

ASSOCIATION

BY: CANDACE MCQUEEN

ASSOCIATION means they have:

- a common purpose and having a formal structure
- A connection or a combination
- Friendship
- A Correlation

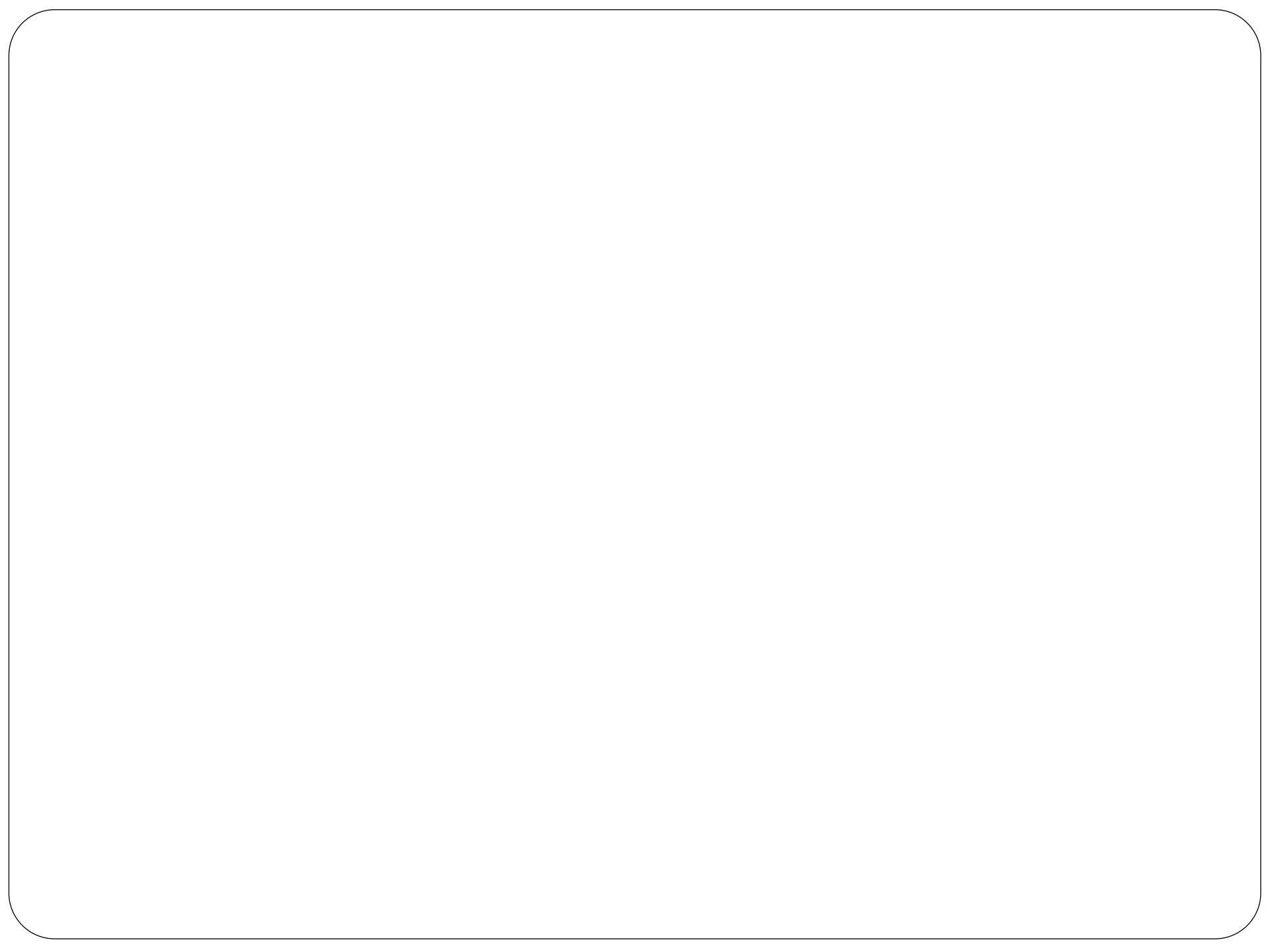


Their close association did not
last long.

