

Query:
MATCH (c:Customer {id: 172}) CREATE (p:Payment {Payment_ID: 15, transaction_id: '401129380-4', date: '23-8-2019', status: TRUE})-[:MADE]->(c)

Query took 3 ms and returned no rows.
Updated the graph - created 1 node and 1 relationship set 4 properties [Result Details](#)

Query:
MATCH (c:Customer {id: 173}) CREATE (p:Payment {Payment_ID: 16, transaction_id: '277406266-7', date: '27-12-2019', status: FALSE})-[:MADE]->(c)

Query took 7 ms and returned no rows.
Updated the graph - created 1 node and 1 relationship set 4 properties [Result Details](#)

Query:
MATCH (c:Customer {id: 174}) CREATE (p:Payment {Payment_ID: 17, transaction_id: '851112155-2', date: '4-12-2019', status: TRUE})-[:MADE]->(c)

Query took 3 ms and returned no rows.
Updated the graph - created 1 node and 1 relationship set 4 properties [Result Details](#)

MATCH (c:Customer {id: 174}) CREATE (p:Payment {Payment_ID: 17, transaction_id: '851112155-2', date: '4-12-2019', status: TRUE})-[:MADE]->(c)

```
graph TD
    17((17)) -- MADE --> Avery[Avery  
Macconick]
    15((15)) -- MADE --> Lonny[Lonny  
Foster]
    3((3)) -- MADE --> Bill[Bill  
Silva]
    5((5)) -- MADE --> Peter[Peter  
King]
    6((6)) -- MADE --> Lataha[Lataha  
Estrada]
    12((12)) -- MADE --> Bret[Bret  
Ibars]
    18((18)) -- MADE --> Aris[Aris  
Kramer]
    7((7)) -- MADE --> Leonardo[Leonardo  
Wheeler]
    13((13)) -- MADE --> Bill
    11((11)) -- MADE --> Lynette[Lynette  
Tate]
    14((14)) -- MADE --> Madely[Madely  
Hendale]
    16((16)) -- MADE --> Karla[Karla  
Kingston]
    9((9)) -- MADE --> Marcia[Marcia  
Mathews]
    8((8)) -- MADE --> Benoit[Benoit  
Nakha]
    1((1)) -- MADE --> Madely
    2((2)) -- MADE --> Lonny
    4((4)) -- MADE --> Bill
    10((10)) -- MADE --> Lynette
    17 -- MADE --> Avery
```