Ecommerce Data – An 360° View

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Objective: To Create an Easy & Customized Report for an Organization which becomes an easy tool for every employees to visualize the Organizational Performance as well as their Individual Contribution.

Abstract:

1. Transaction data – Obtained on Every User Individual Progress.

TransactionID	DOT	UserID	Amount	Category	Accessories	Place	City	Payment Mode
0	06-26-2015	4007024	40.33	Exercise & Fitness	Cardio Machine Accessories	Clarksville	Tennessee	credit
1	05-26-2015	4006742	198.44	Exercise & Fitness	Weightlifting Gloves	Long Beach	California	credit

2. Customer Data - A Secondary table stored as a result of Transaction.

CID	Fname	Lname	Age	Profession
4000001	Kristina	Chung	55	Pilot
4000002	Paige	Chen	74	Teacher

Use-case Generation

Use Case 1: ***Constraint Based Amount Scenario***

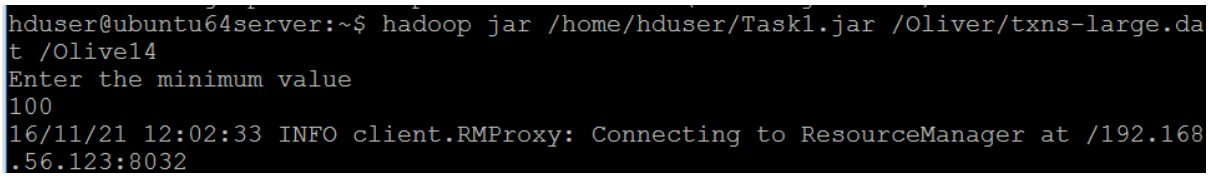
- **Input**: Amount [Custom Input from the User]
- **Key**: ID, **Value**: Amount
- **Output**: Set of User ID and Amount Based on the Input provided by the user
- **Data Validation**: Yes.
  Constraint: User Input Can be Only Numbers
- **Concept used** : Advanced Map Reduce

Description: We need to find the Set of User ID and their Associated Amount Based on the Amount Specified by the User.

Why this Report: To find the set of customers who does a purchase for a minimum amount comparing to the standards set by the organization.

Progress: Organization will have an opportunity for creating a new offers or benefits of these set of customers. These benefits can be either through mail or message. The benefit offers can be also displayed to the customer once they open their authenticated site.

Screen Shot 1.1: Input Window



Screen Shot 1.2: Output Window

```
4001371 187.72
4004939 198.32
4005788 159.5
4009362 141.7
4005452 101.34
4002061 175.61
4002286 121.81
4004311 184.18
4009827 142.03
4008449 192.67
4004318 199.07
4008637 198.4
4007202 129.43
4008092 156.38
4007571 123.58
4002940 144.91
4003685 191.29
4002441 139.78
4005772 177.22
4007287 163.81
4007843 180.41
4001406 168.49
```

Screen Shot 1.3: Data Validation

```
hduser@ubuntu64server:~$ hadoop jar /home/hduser/Task1.jar /Oliver/txns-large.da
t /Olive15
Enter the minimum value
hy
Please enter only numbers
hduser@ubuntu64server:~$
```

Output Path:

hadoop fs -cat /Olive15/part-m-00000

Use Case 2: ***A Single Spot with a Range***

- **Input File**: txns-large.dat
- **Input:** Upper and Lower Limit [Custom Input from the User]
- **Key:** ID, Name **Value:** Amount
- **Output:** A Single Count that match the Range
- **Data Validation:** Yes.
  Constraint: User Input Can be Only Numbers
- **Concept :** Advanced Map Reduce

Description: To Obtain the Exact Count of number of Amount Transaction within a Particular Range

Why this Report: To find a number made in Sales.

Progress: Report from this can be used by Sales Manager. The report an exact view of the number of Transaction made in a particular limit range. If in a particular range, the sales count is less, then the Manager should move a step forward to identify the gap, and plan a mechanism to increase sales.