.....Some
examples of
Associations.....

A FIST IN THE FACE>>>>>>>>>>BRUISE





An association mining problem can be decomposed using APRIORI.....

What APRIORI does...

- Calculate rules that express the probable co-occurrence of items within frequent item sets.
- Apriori calculates the probability of an item being present in a frequent item set, given that another item or items is present

Association Rules

- The Apriori algorithm calculates rules that express probabilistic relationships between items in frequent item sets. For example, a rule derived from frequent item sets containing A, B, and C might state that if A and B are included in a transaction, then C is likely to also be included.

>An Association Rule states that an item or group of items implies the presence of another item with some probability.

>Unlike decision tree rules, which predict a target, association rules simply express correlation.

Antecedent and Consequent

IF.....

- The IF component of an association rule is known as the antecedent.

THEN.....

- The THEN component is known as the consequent.
- ✓ The antecedent and the consequent are disjoint; they have no items in common.

The logo features the word "SONIC" in a bold, red, sans-serif font with a blue outline. The letters are set against a yellow, rounded rectangular background that is tilted upwards from left to right. This yellow background is superimposed on a larger, light blue, rounded rectangular background, also tilted in the same direction. The entire graphic has a black outline.

SONIC

America's

Drive-In

Items on the Sonic menu.....



INFORMATION ABOUT MY DATA.....

- DATA TAKEN ON NOV. 30 2011
 - 21 ATTRIBUTES
 - Breakfast 1, Breakfast 2, burger 1, burger 2, burger 3 , WP 1, WP 2, CHK 1, CHK 2, SWAMP 1, SWAMP 2, SWAMP 3, SWAMP 4, SIDE 1 SIDE2, SIDE 3, FOUNTAIN 1, FOUNTAIN 2, FOUNTIAN 3, FOUNTAIN 4, FROZEN 1
 - 99 TICKETS/RECIEPTS

.....PLEASE LOOK AT
THE RECEIPT THAT I
HAVE GIVEN YOU.....

Home Insert Page Layout Formulas Data Review View

Clipboard Font Alignment Number Styles Cells Editing

Calibri 11 A A

Wrap Text Merge & Center

General \$ % , .00 .0

Conditional Formatting Cell Styles

AutoSum Fill Clear Sort & Filter Find & Select

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	Breakfast	Breakfast	burger 1	burger 2	burger 3	WP 1	WP 2	CHK 1	SWAMP 1	SWAMP 2	SWAMP 3	SWAMP 4	SIDE 1	SIDE2	SIDE 3	FOUNTAIN
2	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	XL DR PEP ?
3	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	XL SWEET TEA
4	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	LG COKE ?
5	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	LG COFFEE LG
6	SEC CROS	?	?	?	?	?	?	?	?	?	?	?	TOT	?	?	MD DR PEI ?
7	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	MD COFF MD
8	SEC BURR	?	?	?	?	?	?	?	?	?	?	?	?	?	?	? ?
9	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	MD WATE ?
10	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	MD WATE ?
11	?	?	?	?	?	?	?	?	?	?	?	?	SM FF	?	?	LG GRAPE SLU
12	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	LG DIET CC ?
13	JR SEC BUI	?	?	?	?	?	?	?	?	?	?	?	?	?	?	? ?
14	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	? ?
15	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	? ?
16	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	LG COKE ?
17	JR SEC BUI	?	?	?	?	?	?	?	?	?	?	?	?	?	?	? ?
18	?	?	?	?	?	?	?	?	5 PC STRIP	5 PC STRIP	?	?	CCTT	CCTT	?	LG ROOT ELG
19	BEC BIURR	?	?	?	?	?	?	?	?	?	?	?	?	?	?	LG SWEET ?

