

Section 1: Definition of Fraud / Fraud Analysis Coderre Chapters 1 – 6, 8, & 9

1. True or false, is ALL theft fraud?
 - a. True
 - b. False

2. True or false, are ALL deceptive statements examples of fraud?
 - a. True
 - b. False

3. Define the fraud triangle. Use one or two sentences to describe each element of the triangle. (Week 1: Slide 19 & Page 5 Coderre)
 - a. **Opportunity:** The opportunity exists when there are weak controls and/or when an individual is in a position of trust. The opportunity for fraud often begins when an innocent, genuine error passes unnoticed, exposing a weakness in the internal controls.
 - b. **Pressure:** While the pressures on those who commit fraud are often of a financial nature, unrealistic corporate targets may also influence a person to commit fraud to meet the targets.
 - c. **Rationalization:** The rationalization for fraud often includes these beliefs:
 - i. The activity is not criminal.
 - ii. Their actions are justified.
 - iii. They are simply borrowing the money.
 - iv. They are ensuring that corporate goals are met.
 - v. "Everyone else is doing it" so it must be acceptable.

4. Data Analysis is a method for identifying the fraud. What are the three steps involved to use data for fraud identification? List these. (Page 75 Coderre)
 - a) Identify the objectives of the investigation.
 - b) Meet with the data owner and programmer.
 - c) Define the parameters for the required data.

5. What assumption can auditors make when searching for sources of information. Select all that are correct.
 - a. The information exists in an electronic form (Page 58 Coderre)
 - b. The information exists and is accessible (Ferrara)
 - c. The systems have information owners and permission is available to access the data (Ferrara)
 - d. There is good documentation on the data and the way the system structures the data
 - e. The system owner is probably involved in the fraud in some way
 - f. The information is not tainted and is forensically sound
 - g. The data is clean and will be easily analyzed

6. What are the three (3) things auditors must be careful to avoid? (Page 67 Coderre)

- a. **Improperly extracting the source data.** Care is required when extracting information from systems. Fields can be lost, decimal places shifted, or data corrupted.
- b. **Misinterpreting the data.** Even if the data is correct, it can be misread. For example, a file containing both debits and credits may be read as debits only. Auditors also can falsely assume that a field marked "location" in the personnel file will consistently designate an employee's physical location or that there are no additional employees at the same location who are not so coded.
- c. **Forgetting to consider real-life issues.** Even with uncorrupted data that is correctly understood, practical factors can make a huge difference to one's conclusions. Consider a data entry section whose increased error rate at the new facility was caused by the afternoon sun's glare and a case of color blindness among the operators.

7. In ACL what does a filter do? (Choose the one (1) correct/best answer.)

- a. Screens out harmful radiation from your computer screen
- b. **Identifies only those records meeting user defined criteria**
- c. Reduces the amount of inaccurate data in an ACL data file
- d. All of the above.

8. In ACL what is summarization? What function does it provide?

Summarization creates an overview that can help identify trends or anomalies within the data. The function essentially is a grouping operations. "They group the records in a table into numeric intervals, or aging periods, or groups based on values, or combinations of values, in fields. Once records are grouped, various sorts of patterns can become more evident."

Source: "Summarizing Data." Help - ACL Analytics 11. ACL Services Ltd., n.d. Web. 23 Feb. 2016.
<http://docs.acl.com/acl/11/index.jsp?topic=%2Fcom.acl.user_guide.help%2Ftable_definition%2Fabout_the_data_definition_wizard.html>.

9. In ACL what does the count function do? What function does it provide?

Count is "Used to count the total number of records in the current view, or only those records that meet the specified test conditions." The function provides a numeric value of frequency depending on the selected criteria.

Source: "ACLScript Command Reference." Help - ACL Analytics 11. ACL Services Ltd., n.d. Web. 23 Feb. 2016.
<http://docs.acl.com/acl/11/index.jsp?topic=%2Fcom.acl.language.help%2Flang_ref_commands%2Fr_command_reference.html>.

10. In ACL what does the Data Definition Wizard Do? How do you start the Data Definition Wizard?

"The Data Definition Wizard is a component of the ACL user interface that you use to define ACL tables. It provides a standard way to access a wide variety of data sources. The basic

process for defining an ACL table from a data source is consistent, but depending on the type of data source some of the required steps may be completed automatically by ACL.”

