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# CSC2001F

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## Assignment 4



APRIL 12, 2018

NKSNKO010  
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## Section A

a) Acct – id

CodeCategoryMap - code

Spending – merchant

b) Spending.id

Spending.code

## Section B

1. Output the number of tuples in each of your 3 relations.

Acct- **SELECT count(\*) As Tuples**

**FROM Acct;**

Tuples
1247

Spending - **SELECT count(\*) As Tuples**

**FROM Spending;**

Tuples
5906

CodeCategoryMap - **SELECT count(\*) As Tuples**

**FROM CodeCategoryMap;**

Tuples
254

2.

Show any one complete tuple (just 1, no more) from each of your 3 relations

Acct –

id	firstname	surname	age	maritalStatu	income
12291311668	Fani	Raziya	98	D	low

### CodeCategoryMap –

category	code
Home	1520

### Spending –

id	transactionI	amount	merchant	code
12291840250	2018/02/01 1:2	-606,15	868652 BLOEM	5541

- List first name and surname of everyone with surname “Naidoo”, in alphabetical order of first name.

**SELECT** firstname,surname

**from** Acct **where** surname="Naidoo" **order by** firstname **ASC**;

firstname	surname
Kemuel	Naidoo
Kenneth	Naidoo
Kevendren	Naidoo
Kgosietsile	Naidoo
Kgothlang	Naidoo
Kgotsofatso	Naidoo
Khanyisa	Naidoo
Khanyisani	Naidoo
Kharan	Naidoo
Kholofelo	Naidoo
Khomotso	Naidoo

- For each code 5511 transaction, give the transactionDate along with the VAT on that transition, where the VAT was 15% of the amount spent.

**SELECT** transactionDate,amount,ABS(amount\*0.15) **as** VAT

**From** Spending **where** code="5511";

transactionI	amount	VAT
2018/02/01 14:	-115	17,25
2018/02/02 13:	-360	54
2018/02/04 10:	-459,95	68,9925
2018/02/05 6:4	-550	82,5
2018/02/06 8:1	-84	12,6
2018/02/06 11:	-2500	375

5. Show the firstname, surname, age, marital-status and income category of everyone who has any missing data in any of these fields.

```
SELECT firstname, surname, age, maritalStatus, income
From Acct where firstname IS NULL or age=0 or maritalStatus IS NULL or
income IS NULL or surname IS NULL;
```

firstname	surname	age	maritalStatu	income
*				0

6. Give the names of merchants who have had transactions of both codes 5111 and 2741.

```
SELECT Distinct merchant
FROM Spending
WHERE merchant IN (Select merchant from Spending where
code="5111")
and merchant IN (Select merchant from Spending where code="2741");
```

merchant
3@1

7. Find the transactionDate and merchant associated with the highest amount in the database, along with that amount.

```
SELECT transactionDate, merchant, amount
FROM Spending where amount in( SELECT min(amount) from Spending);
```

transactionDate	merchant	amount
2018/02/03 7:13	@Home Secunda Mall	-18385,09

8. How many people (ids) have any transaction amount that is higher than every amount ever spent by the person with id 12312870316 ?

```
SELECT DISTINCT COUNT( sp2.id) As NumberOfPeople FROM Spending
AS sp1, Spending AS sp2
WHERE sp1.id="12312870316" AND sp2.amount >sp1.amount;
```

NumberOfPeople
5895

9. How many categories are there? (i.e. how many different category values?)

SELECT COUNT( DISTINCT category) AS CategoriesCount FROM CodeCategoryMap;

CategoriesCount
12

10. Give the average transaction amount (a single value in the answer)

Select ABS(Round(AVG(amount),2)) as Average FROM Spending;

Average
275,45

11. Find the code range for each category (i.e. each result line will have category.

Select category, min(code) as Minimum,max(code) as Maximum From CodeCategoryMap group by category;

category	Minimum	Maximum
Clothing	5137	7296
Eat_Out	5462	7311
Education	2741	9402
Entertainment	4899	7995
Gifts_Donation	5045	8661
Groceries	2000	5451
Health_Fitness	5310	8699
Holiday_Travel	3000	7991
Home	1520	9399
Medical	5047	8099
Pets	4225	7998
Transport	4784	7549

12. Find the largest transaction amount for each code that is associated with more than 50 transactions.

Select code,ABS(min(amount)) as AmountMax from Spending

group by code  
having count(amount)>50;

code	AmountMax
5111	617,8
5499	3410
5541	2000,1
5712	6000
5719	18385,09
5812	3690
5912	7000
5943	1910,5
7011	2876,4

13. Which code(s) have the least number of transactions i.e. which code(s) have the fewest transactions?

Select code, count(\*) from  
(Select min(code1) as minCode from (Select count(code) as Code1 from  
Spending  
GROUP BY code)),Spending  
group by code  
having count(\*) =min(minCode);

code	Expr1001
3405	1
4900	1
5013	1
5039	1
5047	1
5309	1
5621	1
5661	1
5947	1
5971	1
7641	1
7692	1
7991	1
8043	1

