

Pennsylvania State University  
Department of Industrial and Manufacturing Engineering  
IE 330 Engineering Analytics  
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Access Project Report

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## **Introduction:**

The following are a list of 20 actions that require a query to be created. A summary of the solution, the code to create the query and the query report are all shown. All answers for each query were found using Microsoft Access file “330 Project 2”.

### **1. Show all the CustomerIDs present in customer table.**

#### **Summary:**

For this query we will select all customers ID from the customers’ table.

#### **Code:**

```
SELECT CustomerID  
FROM Customer;
```

#### **Query Report:**

1 Select		Friday, December 4, 2020
		5:11:02 PM
CustomerID		
100		
200		
300		
400		

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### **2. Show all the details of the customers living in the 16802 area.**

#### **Summary:**

For this query we will select all entries from the customers table, in where the zip code equals 16082.

#### **Code:**

```
SELECT *  
FROM Customer  
WHERE zip=16802;
```

### Query Report:

2 where		Friday, December 4, 2020 5:11:26 PM		
CustomerID	Gender	Income	EducationLevel	ZIP
200	F	\$60,000		16802
300	F	\$100,000	Ph.D.	16802
400	M	\$70,000	Ph.D.	16802

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### 3. Show the different EducationLevels of the customers

#### Summary:

In this query we will select all distinct education levels from our customers present in our customers tables.

#### Code:

```
SELECT DISTINCT EDUCATIONLEVEL  
FROM Customer;
```

### Query Report:

3 distinct
educationlevel
Bachelor
Ph.D.

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### 4. Show the CustomerID and Education Level of the customers who are male and have an income greater than \$80000.

#### Summary:

For this query we will select the customer ID and education level from the customer table, but only for those customers who are male and have an income greater than \$ 80000.

**Code:**

```
SELECT CUSTOMERID, EDUCATIONLEVEL  
FROM CUSTOMER  
WHERE GENDER="M" AND INCOME>80000;
```

**Query Report:**

4 and

customerid educationlevel

100 Bachelor

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**5. Show the CustomerID of customers with EducationLevel of - Bachelor or Ph.D.**

**Summary:**

In this query we will select the customer ID from the Customer table from all customers whose education level is Bachelor or Ph.D.

**Code:**

```
SELECT CUSTOMERID  
FROM CUSTOMER  
WHERE EDUCATIONLEVEL= "Bachelor" OR EDUCATIONLEVEL= "Ph.D.";
```

**Query Report:**

5 or

customerid

100

300

400

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**6. Show the CustomerID and ZIP of the customers whose EducationLevel is not null.**

### **Summary:**

For this query we will select the customer ID and ZIP from the customer table, but only for those customers that have an education level.

### **Code:**

```
SELECT CUSTOMERID, ZIP  
FROM CUSTOMER  
WHERE EDUCATIONLEVEL IS NOT NULL;
```

### **Query Report:**

6 not null

customerid	zip
100	16801
300	16802
400	16802

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**7. Show the ProductID and Name of the products which have the word 'corn' included in their name.**

### **Summary:**

In this query we will show the product ID and name from the product table for those products that contain corn in the name.

### **Code:**

```
SELECT PRODUCTID, NAME  
FROM PRODUCT  
WHERE NAME LIKE "*CORN*";
```

### **Query Report:**

7 like

productid name

10 Pop corn

20 Corn salad

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**8. Show the CustomerID, Gender, and Education Level of all the male customers in the descending order of CustomerID.**

**Summary:**

In this query we will select the customer ID, gender and education level from the customer table only for customers that are male and order by descending customer ID.

**Code:**

```
SELECT CUSTOMERID, GENDER, EDUCATIONLEVEL
FROM CUSTOMER
WHERE GENDER="M"
ORDER BY CUSTOMERID DESC;
```

**Query Report:**

8 order by

customerid gender

educationlevel

400 M

Ph.D.

100 M

Bachelor

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**9. Show the transaction ID and item name of the transactions that occurred.**

**Summary**

In this query we will the transaction ID and product name form both: the transaction and product tables. We will only show the transaction ID and product name when Item ID is equal to the Product ID.

**Code:**

```
SELECT Transaction.TransactID, Product.Name
FROM Transaction, Product
WHERE Transaction.ItemID=Product.ProductID;
```

**Query Report:**

9 join

transactid	name
T1200	Pop corn
T2200	Pop corn
T4300	Pop corn
T4100	Pop corn
T3400	Pop corn
T3100	Corn salad
T2300	Corn salad
T5100	Corn salad
T1400	Shoes
T7300	Shoes
T6100	Tissue

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**10. Show the transaction ID and item name of the transactions that occurred on December 4 or 6 of 2009.**

**Summary:**

We will select the transaction ID and product name from both: the transaction and product table, where the item ID is equal to the Product ID and the day is either 12/4/2009 or 12/6/2009.

**Code:**

```
SELECT Transaction.TransactID, Product.Name
FROM Transaction, Product
WHERE Transaction.ItemID=Product.ProductID AND (Transaction.Day=#12/4/2009# OR
Transaction.Day=#12/6/2009#);
```

**Query Report:**

## 10 join

transactid	name
T2300	Corn salad
T5100	Corn salad

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## 11. Get the average income per gender.

