Graded Assignment: Peer-Graded Final Assignment

Deadline May 6, 11:59 PM ACST

AI Grading

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Project Title *

Detecting Credit Card Fraud

List at least 5 (five) data points that are required for the analysis and detection of a credit card fraud. (3 marks)

sudden transaction of $5000 should be detected as anomaly in spending.

2. Sudden change in transaction location. For example, a transaction in Sydney (Australia) immediately followed by another in New York (USA).
3. Sudden change in time-based patterns. For example, transactions made at 3am when the user never shops during that time.
4. Sudden change on type of purchased items. For example, the cardholder typically shops at supermarkets but now purchases a luxury item from a high-end store.
5. Sudden change on transactions per minute/hour. For example, high frequency of transactions can flag credit card fraud.

Refer to the data table below and identify 3 (three) errors/issues that could impact the accuracy of your findings. (3 marks)

IP Address	User ID	Account Number	Age	Shipping Address	Transaction Date	Transaction Time	Transaction Value	Product Category	Units Purchased
3.56.123.0	johnp	25671147	32	1542, Orchid Lane, WA 98706, US	15-5-20	15:00:05	$121.58	Clothing	1
3.56.123.0	johnp	25671147	32	1542, Orchid Lane, WA 98706, US	10-6-20	10:23:10	$79.23	Electronics	2
3.56.123.0	johnp	25671147	32	1542, Orchid Lane, WA 98706, US	1-6-20	07:12:45		Home Décor	1
1.186.52.7	johnp	25671147	32	In-store	3-6-20	01:11:10	$2,009.99	Electronics	10
	johnp	25671147	32	In-store	2020-06-03	01:15:12	$4,131.00	Electronics	15
1.186.52.7	johnp	25671147	32	P.O. Box 1049	03-06-2020	01:22:24	$3,010.50	Tools	20
1.58.167.2	davidg	51422789	47	90 Robinson Blvd, Alberta, 97602, Canada	15 May 2020	17:02:08	$234.20	Furniture	1
1.58.167.2	davidg	51422789	47	90 Robinson Blvd, Alberta, 97602, Canada	18 May 2020	19:12:45	$141.00	Kithcen Supplies	3
	davidg	51422789	47	90 Robinson Blvd, Alberta, 97602, Canada	01 June 2020	17:34:15	$157.25	Car Spares	2
1.58.167.2	davidg	51422789	47	90 Robinson Blvd, Alberta, 97602, Canada	13 June 2020	18:02:10	$59.99	Kithcen Supplies	1
172.165.10.1	ellend	11568528		P.O. Box 1322	07 June 2020	15:53:12	$99.99	Clothing	1
172.165.10.1	ellend	11568528		P.O. Box 1322	08 June 2020	17:15:30	$53.15	Beauty	1
1.167.255.10	ellend	11568528		P.O. Box 5401	02 July 2020	00:05:10	$4,895.00	Laptop	1

From the data table, I can see below errors / issues which could impact data accuracy:

1. Inconsistent data format: some dates are in DD-MM-YY while other in YYYY-MM-DD or DD Month YYYY
2. Mixed shipping address format: some rows use street addresses, while others use P.O Box or just "In-store" ("In-store" is not a valid address format for shipping).
3. Blank values of IP Address, Age and Transaction Value.

Refer to the data table below and identify 2 (two) anomalies or unexpected behaviors, that would lead you to believe the transaction may be suspect. (2 marks)

IP Address	User ID	Account Number	Age	Shipping Address	Transaction Date	Transaction Time	Transaction Value	Product Category	Units Purchased
3.56.123.0	johnp	25671147	32	1542, Orchid Lane, WA 98706, US	15-5-20	15:00:05	$121.58	Clothing	1
3.56.123.0	johnp	25671147	32	1542, Orchid Lane, WA 98706, US	10-6-20	10:23:10	$79.23	Electronics	2
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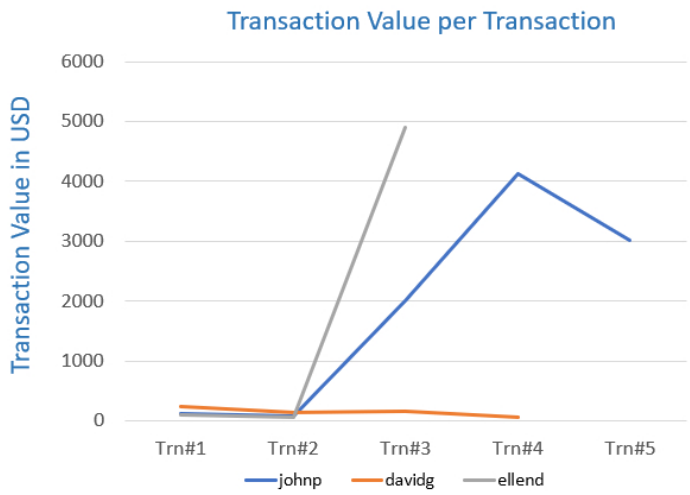
1.167.255.10	ellend	11568528		P.O. Box 5401	02 July 2020	00:05:10	$4,895.00	Laptop	1

From the data table, I can see 2 anomalies that would lead me to believe the transaction may be suspect.

1. Anomaly 1: last row shows extremely high-value purchase at an odd hour. (user ellend, transaction value $4,895 on 00:05:10; item to be shipped to P.O Box 5401 which is common in fraudulent purchases to hide identity)
2. Anomaly 2: multiple expensive electronics and tools transactions in very short timeframe by the same user johnp. On 03-06-2020, there were 3 large transactions totalling over $9,000, all made by the same user in just a few minutes.

Briefly explain your key take-away from the provided data visualization chart. (1 mark)



By looking at the chart, I can quickly see that user **ellend** has a sudden and extreme spike in transaction value (Tran#3). Also, user **johnp** has multiple high-value transactions. Spending of user **davidg** seems normal.

Identify the type of analysis that you are performing when you are analyzing historical credit card data to understand what a fraudulent transaction looks like.

Hint: The four types of Analytics include: Descriptive, Diagnostic, Predictive, Prescriptive. (1 mark)

Since I analyze historical credit card data to understand what a fraudulent transaction looks like, I think I am performing **descriptive analysis**. By definition, **descriptive analysis** looks at past data to identify patterns, trends and anomalies.

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