

ASSIGNMENT # 03

PART I

8.16

$$d. R_1 = \rho_{No} \sum_{\text{Sum(Hours)}} (\text{Works_On})$$

$$R_2 = R_1 \bowtie_{PNo = Pnumber} \text{PROJECT}$$

$$\text{Result} = \pi_{Pname, \text{Total_Hours}} (R_2)$$

Project Name	Total Hours
Product X	52.5
Product Y	37.5
Product Z	50
Computerization	55
Reorganization	25
New benefits	55

$$e. R_1 = \pi_{Pnumber} (\text{PROJECT})$$

$$R_2 = \pi_{ESSN, Pno} (\text{WORKS_ON})$$

$$R_3 = R_2 \div R_1$$

$$R_4 = \text{EMPLOYEE} \times R_3$$

$$\text{Result} = \pi_{Fname, Lname} (R_4)$$

Employees who work on every project = \emptyset

h. $R_1 = \sigma_{\text{sex} = \text{"Female"}}(\text{EMPLOYEE})$

Result = $f_{\text{AVG}(\text{SALARY})}(R_1)$

Average salary of all female employees = 31,000

i. $R_1 = \sigma_{\text{Location} = \text{"Houston"}}(\text{PROJECT})$

$R_2 = \pi_{\text{ESSN}}(\text{WORKS_ON} \bowtie_{\text{Pno} = \text{Pnumber}} R_1)$

$R_3 = \pi_{\text{Dnumber}}(\text{DEPARTMENT}) - \pi_{\text{Dnumber}}(\sigma_{\text{Location} = \text{"Houston"}}(\text{DEPARTMENT}))$

$R_4 = \pi_{\text{SSN}}(\text{EMPLOYEE} \bowtie_{\text{Dno} = \text{Dnumber}} R_3)$

$R_5 = \text{EMPLOYEE} \times (R_2 - R_4)$

Result = $\pi_{\text{fname, lname, Address}}(R_5)$

First Name
Jennifer

Last Name
Wallace

Address
291 Berry, Bellaire, Tx

8.18

$$b. R_1 = \sigma_{\text{Title} = \text{"the last tribe"}}(\text{BOOK}) \times \text{BOOK COPIES}$$

$$\text{Result} = \pi_{\text{Branch_id, No_of_copies}}(R_1)$$

$$c. R_1 = \pi_{\text{card_no}}(\text{Borrower}) - \pi_{\text{card_no}}(\text{Book Loans})$$

$$R_2 = \text{BORROWER} \times R_1$$

$$\text{Result} = \pi_{\text{Name}}(R_2)$$

$$g. R_1 = \sigma_{\text{Author_name} = \text{"Stephen King"}}(\text{BOOK_AUTHORS}) \times \text{BOOK}$$

$$R_2 = \sigma_{\text{Branch_name} = \text{"Central"}}(\text{LIBRARY_BRANCH})$$

$$R_3 = R_1 \times \text{BOOK_COPIES} \times R_2$$

$$\text{Result} = \pi_{\text{Title, No_of_copies}}(R_3)$$

8.21

$$a. R_1 = \sigma_{\text{Name} = \text{"John Smith"}} (\text{Student}) \bowtie \text{ENROLL}$$

$$R_2 = \sigma_{\text{Quarter} = \text{W09}} (R_1)$$

$$\text{Result} = \pi_{\text{course \#}} (R_2)$$

$$b. R_1 = \sigma_{\text{Dept} = \text{"CS"}} (\text{Course}) \bowtie (\text{Book ADOPTION})$$

$$R_2 = \sigma_{\text{course \#} > 2} (R_1)$$

$$R_3 = \pi_{\text{course \#, Book, isbn, Book_title}} (R_2)$$

$$c. R_1 = \text{BOOK ADOPTION} \bowtie \text{COURSE}$$

$$R_2 = \pi_{\text{dept}} (R_1)$$

$$R_3 = \text{BOOK ADOPTION} \times \text{TEXT} \times \text{COURSE}$$

$$R_4 = \sigma_{\text{Publisher} \neq \text{"Pearson Publishers"}} (R_3)$$

$$R_5 = \pi_{\text{dept}} (R_4)$$

$$\text{Result} = R_2 - R_5$$

PART II

a. $R_1 = \pi_{sin} (farmers)$

$$R_2 = R_1 \bowtie_{sin = P_1 - sin} Kids$$

$$R_3 = R_1 \bowtie_{sin = P_2 - sin} Kids$$

$$R_4 = R_2 \cup R_3$$

$$Result = \pi_{sin} (R_4)$$

b. $R_1 = Farmer \bowtie_{sin = P_1 - sin} Kids$

$$R_2 = Farmer \bowtie_{sin = P_2 - sin} Kids$$

$$R_3 = R_1 \bowtie_{(sname = s_name) \wedge (R_1.vname = school.vname)} School$$

$$R_4 = R_2 \bowtie_{(sname = s_name) \wedge (R_2.vname = school.vname)} School$$

$$Result = \pi_{sname} (R_3) - \pi_{sname} (R_4)$$

c. $R_1 = \rho_{max(population)} (Village)$

$$R_2 = R_1 \times Village$$

$$Result = \pi_{name} (R_2)$$

$$d. R_1 = \pi_{sin} (Farmers)$$

$$R_2 = R_1 \bowtie_{sin = P_1 - sin} kids$$

$$R_3 = R_1 \bowtie_{sin = P_2 - sin} kids$$

$$R_4 = R_2 \cup R_3$$

$$R_5 = \pi_{sin, s-name} (R_4)$$

$$R_6 = \pi_{sname} (School)$$

$$Result = R_5 \div R_6$$

$$e. R_1 = \pi_{name} (Village)$$

$$R_2 = \pi_{vname} (School)$$

$$Result = R_1 - R_2$$