@relation Sonic_wide

@attribute Breakfast1 {SECCROS,SECBURR, JRSECBUR, BECBURR, SSBUR, BECTST, SECTST, '?'}

@attribute Breakfast2 {SECCROS,SECBURR, JRSECBUR, BECBURR, SSBUR, BECTST, SECTST, '?'}

@attribute burger1 {BLT,BCNMELT, GRILLCHZ, JRBCNMLT, JRCBDLX, JRDBLCB, JRMSHMLT, MAYOCB, MAYOHB, MA

@attribute burger2 {BLT,BCNMELT, GRILLCHZ, JRBCNMLT, JRCBDLX, JRDBLCB, JRMSHMLT, MAYOCB, MAYOHB, MA

@attribute burger3 {BLT,BCNMELT, GRILLCHZ, JRBCNMLT, JRCBDLX, JRDBLCB, JRMSHMLT, MAYOCB, MAYOHB, MA

@attribute WP1 {WPCB,WPCD,WPCCKSTP,WPHB, '?'}

@attribute WP2 {WPCB,WPCD,WPCCKSTP,WPHB, '?'}

@attribute CHK1 {CKCLBTST, GLWRAP, 5PCSTRIP, '?'}

@attribute CHK2 {CKCLBTST, GLWRAP, 5PCSTRIP, '?'}

@attribute SWAMP1 {AMERDOG, CHICAGO, CORNDOG, KICKKNCNY, QTRCCCONNEY, CCDOG, '?'}

@attribute SWAMP2 {AMERDOG, CHICAGO, CORNDOG, KICKKNCNY, QTRCCCONNEY, CCDOG, '?'}

@attribute SWAMP3 {AMERDOG, CHICAGO, CORNDOG, KICKKNCNY, QTRCCCONNEY, CCDOG, '?'}

@attribute SWAMP4 {AMERDOG, CHICAGO, CORNDOG, KICKKNCNY, QTRCCCONNEY, CCDOG, '?'}

@attribute SIDE1 {CCTT, CFF, CHEDBITE, CTT, FF, LGCTT, LGFF, LGRINGS, LGTT, MOZZ, RINGS, SMCFF, SMFF, SM

@attribute SIDE2 {CCTT, CFF, CHEDBITE, CTT, FF, LGCTT, LGFF, LGRINGS, LGTT, MOZZ, RINGS, SMCFF, SMFF, SM

@attribute SIDE3 {CCTT, CFF, CHEDBITE, CTT, FF, LGCTT, LGFF, LGRINGS, LGTT, MOZZ, RINGS, SMCFF, SMFF, SM

@attribute FOUNTAIN1 {BOTTLEWTR, KDCHERRYSLUSH, KDHIC, KDPOWSLUSH, LGCHOCSHAKE, LGCHRYLA, LGCOFFEE

@attribute FOUNTAIN2 {BOTTLEWTR, KDCHERRYSLUSH, KDHIC, KDPOWSLUSH, LGCHOCSHAKE, LGCHRYLA, LGCOFFEE

@attribute FOUNTIAN3 {BOTTLEWTR, KDCHERRYSLUSH, KDHIC, KDPOWSLUSH, LGCHOCSHAKE, LGCHRYLA, LGCOFFEE

@attribute FOUNTAIN4 {BOTTLEWTR, KDCHERRYSLUSH, KDHIC, KDPOWSLUSH, LGCHOCSHAKE, LGCHRYLA, LGCOFFEE

@attribute FROZEN1 {DISH, LGVANSHAKE, MDRTBRFLOAT, REGBANASHAKE, REGRTBRFLOAT, REGSTRWSHAKE, REGV

?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, XLSWEETEA, ?, ?, ?, ?

?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, LGCOKE, ?, ?, ?, ?

?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, LGCOFFEE, LGWATER, ?, ?, ?

SECCROS, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, TOT, ?, ?, MDDRPEP, ?, ?, ?, ?

?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, MDCOFFEE, MDCOFFEE, ?, ?, ?

SECBURR, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?

?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, MDWATER, ?, ?, ?, ?

?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, MDWATER, ?, ?, ?, ?

?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, SMFF, ?, ?, LGGRAPESLUSH, ?, ?, ?, ?

?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, LGDIETCOKE, ?, ?, ?, ?

JRSECBUR, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?

?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?

?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, REGVANSHAKE

?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, LGCOKE, ?, ?, ?, ?

JRSECBUR, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?

Breakfast 1.....

