SQL PROJECT

Credit Card Detection

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COURSE: MASTER IN DATA SCIENCE AND ANALYTICS WITH AI

About Dataset:

Scams are happening everywhere these days. There are various methods available for you to transact from small to large like online. The project aims to facilitate efficient management of credit card operations, customer accounts and transaction records in a financial institution.

The system is designed to streamline processes related to credit card issuance, account management, transaction tracking and reporting.

Column Description:

***Card_Holder**

***Credit_Card**

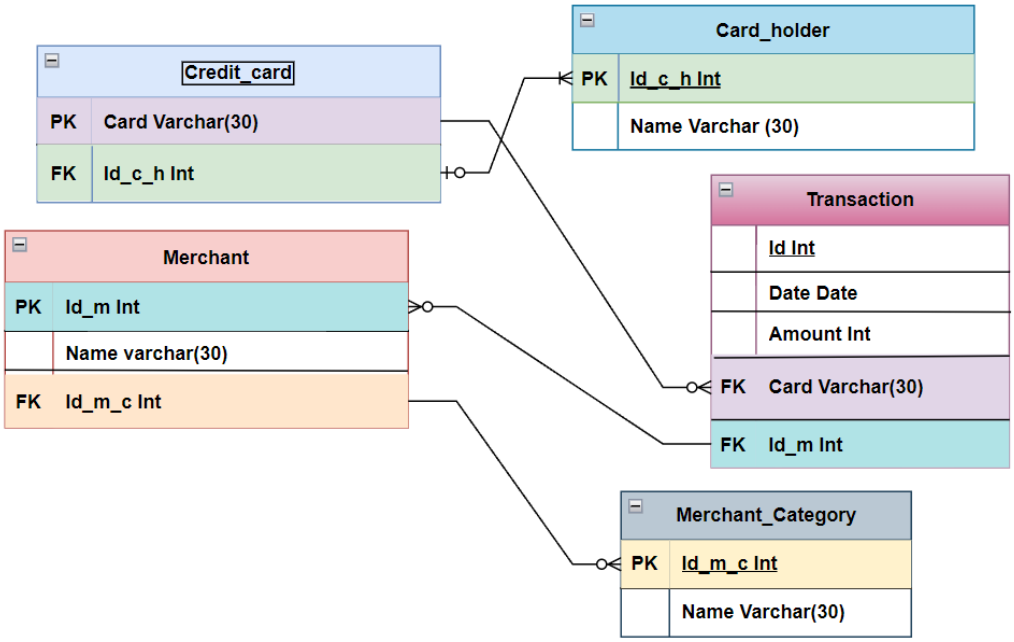
***Merchant_Category**

***Merchant**

***Transaction**

DATASET FROM: GitHub

Entity Relationship Diagram



Show schema of the tables

Card Holder

```
4 • create table card_holder(id_c_h int primary key,name varchar(30));
5 • desc card_holder;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Field	Type	Null	Key	Default	Extra
id_c_h	int	NO	PRI	NULL	
name	varchar(30)	YES		NULL	

Credit Card

```
6 • create table credit_card(card varchar(20) primary key,id_c_h int, foreign key(id_c_h) references card_holder(i
7 • desc credit_card;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Field	Type	Null	Key	Default	Extra
card	varchar(20)	NO	PRI	NULL	
id_c_h	int	YES	MUL	NULL	

Result Grid

Form

Merchant Category

```
8 • create table merchant_category(id_m_c int primary key,name varchar(20));
9 • desc merchant_category;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Field	Type	Null	Key	Default	Extra
id_m_c	int	NO	PRI	NULL	
name	varchar(20)	YES		NULL	

Merchant

```
10 • create table merchant(id_m int primary key,name varchar(20),id_m_c int, foreign key(id_m_c) references merc
11 • desc merchant;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Field	Type	Null	Key	Default	Extra
id_m	int	NO	PRI	NULL	
name	varchar(20)	YES		NULL	
id_m_c	int	YES	MUL	NULL	