### Summary:

We will select the gender and the average of the income (name it averageincome), from the customer table and group them by gender.

### Code:

```
SELECT Gender, AVG(Income) AS averageincome
FROM Customer
GROUP BY Gender;
```

### Query Report:

## 11 group by

gender	averageincome
F	\$80,000.00
M	\$80,000.00

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## 12. Get the average income for female customers.

### Summary:

We will select the gender and the average of the income (name it averageincome), from the customer table, where gender is female and group them by gender.

### Code:



```
SELECT Gender, AVG(Income) AS averageincome
FROM Customer
WHERE GENDER="F"
GROUP BY Gender;
```

### **Query Report:**

12 group by

gender	averageincome
F	\$80,000.00

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**13. Show the total number of transactions per DayOfWeek, in which the sum of payments for each DayOfWeek is greater than \$10.00.**

### **Summary:**

We will select the day of the week and the sum of transactions ID (we will name it numbertransact), from the transaction table and group by day of the week. We will only show those day of weeks having sum of payment greater than 10.

### **Code:**

```
SELECT dayofweek, count(transactid) AS numbertransact
FROM transaction
Group by dayofweek
Having sum(payment) > 10;
```

### **Query Report:**

13 having

dayofweek	numbertransact
Fri	1
Sat	5
Sun	1

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**14. Show the total quantity of sold items per item ID from the transaction records, in which coupons are not used and the quantity is greater than 10.**

**Summary:**

We will select the item ID and the sum of the item quantity sold from the transaction table where there was no coupon usage and group it by item ID. We will only show the sum for those items having a sold quantity of more than or equal to 10.

**Code:**

```
Select ItemID, SUM(QTY) as amount
From Transaction
Where Couponusage = "No"
Group by ItemID
Having SUM(QTY) >= 10;
```

**Query Report:**

14 having	
itemid	amount
10	15

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**15. Get the transaction ID of the transactions in which coupons with a 20% discount rate were used.**

**Summary:**

For this query we will select the transaction ID from both the transaction and coupon tables where the Coupon ID from the transaction table equal the coupon ID from the coupon table and have a discount rate of 0.2.

**Code:**

```
SELECT Transaction.TransactID
FROM Transaction, Coupon
WHERE Transaction.CouponID = Coupon.CouponID AND
Coupon.DiscountRate = 0.2;
```

**Query Report:**

## 15 nested

transactid
T3100
T2300

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**16. Show the transaction ID and item name of the transactions that occurred on December 4 or in 2009.**

### Summary:

In this query we will select the transaction ID and the product name from the transaction and product tables where the item ID equals the Product ID and the transaction day is 12/4/2009 or 12/6/2009

### Code:

```
SELECT Transaction.TransactID, Product.Name
FROM Transaction, Product
WHERE Transaction.ItemID=Product.ProductID AND (Transactions.Day=#12/4/2009# OR
Transactions.Day=#12/6/2009#);
```

### Query Report:

## 16

transactid	name
T2300	Corn salad
T5100	Corn salad

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**17. Show the total number of transactions per day-of-week, in which the sum of payments for each day-of-week is greater than \$10.00.**

### Summary:

We will select the day of the week and the number of transactions ID (as numberoftrans) from the transactions table grouped by day of week and having a sum payment greater than 10.

**Code:**

```
SELECT dayofweek, count(transactid) AS numberoftrans
FROM transactions
Group by dayofweek
Having sum(payment) > 10;
```

**Query Report:**

17	
dayofweek	numberoftrans
Fri	1
Sat	5
Sun	1

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**18. Show the total amount of sold items per item ID from the transaction records, in which coupons are not used and the amount is greater than equal to 2.**

**Summary:**

We will select the item ID and the sum of the quantities sold (as amount) from the transactions table where we have no coupon usage grouped by item ID and having a sum quantity greater or equal to 2.

**Code:**

```
Select ItemID, SUM(Qty) as amount
From Transactions
Where Couponusage = 'No'
Group by ItemID
Having SUM(Qty) >= 2;
```

**Query Report:**

18

itemid	amount
10	15
20	2
30	2
40	2

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**19. Get the transaction ID of the transactions in which coupons with a 20% discount rate were used.**

**Summary:**

We will select the transaction Id from the transaction and coupon tables where the transaction coupon ID and the coupon ID are equal and the discount rate is 0.2.

**Code:**

```
Select Transactions.TransactID
From Transactions, Coupon
Where Transactions.CouponID = Coupon.CouponID
and Coupon.DiscountRate = 0.2;
```

**Query Report:**

19

transactid
T3100
T2300

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**20. Get the name and unit price of the products that female customers have purchased.**

**Summary:**

For this query we will select the name and unit price form the product table where the product ID IN select the Item ID from the transaction table where CID IN select the customer ID from customer table where gender is female.

**Code:**

```
SELECT Name, UnitPrice
FROM Product
WHERE ProductID IN
(SELECT ItemID
FROM Transaction
WHERE Transaction.CID IN
(SELECT CustomerID
FROM Customer
WHERE Gender = 'F'));
```

**Query Report:**

20

name		unitprice
Pop corn		\$5.00
Corn salad		\$6.00
Shoes		\$9.00