How to start the Data Definition Wizard: File > New > Table

Source: "About the Data Definition Wizard." About the Data Definition Wizard. ACL Services Ltd., n.d. Web. 23 Feb. 2016.
 <http://docs.acl.com/acl/11/index.jsp?topic=%2Fcom.acl.user_guide.help%2Ftable_definition%2Fc_about_the_data_definition_wizard.html>.

Section 2: ACL Audit Planning

Up until now you have worked with data that is largely uniform and easy to manipulate. We call this “clean data. In this exam you will be asked to work with data that will need some cleanup. In this case we will use data from both April and May’s transactions from the test data in the “ACL Sample Data Files Directory”. Use the project you set up for Labs 02 and 03 for this exam.

1. Develop an investigation plan for the exercise in Section 3 of this exam. Complete the table below

ACL Analysis Plan		
	<u>Need:</u>	<u>Have:</u>
Describe the information you need and have	<ul style="list-style-type: none"> • Date • Transaction Amount • Company Code • Description • Credit Card Used • Employee Name • Employee ID • Employee Department • HR Representative Clearance # 	<ul style="list-style-type: none"> • Date • Transaction Amount • Company Code • Description • Credit Card Used • Employee Name (Different Table) • Employee ID(Different Table) • Employee Department(Different Table)
Describe the location of the information (e.g. local file system, USB drive, etc.)	We will receive this information from the HR Reimbursement System. Additionally, files will be extracted from the local Accounting department drives and files to ensure that the transactions were consistent throughout the process. Transportation of data can be done through encrypted USBs or if feasible, CD-ROM.	
Describe any related projects (hint: labs performed in this class)	We performed a similar analysis for “Acceptable” and “Unacceptable” transactions in April. We were able to summary and identify all transactions in April as well as affiliated departments and whether the transactions were billed to internal departments or external clients	
List the table names you will import and create and their associated data files	We will export the Trans_May.xls file and its two pages (Trans1_May and Trans2_May) into ACL. From there, we will be able to join those two tables into “Trans_May_All.”	

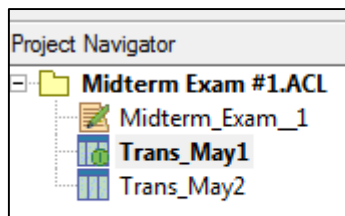
Briefly describe the process you will take to analyze the files	After ensuring that all data fields are accurate and consistent, I will cross check all transactions codes to “Unacceptable Codes” to determine which transactions are “Unacceptable.” From the stance of auditing vendors, I will summarize the frequency of vendor transactions throughout May and note any transaction anomalies.
List the location of the output files (e.g. local disk, USB, etc.)	From ACL, all the findings will be exported to an Excel or Access file where final presentations will be delivered to upper management and supervisors.

Section 3: ACL - Working with Data

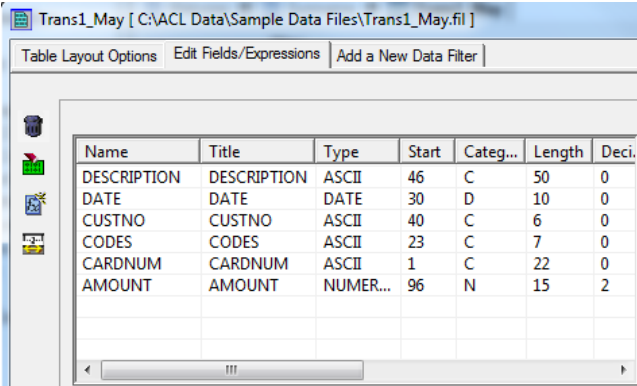
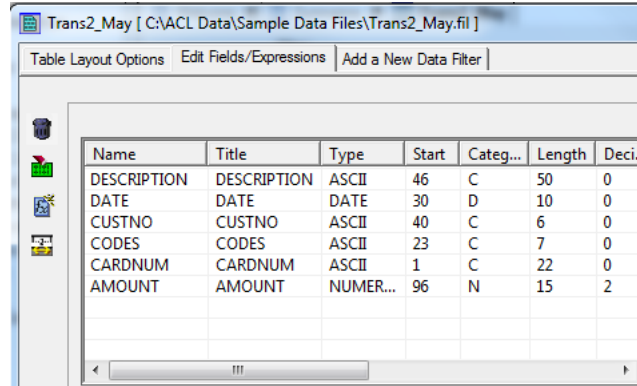
Use chapter 8 and 9 of the ACL in Practice Tutorial and the associated practice data to complete this section. Please complete the following exercises and submit your results. Refer to Chapter 7 where necessary. Screenshots are acceptable but they must be clearly readable in your submission.