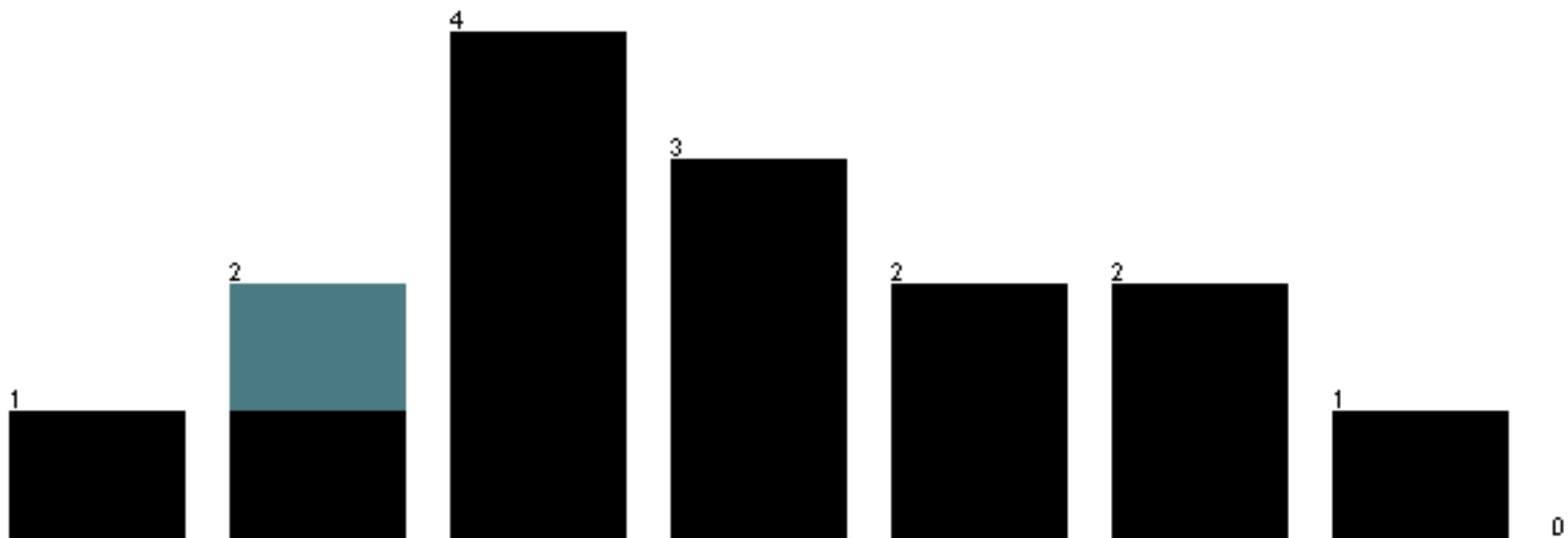
Selected attribute

Name: Breakfast1
Missing: 84 (85%)

Distinct: 7

Type: Nominal
Unique: 2 (2%)

No.	Label	Count	Weight
1	SECCROS	1	1.0
2	SECBURR	2	2.0
3	JRSECBUR	4	4.0
4	BECBURR	3	3.0
5	SSBUR	2	2.0
6	BECTST	2	2.0
7	SECTST	1	1.0
8	?	0	0.0



Burger 1.....