Transaction

```
20 • create table transaction(id int,date date,amount decimal(10,0),card varchar(20),id_m int,foreign key(card) re
21 • desc transaction;
22
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Field	Type	Null	Key	Default	Extra
id	int	YES		NULL	
date	datetime	YES		NULL	
amount	decimal(10,0)	YES		NULL	
card	varchar(20)	YES	MUL	NULL	
id_m	int	YES		NULL	

Show Whole Tables

Card_holder

```
6 • select * from card_holder;
7
```

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

id_c_h	name
1	Robert Johnson
2	Shane Shaffer
3	Elizabeth Sawyer
4	Danielle Green
5	Sara Cooper

card_holder 6

Credit_card

```
10 • select * from credit_card;
11
```

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

card	id_c_h
3.52E+15	1
4.76E+18	1
4.87E+18	2
6.76E+11	2
3.01E+13	3

credit_card 7

Merchant_category

```
14 •  select * from merchant_category;
15
16 •  create table merchant(id_m int primary key,name varchar(20),id_m_c int, foreign key(id_m_c) referen
```

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

id_m_c	name
1	restaurant
2	coffee shop
3	bar
4	pub
5	food truck
NULL	NULL

merchant_category 8

Merchant

```
18 •  select * from merchant;
19
```

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

id_m	name	id_m_c
2	Riggs-Adams	1
4	Mccarty-Thomas	3
5	Miller-Blevins	4
6	Wilson and Sons	1
7	Gomez-Kelly	4
8	Russell-Thomas	1

merchant 9

Output

Transaction

```
22 •  select * from transaction;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

id	date	amount	card	id_m
222	2018-01-01	6	3.56E+15	69
222	2018-01-01	6	3.56E+15	69
2045	2018-01-01	4	5.14E+15	85
3331	2018-01-03	1	3.01E+13	7
2128	2018-01-03	4	4.83E+15	44
2188	2018-01-04	229	5.57E+15	115

transaction 10

1. Change the data type

```
23      -- 1 change data type of amount in transaction table
24 •    alter table transaction modify amount int;
25
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

id	date	amount	card	id_m
222	2018-01-01	6	3.56E+15	69
222	2018-01-01	6	3.56E+15	69
2045	2018-01-01	4	5.14E+15	85
3331	2018-01-03	1	3.01E+13	7
2128	2018-01-03	4	4.83E+15	44
2188	2018-01-04	229	5.57E+15	115

transaction 2 ×

Output

2. write query to find card_holder name start with ‘S’

```
25      -- 2 Find card_holder name start with ‘S’
26 •    select * from card_holder where name like "S%";
27
```

Result Grid | Filter Rows: | Edit: | Export/Import:

id_c_h	name
2	Shane Shaffer
5	Sara Cooper
7	Sean Taylor
24	Stephanie Dalton
NULL	NULL

card_holder 4 ×

3. Display Transaction sorted by their Amount in descending order

```
27 • select * from transaction order by amount desc;
28
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

id	date	amount	card	id_m
533	2018-12-25	2000	4.64E+18	89
69	2018-10-04	1000	3.54E+15	149
10	2018-04-04	999	5.30E+15	70
4	2018-02-06	890	5.02E+11	95
2014	2018-09-29	800	3.56E+15	84
15	2019-02-17	780	5.14E+15	91

transaction 5 ×

Output

4. Calculate the total number of card_holder

```
28 • select count(*) as total_card_holder from card_holder;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

total_card_holder
25

5. Find the maximum amount in Transactions

```
29 • select max(amount) as cr_transaction from transaction;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

cr_transaction
2000

6. Find the minmun amount in Transactions

```
29 •  select min(amount) as cr_transaction from transaction;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

cr_transaction
1

7. Write a query to fetch merchant_category and name in table merchant.