Screen Shot 2.1: Input Window

```
hduser@ubuntu64server:~$ hadoop jar /home/hduser/Task2.jar /Oliver/txns-large.da
t /Olive17
Enter the lower & upper limit
250
500
```

Screen Shot 2.2: Output Window

```
hduser@ubuntu64server:~$ hadoop fs -cat /Olive17/part-r-00000
50000
```

Screen Shot 2.3: Data Validation

```
hduser@ubuntu64server:~$ hadoop jar /home/hduser/Task2.jar /Oliver/txns-large.da
t /Olive16
Enter the lower & upper limit
t
Please enter only numbers
```

Output Path:

Hadoop fs –cat /Olive17/part-r-00000

Use Case 3 & 4: ***An User Aggregate***

- **Input File**: txns-large.dat
- **Input**: ID [Custom Input from the User]
- **Key**: ID, **Value**: Amount
- **Output**: Count, Sum & Average Transaction of a User.
- **Data Validation**: Yes.
  Constraint: User Input Can be Only Numbers
- **Concept** : Advanced Map Reduce

Description: To obtain a summarized data of a user about the transaction completed.

Why this Report: To get an Individual Customer Performance

Progress: This report can be used any Employee in the Organization to identify their helpdesk queries. However this can be also used to Identify the Summarized Customer Performance till date .

Screen Shot 3.1 & 4. 1: Data Validation

```
hduser@ubuntu64server:~$ hadoop jar /home/hduser/Task3.jar /Oliver/txns-large.da
t /Olive22
tEnter Your Customer ID
t
Please enter only numbers
```

Screen Shot 3.2 & 4.2: Input Window

```
hduser@ubuntu64server:~$ hadoop jar /home/hduser/Task3.jar /Oliver/txns-large.da
t /Olive21
Enter Your Customer ID
4007024
```

Screen Shot 3.3 & 4.3: Output Window

```
hduser@ubuntu64server:~$ hadoop fs -cat /Olive21/part-r-00000
4007024 Sum960.11Count7Average137.15857142857143
```

Output Path:

Hadoop fs –cat /Olive21/part-r-00000

Use Case 5: ***Quick Month Sales Review***

- **Input File**: txns-large.dat
- **Input**: Month [Custom Input from the User]
- **Key**: Month, **Value**: Amount
- **Output** : Total Sales of Month
- **Data Validation**: Yes.

  Constraints 1: Month can be only between 1-12

  Constraints 2: Month can be only Positive Value

  Constraints 3: Month can be only in Numbers

  - **Concept**: Advanced Map Reduce

Description: To obtain a summarized view of a Month.

Why this Report: For an effective Analysis

Progress: Every month it is the responsibility for a Business head to analyse the sales performance. The data obtained from the base is very large and hence the filtering of an individual data as per the requirement is complex. This report will give an overall sales made in the month handy to the Business head to understand where do they stand and bring out innovative ideas to move further.

Screen Shot 5.1: Data Validation

```
hduser@ubuntu64server:~$ hadoop jar /home/hduser/Task5.jar /Oliver/txns-large.da
t /Olive25
Enter the month
y
Please enter only numbers
hduser@ubuntu64server:~$ hadoop jar /home/hduser/Task5.jar /Oliver/txns-large.da
t /Olive26
Enter the month
-5
Please Enter only Positive numbers
hduser@ubuntu64server:~$ hadoop jar /home/hduser/Task5.jar /Oliver/txns-large.da
t /Olive27
Enter the month
45
Please Enter a Valid month(1-12)
```

Screen Shot 5.2: Input Window

```
hduser@ubuntu64server:~$ hadoop jar /home/hduser/Task5.jar /Oliver/txns-large.da
t /Olive28
Enter the month
8
```

Screen Shot 5.3: Output Window

```
hduser@ubuntu64server:~$ hadoop fs -cat /Olive28/part-r-00000
08      434255.0100000014
```

Output Path:

Hadoop fs –cat /Olive28/part-r-00000

Use Case 6: ***Large Module – Small Module Visualization***

- **Input File**: txns-large.dat
- **Input** : Predefined
- **Key**: Month, **Value**: Entire Line of Data
- **Output** : Partitioned Month
- **Data Validation**: NA
- **Concept** : Map Reduce with Partitioner

Description: To Obtain a Distributed output for every month specific Data. Each of the output will be stored in a separate file based on month.

Why this Report: For modularity

Progress: The server used by the organization streams various data from the Clients. The frequency of the data will be unimaginable. All these data to the server is dumped together. Hadoop developer of the company can help the admin to partition the data based on the month. Now this can be a dual purpose way. Admin can maintain back up of data for every month as well an over view for the managers.