Perform all of the tasks outlined in Chapter 7 (See page 63 - of ACL in Practice for more details) and then perform the following exercises:

1. Exam Step 1 – Import and correct the structure of two data sources
 - a. The **Trans_May.xls** contains two worksheets. Import both worksheets from the same file into ACL. Name each table. **Submit the two new tables.**



- b. Edit the table layout for both new tables.
 - i. Edit the AMOUNT, CARDNUM, and CODES fields.
 1. AMOUNT: Set the Data Type to be NUMERIC with Format -999999.99
 2. CARDNUM: Set the Data Type to ASCII.
 3. CODES: Set the Data Type to ASCII.
 - ii. Verify all fields.
 - iii. **Submit the results of the verification and changes.**

May 1	May 2
 <p>As of: 02/23/2016 15:52:07</p> <p>Command: VERIFY FIELDS AMOUNT CARDNUM CODES CUSTNO DATE DESCRIPTION ERRORLIMIT 10 TO SCREEN Table: Trans_May1</p> <p>0 data validity errors detected</p>	 <p>As of: 02/23/2016 15:52:36</p> <p>Command: VERIFY FIELDS AMOUNT CARDNUM CODES CUSTNO DATE DESCRIPTION ERRORLIMIT 10 TO SCREEN Table: Trans_May2</p> <p>0 data validity errors detected</p>

c. Compare the layout of both tables. **Submit the results.**

May 1	May 2																																																																																				
<p>File 'Trans_May1.fil' (format 'Trans_May1') is your PRIMARY file. The record length is 111</p> <p>Fields</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Name</th> <th>Type</th> <th>Start</th> <th>Length</th> <th>Decimals</th> <th>Field explanation</th> </tr> </thead> <tbody> <tr> <td>CARDNUM</td> <td>ASCII</td> <td>1</td> <td>16</td> <td></td> <td>WIDTH 25</td> </tr> <tr> <td>CODES</td> <td>ASCII</td> <td>23</td> <td>4</td> <td></td> <td>WIDTH 10</td> </tr> <tr> <td>DATE</td> <td>DATE</td> <td>30</td> <td>10</td> <td></td> <td>PICTURE "MM/DD/YYYY"</td> </tr> <tr> <td>CUSTNO</td> <td>ASCII</td> <td>40</td> <td>6</td> <td></td> <td></td> </tr> <tr> <td>DESCRIPTION</td> <td>ASCII</td> <td>46</td> <td>50</td> <td></td> <td></td> </tr> <tr> <td>AMOUNT</td> <td>NUMERIC</td> <td>96</td> <td>15</td> <td>2</td> <td>PICTURE "-999999.99" WIDTH 16</td> </tr> </tbody> </table>	Name	Type	Start	Length	Decimals	Field explanation	CARDNUM	ASCII	1	16		WIDTH 25	CODES	ASCII	23	4		WIDTH 10	DATE	DATE	30	10		PICTURE "MM/DD/YYYY"	CUSTNO	ASCII	40	6			DESCRIPTION	ASCII	46	50			AMOUNT	NUMERIC	96	15	2	PICTURE "-999999.99" WIDTH 16	<p>File 'Trans_May2.fil' (format 'Trans_May2') is your PRIMARY file. The record length is 110</p> <p>Fields</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Name</th> <th>Type</th> <th>Start</th> <th>Length</th> <th>Decimals</th> <th>Field explanation</th> </tr> </thead> <tbody> <tr> <td>CARDNUM</td> <td>ASCII</td> <td>1</td> <td>16</td> <td></td> <td>WIDTH 25</td> </tr> <tr> <td>CODES</td> <td>ASCII</td> <td>23</td> <td>4</td> <td></td> <td>WIDTH 10</td> </tr> <tr> <td>DATE</td> <td>DATE</td> <td>30</td> <td>10</td> <td></td> <td>PICTURE "MM/DD/YYYY"</td> </tr> <tr> <td>CUSTNO</td> <td>ASCII</td> <td>40</td> <td>6</td> <td></td> <td></td> </tr> <tr> <td>DESCRIPTION</td> <td>ASCII</td> <td>46</td> <td>50</td> <td></td> <td></td> </tr> <tr> <td>AMOUNT</td> <td>NUMERIC</td> <td>96</td> <td>15</td> <td>2</td> <td>PICTURE "-999999.99" WIDTH 15</td> </tr> </tbody> </table>	Name	Type	Start	Length	Decimals	Field explanation	CARDNUM	ASCII	1	16		WIDTH 25	CODES	ASCII	23	4		WIDTH 10	DATE	DATE	30	10		PICTURE "MM/DD/YYYY"	CUSTNO	ASCII	40	6			DESCRIPTION	ASCII	46	50			AMOUNT	NUMERIC	96	15	2	PICTURE "-999999.99" WIDTH 15
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- d. Correct any table layout differences.
- e. Combine the two tables with any of the following methods:
 - i. Join
 - ii. Relations
 - iii. Extract and append
 - iv. Merge
- f. Name the new table. **Submit the results of the combined tables.**