```
35    -- 7 Write a query to fetch merchant_category by using distinct in table mer
36 •  select id_m_c,name from merchant;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

id_m_c	name
1	Riggs-Adams
3	Mccarty-Thomas
4	Miller-Blevins
1	Wilson and Sons
4	Gomez-Kelly
1	Russell-Thomas

merchant 4 | Read Onl

Output

Action Output

8. Write query to fetch category of merchant with or operater

```
44    -- 8 command to fetch with or operator
45 •  select * from merchant where id_m=5 or id_m_c=2;
46
```

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

id_m	name	id_m_c
5	Miller-Blevins	4
14	Osborne-Page	2
20	Kim-Lopez	2
26	Smith-Stephens	2
27	Horn Ltd	2
43	Wallace and Sons	2

merchant 5

9. Count the total number of transactions

```
39      -- 9 command for count of transactions
40 •    select count(*) AS total_transactions from transaction;
41
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

	total_transactions
▶	25

10. List all transactions made by a specific card number

```
42      -- 10 command to fetch specific card in transaction table
43 •    select * from transaction where card = "5.14E+15";
44
45
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

	id	date	amount	card	id_m
▶	2045	2018-01-01	4	5.14E+15	85
	15	2019-02-17	780	5.14E+15	91

Result Grid

Form Editor

11. Find transactions above a certain amount

```
43      -- 11 command to fetch specific amont>800
44 •    select * from transaction where amount>800;
45
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

id	date	amount	card	id_m
4	2018-02-06	890	5.02E+11	95
10	2018-04-04	999	5.30E+15	70
69	2018-10-04	1000	3.54E+15	149
533	2018-12-25	2000	4.64E+18	89

Result Grid | Form Editor

12. Write Query to gives name in upper case

```
46      -- 12 command to fetch uppercase name in card_holder
47 •    select upper(name) as uppercase_name from card_holder;
48
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

uppercase_name
ROBERT JOHNSON
SHANE SHAFFER
ELIZABETH SAWYER
DANIELLE GREEN
SARA COOPER
BETH HERNANDEZ

Result Grid | Form Editor

Result 26 | Read On

13. Write query to fetch data where transaction between 500 to 900.

```
53      -- 13 command to fetch transaction amount with between operator
54 •    select id,date,amount from transaction
55      where amount between 500 And 900;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

id	date	amount
555	2018-01-08	550
4	2018-02-06	890
2014	2018-09-29	800
400	2018-11-24	700
1302	2018-12-09	600
314	2019-01-26	550

Result Grid | Form Editor | transaction 1 | Read Only

14. Write query to fetch data where transaction not between 500 to 900.

```
57      -- 14 command to fetch transaction amount with between operator
58 •    select id,date,amount from transaction
59      where amount not between 500 And 900;
60
61
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

id	date	amount
222	2018-01-01	6
222	2018-01-01	6
2045	2018-01-01	4
3331	2018-01-03	1
2128	2018-01-03	4
2188	2018-01-04	229

Result Grid | Form Editor | transaction 2 | Read Only

Output

15. Write query to fetch data where transaction is 550 or 999 or 1000.

```
51      -- 15 command to fetch amount by using In operator
52 •    select id,amount from transaction where amount In(550,999,1000);
53
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

id	amount
555	550
10	999
69	1000
314	550

Result Grid | Form Editor

16. Write a query to fetch data where card_holder name end z.

```
53      -- 16 Write a query to fetch data where card_holder name end Z.
54 •    select id_c_h,name from card_holder where name Like "%Z";
```

Result Grid | Filter Rows: | Edit: | Export/Import:

id_c_h	name
6	Beth Hernandez
10	Matthew Gutierrez
NULL	NULL

Result Grid | Form Editor

17. write a query to fetch top 5 record from transaction table.

```
65      -- 17 write a query to fetch top 5 record from transaction table.
66 •    select * from transaction limit 5;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

id	date	amount	card	id_m
222	2018-01-01	6	3.56E+15	69
222	2018-01-01	6	3.56E+15	69
2045	2018-01-01	4	5.14E+15	85
3331	2018-01-03	1	3.01E+13	7
2128	2018-01-03	4	4.83E+15	44

Result Grid | Form Editor

18. Write a query to show top 5 highest amount in transaction.

```
68      -- 18   Write a query to show top 5 highest amount.
69 •    select * from transaction order by amount desc limit 5;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

id	date	amount	card	id_m
533	2018-12-25	2000	4.64E+18	89
69	2018-10-04	1000	3.54E+15	149
10	2018-04-04	999	5.30E+15	70
4	2018-02-06	890	5.02E+11	95
2014	2018-09-29	800	3.56E+15	84

Result Grid | Form Editor

19. Aggregate Function

    Write to query average of amount

    Avg()

```
112 •   select avg(amount) from transaction;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

avg(amount)
470.3600

Sum()

```
114 •  select sum(amount) from transaction;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

sum(amount)
11759

20. Date functions

Now()

```
71 •  select now() as current_date_time;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Cont

current_date_time
2024-07-05 19:59:49

curdate()

```
72 •  select curdate();
```

Result Grid | Filter Rows: | E

curdate()
2024-07-05

Curtime()

```
129 •  select curtime();
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

curtime()
13:48:29

21. Write a query to show highest amount in table.

