Xiang Xu **Course 605.471** **Week2 Quiz** **2/13/2017**

Student

sid	name	university	state	gpa
1	Jones	JHU	MD	3.7
2	Harris	UMD	MD	2.5
3	Chu	NYU	NY	3.9
4	Kim	Cornell	NY	3.8
5	Sudarsen	RPI	NY	2.8
6	Katz	Columbia	NY	3.1
7	Miller	Goucher	MD	2.9
8	Penn	NYU	NY	3.6

Assume that each of the following queries will be issued to the STUDENT table:

q1: SELECT name, gpa
FROM STUDENT
WHERE gpa > 3.5

q2: SELECT name, university, state
FROM STUDENT
WHERE gpa <= 3.5

q3: SELECT university
FROM STUDENT
WHERE state = ‘NY'

q4: SELECT university
FROM STUDENT
WHERE state = 'MD'

a) Propose predicates for horizontal fragmentation.

p1 gpa > 3.5
p2 gpa <= 3.5
p3 state = ‘NY’
p4 state = ‘MD’

b) List the set of corresponding minterms.

m1 state = MD
m2 state = NY
m4 gpa <= 3.5

m5 gpa <= 3.5 ^ state = MD
m6 gpa <= 3.5 ^ state = NY
m8 gpa > 3.5
m9 gpa > 3.5 ^ state = MD
m10 gpa > 3.5 ^ state = NY

c) List the set of minterms after contradictory minterms are eliminated

m5 gpa <= 3.5 ^ state = MD
m6 gpa <= 3.5 ^ state = NY
m9 gpa > 3.5 ^ state = MD
m10 gpa > 3.5 ^ state = NY

d) Show the resulting horizontal fragmentation.

m5 gpa <= 3.5 ^ state = MD

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m6 gpa <= 3.5 ^ state = NY

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m9 gpa > 3.5 ^ state = MD

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m10 gpa > 3.5 ^ state = NY

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Note: Semi-automated python scripts,

https://github.com/thexiang/JHU-MS-DataScience/blob/master/605.741%20Distributed%20Database%20system/Horizontal%20PartitioningStudent.ipynb