Screen Shot 6.1: ***Output Window [Multiple Partitioned Files]***

```
hduser@ubuntu64server:~$ hadoop fs -ls /Olive29
Found 13 items
-rw-r--r--   1 hduser supergroup          0 2016-11-21 13:36 /Olive29/_SUCCESS
-rw-r--r--   1 hduser supergroup     377449 2016-11-21 13:35 /Olive29/part-r-000
00
-rw-r--r--   1 hduser supergroup     339311 2016-11-21 13:35 /Olive29/part-r-000
01
-rw-r--r--   1 hduser supergroup     385895 2016-11-21 13:35 /Olive29/part-r-000
02
-rw-r--r--   1 hduser supergroup     368421 2016-11-21 13:35 /Olive29/part-r-000
03
-rw-r--r--   1 hduser supergroup     371798 2016-11-21 13:35 /Olive29/part-r-000
04
-rw-r--r--   1 hduser supergroup     368247 2016-11-21 13:35 /Olive29/part-r-000
05
-rw-r--r--   1 hduser supergroup     375554 2016-11-21 13:36 /Olive29/part-r-000
06
-rw-r--r--   1 hduser supergroup     374305 2016-11-21 13:36 /Olive29/part-r-000
07
-rw-r--r--   1 hduser supergroup     367955 2016-11-21 13:36 /Olive29/part-r-000
08
-rw-r--r--   1 hduser supergroup     368733 2016-11-21 13:36 /Olive29/part-r-000
```

Screen Shot 6.2: ***Output Window [Specific Month View]***

```
00002201,01-05-2015,4007645,022.13,Exercise & Fitness,Abdominal Equipment,Colora
do Springs,Colorado,credit
00006383,01-03-2015,4009779,076.99,Indoor Games,Air Hockey,Flint,Michigan,credit
00032500,01-05-2015,4006784,126.42,Indoor Games,Ping Pong,Eugene,Oregon,credit
00044032,01-18-2015,4004101,049.39,Dancing,Ballet Bars,Pittsburgh,Pennsylvania,c
redit
00044029,01-14-2015,4000585,128.11,Gymnastics,Balance Beams,Jacksonville ,Florid
a,credit
00044028,01-09-2015,4009478,183.65,Team Sports,Cricket,Reno,Nevada,credit
00032514,01-07-2015,4005181,049.23,Water Sports,Swimming,Lexington,Kentucky,cred
it
00016778,01-01-2015,4004887,164.83,Team Sports,Hockey,Jackson,Mississippi,credit
00006370,01-02-2015,4009772,055.41,Jumping,Bungee Jumping,San Antonio,Texas,cred
it
00032523,01-19-2015,4008207,022.03,Games,Portable Electronic Games,Durham,North
Carolina,credit
00032525,01-15-2015,4003481,150.91,Winter Sports,Cross-Country Skiing,Clarksvill
e,Tennessee,credit
00032527,01-02-2015,4003279,145.18,Exercise & Fitness,Weightlifting Machine Acce
ssories,Columbus,Georgia,credit
00011476,01-09-2015,4006467,158.87,Gymnastics,Balance Beams,Jersey City,New Jers
ey,credit
00006368,01-06-2015,4000492,124.45,Winter Sports,Bobsledding,Irving,Texas,credit
00032530,01-10-2015,4009194,113.97,Gymnastics,Gymnastics Rings,Bellevue,Washingt
```

Output Path:

Hadoop fs –cat /Olive29/part-r-00000

Use Case 7: Get the Profession

- **Input File**: txns-large.dat, Customer.dat
- **Input** : ID, AMT, PROFESSION
- **Key**: ID, **Value**: AMT & PROFESSION
- **Output** : Profession
- **Concept** : Mapper Side Join

Description: To Find the Profession of a user who has spent the Max Amount for the Transaction data

Why this Report: To individualize the products

Progress: To bring out an increase in individualized products based on profession. There could be some products which can be used for by a Certain Category of people. For Example, Virtual mouse for every Techies at offers . These kind of reports will help the organization to bring out various products targeting a set of customers with exciting offers.