```
75     -- 20 Write a query to show highest amount in table.
76 •  select max(amount) as highest_amount from transaction;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

highest_amount
2000

22. Write a query to fetch number of credit card.

```
78     -- 21 write a query to fetch number of credit card.
79 •  select count(*) from credit_card;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

count(*)
47

23. write a query to find highest amount of transaction by using subquery.

```
81      -- 22 write a query to find highest amount of transaction by using
82  •   select id,date,amount,card from transaction
83      where amount=(select max(amount) from transaction);
84
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

id	date	amount	card
533	2018-12-25	2000	4.64E+18

24. write a query to find 2nd highest amount of transaction by using subquery.

```
85  •   select id,date,amount,card from transaction
86      where amount=(select max(amount) from transaction
87      where  amount < (select max(amount) from transaction));
88
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

id	date	amount	card
69	2018-10-04	1000	3.54E+15

```
89  •   select id,date,amount,card from transaction
90      where amount<(select max(amount) from transaction)
91      order by amount desc limit 1;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

id	date	amount	card
69	2018-10-04	1000	3.54E+15

25. Retrieve Merchant Made with Merchant_Category.

Cross Join

```
106 •   select merchant.name,merchant_category.name from merchant
107     cross join merchant_category;
108
109
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

name	name
Riggs-Adams	food truck
Riggs-Adams	pub
Riggs-Adams	bar
Riggs-Adams	coffee shop
Riggs-Adams	restaurant
Mccarty-Thomas	food truck

Result 7

26. Retrieve Transactions Made with Credit Cards.

Inner Join

```
97 •   select transaction.card,credit_card.card from transaction
98     inner join credit_card
99     ON transaction.card = credit_card.card;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

card	card
3.01E+13	3.01E+13
3.54E+15	3.54E+15
3.56E+15	3.56E+15
3.56E+15	3.56E+15
3.56E+15	3.56E+15
3.56E+15	3.56E+15

Result Grid | Form Editor

Result 41 | Read Only

Left Join

```
101 •  select transaction.card,credit_card.card from transaction
102    Left join credit_card
103    ON transaction.card = credit_card.card;
104
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

card	card
3.01E+13	3.01E+13
3.54E+15	3.54E+15
3.56E+15	3.56E+15
3.56E+15	3.56E+15
3.56E+15	3.56E+15
3.56E+15	3.56E+15

Result Grid | Form Editor | Result 44 | Read Only

27. Create view.

```
105 •  create view detail_view
106    as select * from transaction where amount<500;
107 •  select * from detail_view;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

id	date	amount	card	id_m
222	2018-01-01	6	3.56E+15	69
222	2018-01-01	6	3.56E+15	69
2045	2018-01-01	4	5.14E+15	85
3331	2018-01-03	1	3.01E+13	7
2128	2018-01-03	4	4.83E+15	44
2188	2018-01-04	229	5.57E+15	115

detail_view 45

28. String Function

Concat()

```
116 •  select concat("Shraddha", 'Thik');
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

concat("Shraddha", 'Thik')
ShraddhaThik

Result Grid | Form Editor

Result 1 | Read Only

Length()

```
119 •  select length ("shraddha thik");
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

length ("shraddha thik")
13

Reverse()

```
121 •  select reverse("Shraddha Thik");
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

reverse("Shraddha Thik")
kihT ahddarhS

29. Math Function

Absolute()

```
142 •  select abs(-5) as absolute;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

absolute
5

Modulas()

```
144 •  select mod(24,7) as remainder;
```

Result Grid | Filter Rows: | Export: | Wrap Ce

remainder
3

Square

```
146 •  select power(6,2) as square;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

square
36