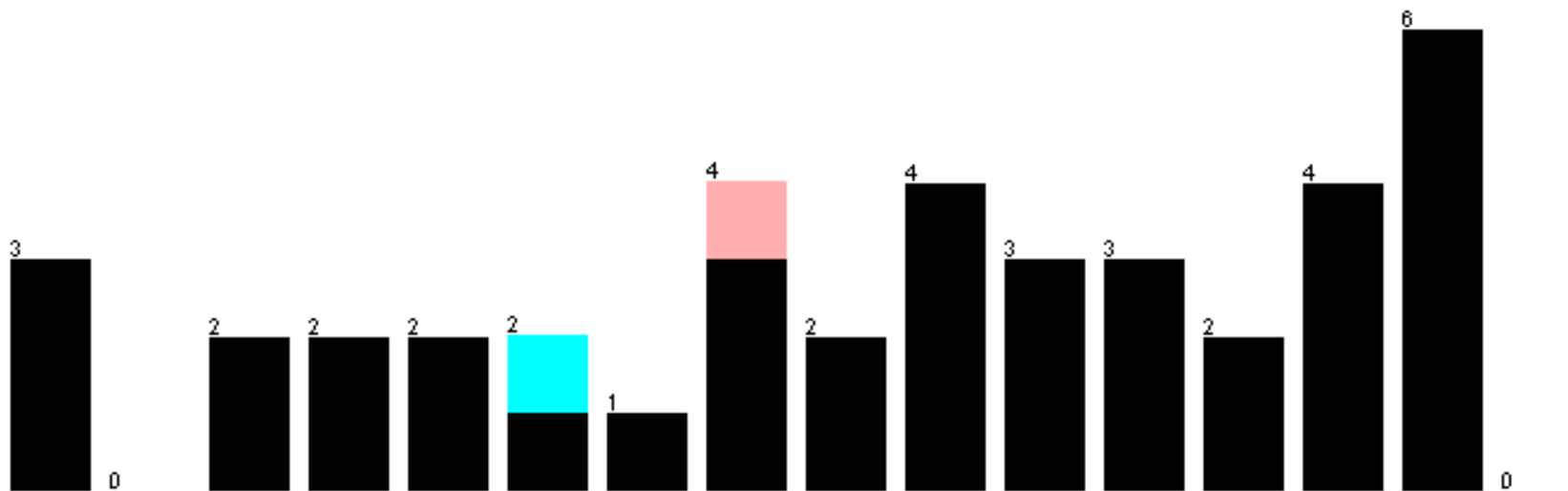
Selected attribute

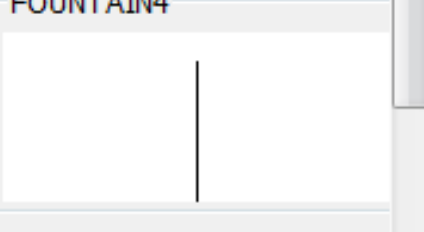
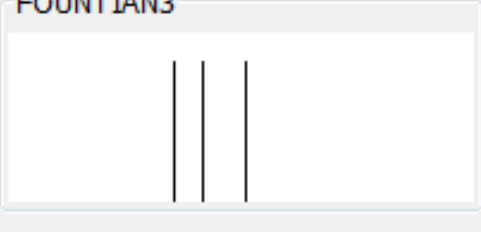
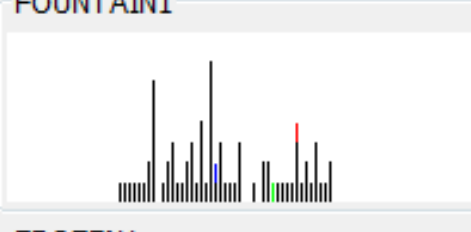
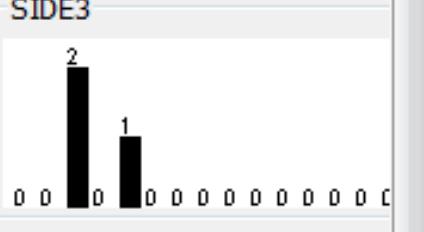
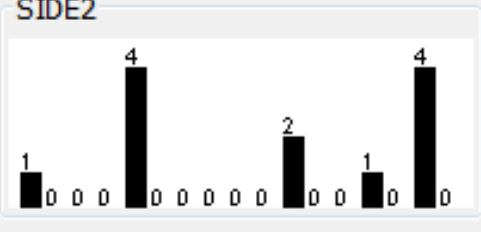
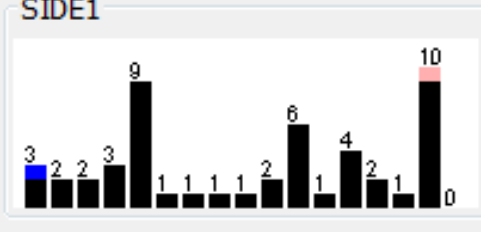
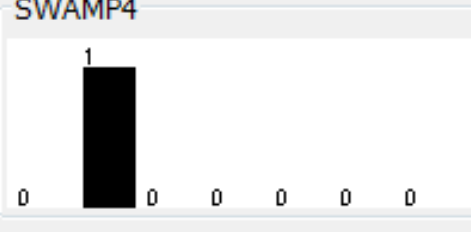
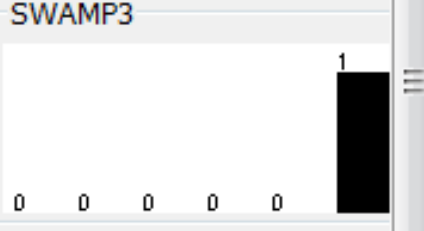
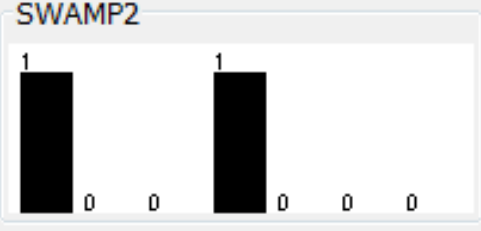