	AMOUNT	DESCRIPTION	CUSTNO	DATE
1	108.01	Tour Buses	925007	05/27/2003
2	71.57	Delivery Services - Local	051593	05/28/2003
3	5.83	Toll and Bridge Fees	503458	05/29/2003
4	152.97	Florists	925007	05/30/2003
5	390.33	Tour Buses	051593	03/31/2003
6	295.75	Hyatt	202028	05/01/2003
7	270.25	Computer Software Stores	962353	05/02/2003
8	223.18	Ramada Inn	503458	05/03/2003
9	1583.02	Cruise Lines	444413	05/05/2003
10	307.27	Caterers	250402	05/05/2003
11	176.29	Howard Johnson	051593	05/06/2003
12	12.15	Fast food restaurants	812465	05/07/2003
13	259.05	Hyatt	444413	05/08/2003
14	253.97	Hyatt	250402	05/09/2003
15	35.31	Taxis/Limousines	444413	05/10/2003
16	107.95	Bakeries	359310	05/11/2003
17	281.85	Radisson	284354	05/12/2003
18	119.32	Stationery Stores, Office and School Supply Stores	812465	05/13/2003
19	288.49	Radisson	778088	05/15/2003
20	138.80	Bands, Orchestras, Entertainers	962353	05/15/2003
21	15.18	Video Games, Arcades	812465	05/16/2003
22	363.34	Counseling Services - Debt, Marriage, Personal	503458	05/17/2003
23	22.72	Taxis/Limousines	284354	05/18/2003
24	23.74	Florists	925007	05/19/2003
25	898.05	EI/	778088	05/20/2003
26	27.48	Fast food restaurants	284354	05/21/2003
27	333.62	Motel 6	051593	05/22/2003
28	136.41	Testing Laboratories (non-medical)	778088	05/04/2003
29	169.57	Office, Photographic, Photocopy, and Microfilm Equ	202028	05/01/2003
30	276.01	Hampton Inn	503458	05/02/2003
31	356.46	Membership Clubs (Sports, Recreation, Athletic), C	202028	05/03/2003
32	285.55	Hampton Inn	284354	05/05/2003
33	47.08	Health and Beauty Spas	444413	05/05/2003
34	34.38	Taxis/Limousines	812465	05/06/2003
35	28.55	Aquariums, Sea-aquariums, Dolphinariums	202028	05/07/2003
36	97.58	Membership Clubs (Sports, Recreation, Athletic), C	051593	05/08/2003
37	39.85	Service Station	925007	05/09/2003
38	262.26	Business and Secretarial Schools	051593	05/10/2003
39	108.80	Caterers	962353	05/11/2003
40	200.15	Riviera Hotel And Casino	812465	05/12/2003
41	125.37	Hilton	250402	05/13/2003
42	177.17	Southwest	444413	05/15/2003

g. Run the profile command on the combined tables. **Submit the results.**

As of: 02/23/2016 16:16:46

Command: PROFILE FIELDS AMOUNT
 Table: Trans_May_All

Field Name	Total Value	Absolute Value	Minimum	Maximum
AMOUNT	47,487.78	47,487.78	5.83	1,999.06

h. Check the table for duplicates in the CUSTNO field. **Submit the results.**

As of: 02/23/2016 20:48:37

Command: DUPLICATES ON CUSTNO OTHER DESCRIPTION DATE CUSTNO CODES CARDNUM AMOUNT PRESORT TO SCREEN
Table: Trans_May_All

188 duplicates detected

Duplicates:

CUSTNO	DESCRIPTION	DATE	CODES	CARDNUM	AMOUNT
051593	Delivery Services - Local	05/28/2003	4214	8590128346463420	71.57
051593	Tour Buses	03/31/2003	4131	8590 1294 0066 5510	390.33
051593	Howard Johnson	05/06/2003	3638	8590120923083354	176.29
051593	Motel 6	05/22/2003	3700	8590120807946744	333.62
051593	Membership Clubs (Sports, Recreation, Athletic), C	05/08/2003	7997	8590129792699147	97.58
051593	Business and Secretarial Schools	05/10/2003	8244	8590122221251495	262.26
051593	Hilton	05/16/2003	3535	8590122692664620	164.36
051593	Hilton	05/26/2003	3535	8590120674263418	272.10
051593	Air Canada	05/01/2003	3009	8590126866956930	387.68
051593	Books, Periodicals and Newspapers	05/14/2003	5942	8590125918377349	17.68
051593	Plumbing and Heating Equipment	05/03/2003	5074	8590122974573538	89.50
051593	Stationery, Office Supplies, Printing	05/05/2003	5111	8590124072645078	189.67
051593	Southwest	05/02/2003	3066	8590120784984566	270.25
051593	Hilton	05/07/2003	3535	8590122720558982	386.26
051593	Information retrieval services	05/10/2003	7375	8590121762084715	127.65
051593	Air China	05/11/2003	3261	8590129593164703	1,790.56
051593	Chemicals and Allied Products	05/05/2003	5169	8590121394166062	175.24
051593	Tourist Attractions and Exhibits	05/16/2003	7991	8590125567358756	95.96
051593	Restaurants	05/19/2003	5812	8590121785018691	56.06
051593	Recreation Services, (Includes Swimming Pools, Min	05/22/2003	7999	8590126611059920	237.98

i. Why would this be significant? Submit your answer in one to three sentences.
Duplicates within this table would be significant because it displays vendors (CUSTNO) that (who have had more than one of the same transaction) could be potential suspects of fraud.

2. Exam Step 2 – Check the validity and format of the credit card numbers
 - a. From the combined table you created in Step 1, determine which card numbers in the table have an invalid format. Card numbers must have 16 digits and no other characters. Submit the results.
 - b. Command: NOT MAP(ALLTRIM(CARDNUM), "9999999999999999")
 - c. Result: 5 Records

	CODES	CUSTNO	DESCRIPTION	CARDNUM
1	4131	925007	Tour Buses	8590 1252 7244 7003
5	4131	051593	Tour Buses	8590 1294 0066 5510
87	2741	962353	Miscellaneous Publishing and Printing	8590-1224-9766-3807
90	7922	250402	Theatrical Producers (except Motion Pict	8590-1242-5362-1744
200	3742	503458	Club Med	8590-1214-6979-9624

d. Also, count the records and submit the results.

e. Command Line: COUNT

	CODES	CUSTNO	DESCRIPTION	CARDNUM
1	4131	925007	Tour Buses	8590 1252 7244 7003
5	4131	051593	Tour Buses	8590 1294 0066 5510
87	2741	962353	Miscellaneous Publishing and Printing	8590-1224-9766-3807
90	7922	250402	Theatrical Producers (except Motion Pict	8590-1242-5362-1744
200	3742	503458	Club Med	8590-1214-6979-9624

<< End of File >>

Global Filter: not map(alltrim(cardnum), "9999999999999999")

f. Create a computed field to change credit card numbers from this format:
 8590122497663807 to this format 8590-1224-9766-3807. Submit the results.

Option 1 (Good)

From the already created "CCN_Corrected = AllTrim(Include(cardnum,"0123456789"))," I created three more additional expressions to add "-" every four digits:

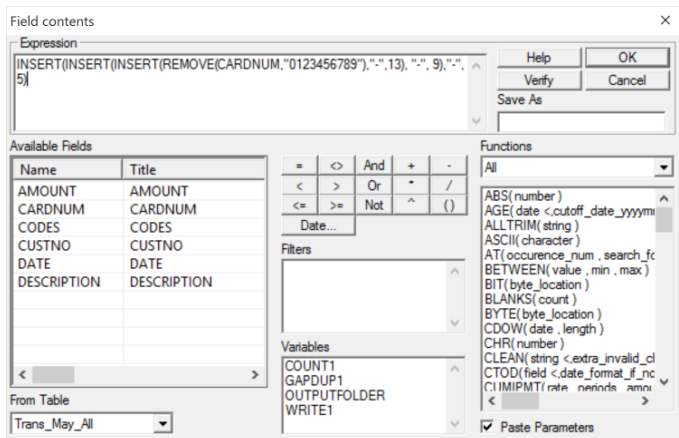
- CCN_Dashes_1 = INSERT(CCN_Corrected,"-",5)
- CCN_Dashes_2 = INSERT(CCN_Dashes_1,"-",10)
- CCN_Dashes_3 = INSERT(CCN_Dashes_2,"-",15)

