Assignment-1 CS303

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1 Problem 1

The Schema of the table is as shown below

Branch (branch_name, branch_city, assets)
customer (customer_name, customer_street, customer_city)
loan (loan_number, branch_name, amount)
borrower (customer_name, loan_number)
account (account_number, branch_name, balance)
depositor (customer_name, account_number)

1.1 Sub Question (a)

1.1.1 Part (i)

To find the names of braches present in **Chicago**, we impose a condition on *branch_city* using table **Branch**. Projection can be used to get the names.

$$\prod_{branch\_name}(\sigma_{branch\_name="Chicago"}(Branch)) \tag{1}$$

1.1.2 Part (ii)

To solve this we take the cross product of **borrower** and **loan** tables and join them based on appropriate conditions. Projection is used to select the customer names.

$$P_1 \leftarrow borrower.loan\_number = loan.loan\_number$$

$$P_2 \leftarrow loan.branch\_name = "Downtown" \tag{2}$$

$$\prod_{borrower.customer\_name}(\sigma_{P_1 \wedge P_2}(borrower \times loan))$$