Screen Shot 7.1: Input Window

```
hduser@ubuntu64server:~$ hadoop fs -put /home/hduser/Customer.dat /Oliver
hduser@ubuntu64server:~$ hadoop jar /home/hduser/Task6_11.jar /Oliver/txns-large
.dat /Olive30
```

Screen Shot 7.2: Output Window

```
hduser@ubuntu64server:~$ hadoop fs -cat /Olive30/part-r-00000
Pilot   1700.17
```

Output Path:

Hadoop fs –cat /Olive30/part-r-00000

Use Case 8: ***Top 3 Contributors***

- **Input File**: txns-large.dat, Customer.dat
- **Input** : ID, AMT, NAME
- **Key**: NAME, **Value**: AMT
- **Output** : NAME
- **Concept** : Mapper Side Join

Description: To find the top 3 Customers who has spent the MAX Transaction

Why this Report: To Identify Category wise Performers.

Progress: This report is just to identify top customers who has done good amount of transactions at various products. This will help to identify the fast moving products and will help to promote advertisement about the product as soon the customer opens the website.

Screen Shot 8. 1: Input Window

```
hduser@ubuntu64server:~$ hadoop jar /home/hduser/Task7_11.jar /Oliver/txns-large
.dat /Olive31
```

Screen Shot 8. 2: Output Window

```
hduser@ubuntu64server:~$ hadoop fs -cat /Olive31/part-r-00000
Karen   1080.42
Kristina        980.51
Elsie   719.66
```

Output Path:

Hadoop fs –cat /Olive31/part-r-00000

Use Case 9: ***Rock Star of the Month***

- **Input File**: txns-large.dat, Customer.dat
- **Input** : ID, AMT, NAME
- **Key**: NAME, **Value**: AMT
- **Output** : NAME [BASED ON MONTH]
- **Concept** : Mapper Side Join

Description: To find the User who has Spent MAX Amount in the month of July

Why this Report: To identify Luckiest Person.

Progress: To gift the customer with an exciting prize for the contribution made .

Screen Shot 9. 1: Input Window

```
hduser@ubuntu64server:~$ hadoop jar /home/hduser/Task8_Trans.jar /Oliver/txns-la
rge.dat /Olive32
```

Screen Shot 9.2: Output Window

```
hduser@ubuntu64server:~$ hadoop fs -cat /Olive32/part-r-00000
Karen   155.18
```

Output Path:

Hadoop fs –cat /Olive32/part-r-00000

Use Case 10: Take me to and From the Beginning

- **Input File**: txns-large.dat
- **Input** : AMT
- **Key**: AMT, **Value**: Entire line of a data
- **Output** : SORTED data based by Amount
- **Concept** : Simple Map Reduce

Description: To sort the output based on the Amount

Why this Report: Range of Results.

Progress: This report will be handy to managers of various departments to identify the different set of products sold in various ranges. This can be partitioned to multiple employees to concentrate on the product which has been sold quickly / more , identify the scarcity of the product and meet the demands of the customer.

Screen Shot 9.1: Input Window

```
hduser@ubuntu64server:~$ hadoop jar /home/hduser/Task10.jar /Oliver/txns-large.d
at /Olive33
```