	DATE	CUSTNO	CODES	CCN_Corrected	AMOUNT	CCN Dashes_3
1	05/27/2003	925007	4131	8590125272447003	108.01	8590-1252-7244-7003
2	05/28/2003	051593	4214	8590128346463420	71.57	8590-1283-4646-3420
3	05/29/2003	503458	4784	8590128263176714	5.83	8590-1282-6317-6714
4	05/30/2003	925007	5992	8590128006917664	152.97	8590-1280-0691-7664
5	03/31/2003	051593	4131	8590129400665510	390.33	8590-1294-0066-5510
6	05/01/2003	202028	3640	8590121044024386	295.75	8590-1210-4402-4386
7	05/02/2003	962353	5734	8590126590309991	270.25	8590-1265-9030-9991
8	05/03/2003	503458	3637	8590128379233112	223.18	8590-1283-7923-3112
9	05/05/2003	444413	4411	8590127539604447	1583.02	8590-1275-3960-4447
10	05/05/2003	250402	5811	8590124910032035	307.27	8590-1249-1003-2035

Option 2: (Better)

Use a nested function.

Expression: INSERT(INSERT(INSERT(REMOVE(CARDNUM,"0123456789"),"-",13), "- ", 9), "- ", 5)



	REMOVE(CARDNUM, "0123456789")	ALLTRIM(INCLUDE(CARDNUM, "0123456789"))	INSERT(INSERT(INSERT(CARDNUM, "- ", 13), "- ", 9), "- ", 5)
1	8590125272447003	8590125272447003	8590-1252-7244-7003
2	8590128346463420	8590128346463420	8590-1283-4646-3420
3	8590128263176714	8590128263176714	8590-1282-6317-6714
4	8590128006917664	8590128006917664	8590-1280-0691-7664
5	8590129400665510	8590129400665510	8590-1294-0066-5510
6	8590121044024386	8590121044024386	8590-1210-4402-4386
7	8590126590309991	8590126590309991	8590-1265-9030-9991
8	8590128379233112	8590128379233112	8590-1283-7923-3112
9	8590127539604447	8590127539604447	8590-1275-3960-4447
10	8590124910032035	8590124910032035	8590-1249-1003-2035

- g. Exam Step 3 – Examine the transactions. Which of the transactions have unacceptable merchants (e.g. Escort Services)?
 - i. Import the Unacceptable Codes table from the labs: Unacceptable_Codes.txt
 - ii. Clean the codes column
 - iii. Create a relation between the two
 - iv. Create a filter where Trans_All.Codes = Unacceptable_Codes.Codes
 - v. 9 records

	CARDNUM	CARD DASHES	CUSTNO	CODES	AMOUNT	DESCRIPTION	DATE
9	8590127539604447	8590-1275-3960-4447	444413	4411	1583.00	Cruise Lines	05/05/2003
21	8590120032047834	8590-1200-3204-7834	812465	7994	15.00	Video Games, Arcades	05/16/2003
59	8590124651080991	8590-1246-5108-0991	778088	7996	131.00	Amusement Parks	05/03/2003
61	8590128759809183	8590-1287-5980-9183	503458	7995	224.00	Betting	05/05/2003
100	8590121282195395	8590-1212-8219-5395	778088	7295	27.00	Babysitting services	05/13/2003
117	8590126009071523	8590-1260-0907-1523	778088	7273	117.00	Dating & Escort Svcs.	05/30/2003
156	8590120233319873	8590-1202-3331-9873	812465	5993	59.00	Cigar Stores & Stands	05/04/2003
184	8590126746343410	8590-1267-4634-3410	503458	5094	113.00	Precious Stones and Metals, Watches and Jewelry	05/10/2003
197	8590122631528386	8590-1226-3152-8386	812465	4411	250.00	Cruise Lines	05/23/2003

- h. Which vendors (CUSTNO) have several (3 or more) transactions over a brief periods of time (3 days?)