14. Show all information on all large transactions including the category involved. A large transaction is one with an amount that exceeds ten times the average transaction amount (e.g. if the average transaction amount is R100, a large transaction has an amount above R1000).

```
SELECT Spending.id, Spending.transactionDate, Spending.amount,
Spending.merchant, CodeCategoryMap.category
FROM Spending INNER JOIN CodeCategoryMap ON Spending.code =
CodeCategoryMap.code
where amount < (Select 10*avg(amount) from Spending);
```

id	transactionDate	amount	merchant	category
12291743683	2018/02/01 20:10	-3690	5TH AVE..	Gifts_Donations
12314566711	2018/02/02 11:09	-3410	382522 ULTRA CITY PIET	Gifts_Donations
12376294619	2018/02/08 6:07	-7000	*NETCARE HOLDINGS (PTY	Health_Fitness
12328755357	2018/02/03 10:04	-6000	4 D BEDDING CC	Eat_Out
12314550122	2018/02/02 11:08	-5299,9	849 - BT GAMES ILANGA	Entertainment
12313442532	2018/02/02 9:30	-3999,9	849 - BT GAMES CLEARWA	Entertainment
12359393961	2018/02/06 11:11	-6299,8	849 - BT GAMES MIMOSA	Entertainment
12315064423	2018/02/02 11:52	-2999,7	849 - BT GAMES MIMOSA	Entertainment
12297034299	2018/02/01 10:09	-5000	200 Baviaanspoortweg{#	Entertainment
12299530095	2018/02/01 14:04	-2876,4	54 ON BATH	Holiday_Travel
12312298975	2018/02/02 7:43	-2770	4 YOU HARDWARE NQAMAKW	Home
12349843967	2018/02/05 11:02	-4511	3 START HARDWARE OLIVE	Home
12330362338	2018/02/03 12:22	-5900	4 YOU HARDWARE WILLOWV	Home
12312870316	2018/02/02 8:41	-5000	4 YOU HARDWARE NQAMAKW	Home
12327008160	2018/02/03 7:32	-8152,44	000702 PENNY PINCHERS	Home
12326817964	2018/02/03 7:13	-18385,09	@Home Secunda Mall	Home
12379967451	2018/02/08 15:38	-5999	@Home Centurion 2	Home
12359703132	2018/02/06 11:55	-8000	*KK ROOFSHEETING CC	Home
12349286107	2018/02/05 9:56	-3000	5 STAR FURNITURE PTA	Home
12297272968	2018/02/01 10:33	-3545	1 STOP MOTOR SPARES	Transport
12329107529	2018/02/03 9:32	-4310,56	24 LADYMEAD	Holiday_Travel

15. Find the total amount spent on Pets for each merchant where there have been more than 10 transactions in the Pets category.

```
Select merchant,ABS(sum(amount)) as Total
From Spending inner join CodeCategoryMap
on CodeCategoryMap.code = Spending.code
where category="pets"
group by merchant
having count(category)>10;
```

merchant	Total
*WALKERVILLE FEEDS CC	5026
3005 CHECK STAR DURBAN	3955,89
3R DIEREVET	7394,4
9th Avenue Vet Clinic	5468,74

16. For each category, show how many such transactions there are in the database along with the total Rand amount of those transactions.

Select category,count(category) as Number\_of\_categories  
,Round(sum(amount),2) as Total  
From Spending inner join CodeCategoryMap  
on CodeCategoryMap.code = Spending.code  
group by category;

category	Number_of	Total
Clothing	12	-7000
Eat_Out	122	-67420,8
Education	237	-36653,09
Entertainment	51	-43350,61
Gifts_Donation	599	-49849,72
Groceries	3	-765,1
Health_Fitness	4340	-1123170,87
Holiday_Travel	135	-72976,86
Home	237	-167686,19
Medical	31	-8101,91
Pets	101	-31514,48
Transport	38	-18316,83

### Section C

This query is meant to output the total sales in each category which are more than R1000.

This query does not need to be tested for correctness because all the absolute values of the output are more than 10000.

Select category,Total from  
(select category, round(sum(amount),2) as Total



From Spending inner join CodeCategoryMap  
on CodeCategoryMap.code = Spending.code  
group by category  
order by sum(amount))  
where abs(total) >=10000;

category	Total
Health_Fitness	-1123170,87
Home	-167686,19
Holiday_Trave	-72976,86
Eat_Out	-67420,8
Gifts_Donation	-49849,72
Entertainment	-43350,61
Education	-36653,09
Pets	-31514,48
Transport	-18316,83

## Section D

- I. Delete all transactions from merchant 3@1 (however it may be spelt).

**DELETE**

**FROM Spending where merchant like "%3@1%";**

- II. Insert a new transaction for id 12393560590 that took place at midnight on New Years Eve 2018 for an amount of R448. The code is 5251 but the merchant and description are not known

**INSERT INTO Spending values("12393560590","2018/12/31 00:00",-448",Null,"5251")**

- III. Code 5211 purchases should have been coded 5221, so change 5211 to 5221

**UPDATE Spending SET code ="5221" where code="5211";**

- IV. For everyone who is not M(married), add another row for them, which has their maritalStatus as U (unmarried) and has the values in all the other columns of their new extra row the same as in their original row.

```
Insert into account(select id,firstname,surname,age,"U",income  
From account  
Where maritalStatus!="M");
```