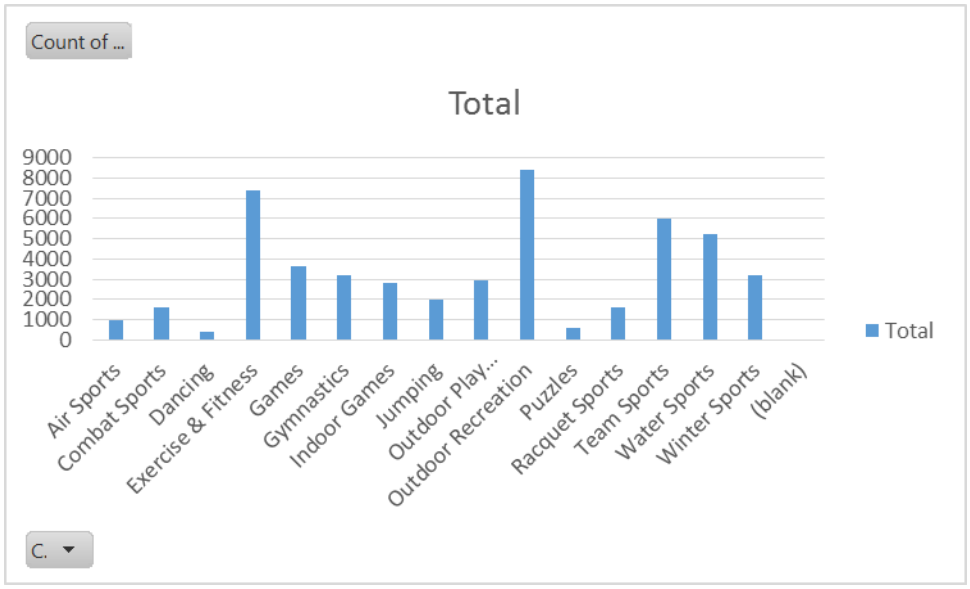
Screen Shot 9. 2 : Output Window

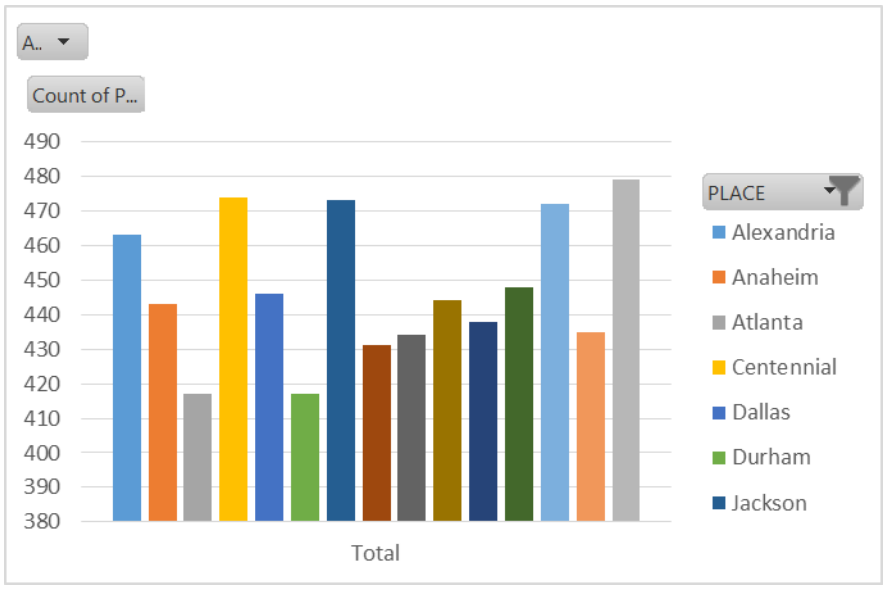
```
00034188,02-26-2015,4006041,195.68,Combat Sports,Fencing,Madison,Wisconsin,credi
t
00021379,12-13-2015,4000223,195.68,Outdoor Recreation,Deck Shuffleboard,Cambridg
e,Massachusetts,credit
00020735,04-08-2015,4003036,195.68,Outdoor Recreation,Deck Shuffleboard,Boston,M
assachusetts,credit
00015706,10-13-2015,4007189,195.68,Winter Sports,Luge,Stamford,Connecticut,credi
t
00001412,06-12-2015,4006334,195.69,Water Sports,Water Polo,Fremont,California,cr
edit
00003451,01-30-2015,4003225,195.70,Racquet Sports,Racquetball,Oklahoma City,Okla
homa,credit
00001932,07-05-2015,4007228,195.71,Winter Sports,Downhill Skiing,Reno,Nevada,cre
dit
00004787,12-07-2015,4008646,195.72,Water Sports,Bodyboarding,Jersey City,New Jer
sey,credit
00025794,05-25-2015,4007111,195.72,Games,Poker Chips & Sets,San Francisco,Califo
rnia,credit
00007382,11-22-2015,4001367,195.72,Gymnastics,Vaulting Horses,New York,New York,
credit
00027119,06-22-2015,4001170,195.72,Exercise & Fitness,Exercise Balls,Seattle,Was
hington,credit
00046726,06-19-2015,4001182,195.72,Exercise & Fitness,Cardio Machine Accessories
,St. Louis  ,Missouri,credit
```

Output Path:

Hadoop fs –cat /Olive33/part-r-0000

Analysis from Report Created by Developer:





Conclusion:

A handy tool that makes the life easier of employee in the organization is now ready. This Project, as title says, as 360 Degree report generation, that can be used by the Organization to make their day – to – day activities easier and overcomes the time spent to analyse the data manually.