SAMPLE SOLUTION

MIS5208 Mid-Term Exam

Wednesday February 24th 2016

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- i. Use the Cross-tabulate command.
- j. Command: CROSSTAB ON DATE(ASCII(CUSTNO)) COLUMNS CUSTNO TO SCREEN
 - i. Use the DATE() function to convert date to ASCII so you can cross-tabulate the data.

Command: CROSSTAB ON DATE(ASCII(CUSTNO)) COLUMNS CUSTNO TO SCREEN
 Table: Trans_May_All

«Expression»	Count	Count	Count	Count	Count	Count	Count	Count	Count	Count	Count	Count
	051593	202028	250402	284354	359310	444413	503458	778088	812465	878035	925007	962353
03/31/2003	1	0	0	0	0	0	0	0	0	0	0	0
05/01/2003	1	2	0	1	0	0	1	0	2	1	1	1
05/02/2003	2	2	0	0	0	0	2	0	2	0	0	1
05/03/2003	1	1	1	1	0	0	1	2	1	0	0	1
05/04/2003	0	0	0	0	0	0	0	1	1	0	0	1
05/05/2003	2	1	3	1	0	3	1	3	2	0	1	0
05/06/2003	1	2	1	1	0	0	1	0	1	0	0	0
05/07/2003	1	1	0	1	0	0	0	0	2	0	1	1
05/08/2003	2	0	0	1	0	2	0	2	0	0	0	0
05/09/2003	2	0	1	0	0	0	0	1	0	0	2	1
05/10/2003	2	1	1	0	0	1	1	0	1	0	0	0
05/11/2003	1	1	0	1	1	0	0	1	1	0	0	1
05/12/2003	0	0	0	1	1	0	0	0	3	1	0	1
05/13/2003	0	0	1	0	0	1	1	2	1	0	1	0
05/14/2003	1	0	0	0	0	0	0	0	1	0	0	0
05/15/2003	1	1	1	0	0	2	2	3	1	0	1	2
05/16/2003	2	0	1	0	0	1	2	0	1	0	0	0
05/17/2003	0	0	1	0	0	1	2	2	0	0	0	1
05/18/2003	0	0	0	2	0	1	0	1	2	0	0	0
05/19/2003	1	0	1	0	0	0	2	0	0	0	2	0
05/20/2003	0	0	0	2	0	0	1	1	0	0	1	1
05/21/2003	0	1	0	1	1	0	1	0	0	0	2	0
05/22/2003	3	0	1	0	1	0	0	0	1	0	0	0
05/23/2003	0	1	0	0	1	0	1	0	1	0	0	1
05/24/2003	0	0	0	0	0	0	0	0	1	0	0	1
05/25/2003	0	3	1	1	2	0	0	0	1	0	1	1
05/26/2003	2	0	0	1	0	0	1	0	0	0	0	0
05/27/2003	0	1	0	0	0	0	1	1	0	0	1	0
05/28/2003	2	0	0	0	0	0	1	0	0	0	0	0
05/29/2003	1	0	0	0	0	0	1	0	0	0	0	1
05/30/2003	0	0	0	0	0	0	0	1	1	0	1	0
05/31/2003	0	0	0	0	0	1	0	0	0	0	0	0
Totals	29	18	14	15	7	13	23	21	27	2	15	16

1. The Total # of transactions is 200.
2. Now, by cross-tabulating the data, we can focus on which vendors have more than average transactions over the course of a month.
3. Vendors in RED have a high number of transactions.
4. Many fall within a 3-day period.

Option 1:

Command: SUMMARIZE ON CUSTNO DATE OTHER CUSTNO CODES DESCRIPTION TO SCREEN PRESORT
Table: Trans_May_All

As of: 03/06/2016 16:15:05

Command: SUMMARIZE ON CUSTNO DATE OTHER CUSTNO CODES DESCRIPTION TO SCREEN PRESORT
Table: Trans_May_All