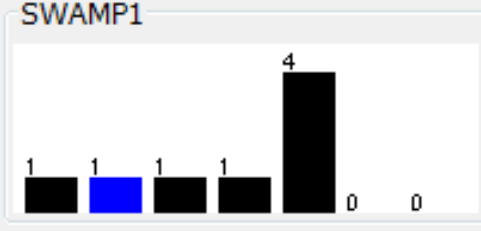
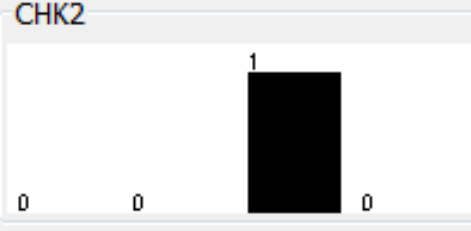
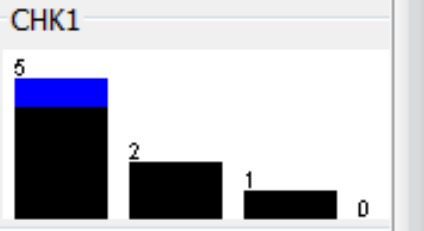
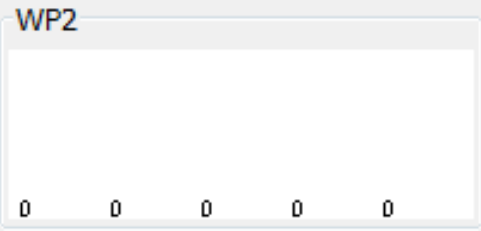
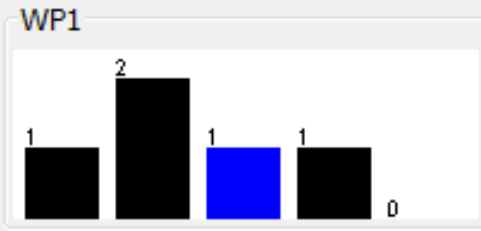
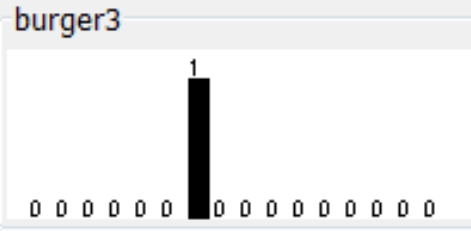
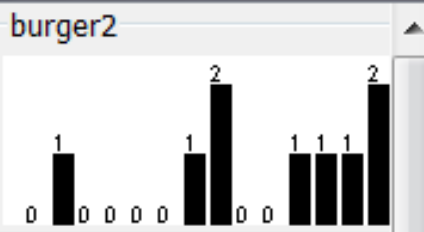
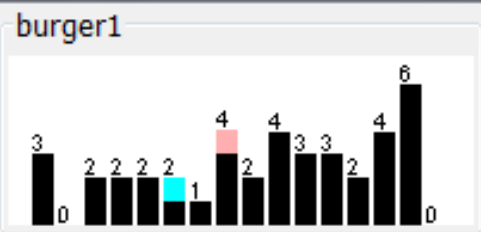
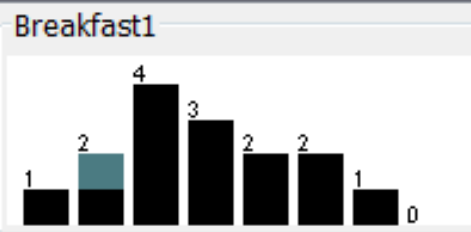
Name: burger1
Missing: 59 (60%)

