

AHSANULLAH UNIVERSITY OF SCIENCE AND TECHNOLOGY
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Course No: CSE4125

Course Title: Distributed Database Systems

Spring 2019 | Quiz – 4 | Marks 20 | Time: 40 Minutes | Set – A | ID =

	Consider the following relations -																																																																		
	R	S	T																																																																
	<table border="1" style="margin: auto;"> <tr><th>a</th><th>b</th><th>c</th><th>d</th></tr> <tr><td>1</td><td>A</td><td>F</td><td>K</td></tr> <tr><td>2</td><td>B</td><td>G</td><td>L</td></tr> <tr><td>3</td><td>A</td><td>F</td><td>M</td></tr> <tr><td>3</td><td>D</td><td>I</td><td>K</td></tr> <tr><td>4</td><td>A</td><td>J</td><td>K</td></tr> </table>	a	b	c	d	1	A	F	K	2	B	G	L	3	A	F	M	3	D	I	K	4	A	J	K	<table border="1" style="margin: auto;"> <tr><th>p</th><th>q</th><th>r</th><th>s</th></tr> <tr><td>11</td><td>2</td><td>AA</td><td>X</td></tr> <tr><td>11</td><td>2</td><td>BB</td><td>Y</td></tr> <tr><td>11</td><td>3</td><td>CA</td><td>Z</td></tr> <tr><td>11</td><td>4</td><td>BB</td><td>T</td></tr> <tr><td>11</td><td>4</td><td>AC</td><td>T</td></tr> </table>	p	q	r	s	11	2	AA	X	11	2	BB	Y	11	3	CA	Z	11	4	BB	T	11	4	AC	T	<table border="1" style="margin: auto;"> <tr><th>x</th><th>y</th><th>z</th></tr> <tr><td>1</td><td>11</td><td>A</td></tr> <tr><td>2</td><td>22</td><td>B</td></tr> <tr><td>3</td><td>11</td><td>C</td></tr> <tr><td>4</td><td>22</td><td>R</td></tr> </table>	x	y	z	1	11	A	2	22	B	3	11	C	4	22	R	
a	b	c	d																																																																
1	A	F	K																																																																
2	B	G	L																																																																
3	A	F	M																																																																
3	D	I	K																																																																
4	A	J	K																																																																
p	q	r	s																																																																
11	2	AA	X																																																																
11	2	BB	Y																																																																
11	3	CA	Z																																																																
11	4	BB	T																																																																
11	4	AC	T																																																																
x	y	z																																																																	
1	11	A																																																																	
2	22	B																																																																	
3	11	C																																																																	
4	22	R																																																																	
1.	Complete the following Database Profiles :-			4																																																															
	Grade(R) = Card (R) = Site (R) = 1 Size (R) = <table border="1" style="margin: auto;"> <tr><td></td><td>a</td><td>b</td><td>c</td><td>d</td></tr> <tr><td>Size</td><td>2</td><td>1</td><td>3</td><td>4</td></tr> <tr><td>Val</td><td></td><td></td><td></td><td></td></tr> </table>		a	b	c	d	Size	2	1	3	4	Val					Grade(S) = Card (S) = Site (S) = 2 Size (S) = <table border="1" style="margin: auto;"> <tr><td></td><td>p</td><td>q</td><td>r</td><td>s</td></tr> <tr><td>Size</td><td>2</td><td>1</td><td>3</td><td>4</td></tr> <tr><td>Val</td><td></td><td></td><td></td><td></td></tr> </table>		p	q	r	s	Size	2	1	3	4	Val					Grade(T) = Card (T) = Site (T) = 3 Size (T) = <table border="1" style="margin: auto;"> <tr><td></td><td>x</td><td>y</td><td>z</td></tr> <tr><td>Size</td><td>2</td><td>2</td><td>2</td></tr> <tr><td>Val</td><td></td><td></td><td></td></tr> </table>		x	y	z	Size	2	2	2	Val																									
	a	b	c	d																																																															
Size	2	1	3	4																																																															
Val																																																																			
	p	q	r	s																																																															
Size	2	1	3	4																																																															
Val																																																																			
	x	y	z																																																																
Size	2	2	2																																																																
Val																																																																			
2.	We want to perform the query Q : $(R \bowtie_{a=q} S) \cup (T \bowtie_{x=q} S)$. Draw the optimization graph for the query.			2																																																															
3.	Estimate the cardinality and size of the query of question 2.			6																																																															
4.	Find the total transmission cost of performing $(R \bowtie_{a=q} S)$ at Site 2 by: (a) using the semi-join program and (b) without using the semi-join program. Which one is the better solution? Semi-join has selectivity $\rho=0.1$			8																																																															