CUSTNO	DATE	Count	CODES	DESCRIPTION
051593	03/31/2003	1	4131	Tour Buses
051593	05/01/2003	1	3009	Air Canada
051593	05/02/2003	2	3066	Southwest
051593	05/03/2003	1	5074	Plumbing and Heating Equipment
051593	05/05/2003	2	5111	Stationery, Office Supplies, Printing
051593	05/06/2003	1	3638	Howard Johnson
051593	05/07/2003	1	3535	Hilton
051593	05/08/2003	2	7997	Membership Clubs (Sports, Recreation, Athletic), C
051593	05/09/2003	2	7922	Theatrical Producers (except Motion Pictures), Tic
051593	05/10/2003	2	8244	Business and Secretarial Schools
051593	05/11/2003	1	3261	Air China
051593	05/14/2003	1	5942	Books, Periodicals and Newspapers
051593	05/15/2003	1	7394	Equipment Rental & Leasing Services, Tool Rental,
051593	05/16/2003	2	3535	Hilton
051593	05/19/2003	1	5812	Restaurants
051593	05/22/2003	3	3700	Motel 6
051593	05/26/2003	2	3535	Hilton
051593	05/28/2003	2	4214	Delivery Services - Local
051593	05/29/2003	1	5814	Fast food restaurants
202028	05/01/2003	2	3640	Hyatt

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Etc.

Option 2:

Cross Tabulate on Date and Codes.

DATE	Count 051593	Count 202028	Count 250402	Count 284354	Count 359310	Count 444413	Count 503458	Count 778088	Count 812465	Count 878035	Count 925007	Count 962353
03/31/2003	1	0	0	0	0	0	0	0	0	0	0	0
05/01/2003	1	2	0	1	0	0	1	0	2	1	1	1
05/02/2003	2	2	0	0	0	0	2	0	2	0	0	1
05/03/2003	1	1	1	1	0	0	1	2	1	0	0	1
05/04/2003	0	0	0	0	0	0	0	1	1	0	0	1
05/05/2003	2	1	3	1	0	3	1	3	2	0	1	0
05/06/2003	1	2	1	1	0	0	1	0	1	0	0	0
05/07/2003	1	1	0	1	0	0	0	0	2	0	1	1
05/08/2003	2	0	0	1	0	2	0	2	0	0	0	0
05/09/2003	2	0	1	0	0	0	0	1	0	0	2	1
05/10/2003	2	1	1	0	0	1	1	0	1	0	0	0
05/11/2003	1	1	0	1	1	0	0	1	1	0	0	1
05/12/2003	0	0	0	1	1	0	0	0	3	1	0	1
05/13/2003	0	0	1	0	0	1	1	2	1	0	1	0
05/14/2003	1	0	0	0	0	0	0	0	1	0	0	0
05/15/2003	1	1	1	0	0	2	2	3	1	0	1	2
05/16/2003	2	0	1	0	0	1	2	0	1	0	0	0
05/17/2003	0	0	1	0	0	1	2	2	0	0	0	1
05/18/2003	0	0	0	2	0	1	0	1	2	0	0	0
05/19/2003	1	0	1	0	0	0	2	0	0	0	2	0
05/20/2003	0	0	0	2	0	0	1	1	0	0	1	1
05/21/2003	0	1	0	1	1	0	1	0	0	0	2	0
05/22/2003	3	0	1	0	1	0	0	0	1	0	0	0
05/23/2003	0	1	0	0	1	0	1	0	1	0	0	1
05/24/2003	0	0	0	0	0	0	0	0	1	0	0	1
05/25/2003	0	3	1	1	2	0	0	0	1	0	1	1
05/26/2003	2	0	0	1	0	0	1	0	0	0	0	0
05/27/2003	0	1	0	0	0	0	1	1	0	0	1	0
05/28/2003	2	0	0	0	0	0	1	0	0	0	0	0
05/29/2003	1	0	0	0	0	0	1	0	0	0	0	1
05/30/2003	0	0	0	0	0	0	0	1	1	0	1	0
05/31/2003	0	0	0	0	0	1	0	0	0	0	0	0

5. To properly answer the question, I've provided a table below:

Vendors that have had more than three transactions over a three day period	Top 5 Vendors that pushed the most transactions in May
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<ul style="list-style-type: none">• 51593• 202028• 250402• 284354• 359310• 444413• 503458• 778088• 812465• 925007• 962353• Only one didn't (878035)	<ul style="list-style-type: none">• 051593• 202028• 503458• 778088• 812465
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k. Why would this any or all of this information be helpful in determining fraud?

By analyzing the frequency of transactions, we can determine strange frequencies (vendors that charge more frequently over the month), and this could be a good indicator if the vendor is committing a fraud given that they are not following "normal" transaction patterns.

These vendors would need a deeper dive of their purchases, descriptions, amounts, and purpose of transactions. For example: looking for duplicate transactions.