Distinct: 14

Type: Nominal
Unique: 1 (1%)

No.	Label	Count	Weight
1	BLT	3	3.0
2	BCNMELT	0	0.0
3	GRILLCHZ	2	2.0
4	JRBCNMLT	2	2.0
5	JRCBDLX	2	2.0
6	JRDBLCB	2	2.0
7	JRMSHMLT	1	1.0
8	MAYOCB	4	4.0
9	MAYOHB	2	2.0
10	MAYOSSCB	4	4.0





Rules.....

Best rules found:

1. SIDE1=SMTT 2 ==> Breakfast1=JRSECBUR 2 <conf:(1)> lift:(24.75) lev:(0.02) [1] conv:(1.92)
2. Breakfast1=SSBUR 2 ==> FOUNTAIN1=LGDIETDRPEP 2 <conf:(1)> lift:(33) lev:(0.02) [1] conv:(1.94)
3. burger2=MUSTSSCB 2 ==> burger1=MAYOSSCB 2 <conf:(1)> lift:(24.75) lev:(0.02) [1] conv:(1.92)
4. FOUNTAIN2=MDCHRYLA 2 ==> FOUNTAIN1=MDCHRYLA 2 <conf:(1)> lift:(24.75) lev:(0.02) [1] conv:(1.92)
5. SWAMP1=QTRCCONEY 4 ==> SIDE1=TT 3 <conf:(0.75)> lift:(7.43) lev:(0.03) [2] conv:(1.8)
6. FOUNTAIN1=LGDIETDRPEP 3 ==> Breakfast1=SSBUR 2 <conf:(0.67)> lift:(33) lev:(0.02) [1] conv:(1.47)
7. SIDE1=CCTT 3 ==> CHK1=CKCLBTST 2 <conf:(0.67)> lift:(13.2) lev:(0.02) [1] conv:(1.42)
8. SIDE1=CTT 3 ==> FOUNTAIN1=MDCOKE 2 <conf:(0.67)> lift:(9.43) lev:(0.02) [1] conv:(1.39)
9. FOUNTAIN1=MDDRPEP 3 ==> SIDE1=TT 2 <conf:(0.67)> lift:(6.6) lev:(0.02) [1] conv:(1.35)
10. burger1=SSDBLBCB 6 ==> FOUNTAIN1=MDCOKE 3 <conf:(0.5)> lift:(7.07) lev:(0.03) [2] conv:(1.39)

PRE PROCESSING DATA

- PREPROCESSING steps should be applied to make the data more suitable for results
- Increases/higher Support
- Taking out inferences that will not affect the data that is be sought for
 - HAPPY HOUR
 - .99 LG. BEVERAGES
- Strip minority combinations out
 - Chocolate milk (2)

CONTINUATION OF PRE PROCESSING DATA.....

Issues:

- Small set/ One day
- Short coming- ability to handle large data sets.
 - Errors occurring
 - Much manual labor
 - First time using this program

REFERENCES

- "Association - Google Search." *Google*. Web. 13 Dec. 2011. <<http://www.google.com/search?q=association>>.
- Chen, Victoria C. P. *Data Mining*. Dordrecht, Netherlands: Springer, 2010. Print.
- "A Priori and a Posteriori." *Wikipedia, the Free Encyclopedia*. . 13 Dec. 2011. <http://en.wikipedia.org/wiki/A_priori_and_a_posteriori>.
- Tan, Pang-Ning, Michael Steinbach, and Vipin Kumar. *Introduction to Data Mining*. Boston: Pearson Addison Wesley, 2005. Print.