

Assignment #2

CSC343 Winter 2023

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I declare that this assignment is solely our own work, and is in accordance with the University of Toronto Code of Behaviour on Academic Matters.

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This submission has been prepared using L<sup>A</sup>T<sub>E</sub>X.

a)

$C \rightarrow Customer$

$B \rightarrow Books$

$Rv \rightarrow Reservation$

$\theta_1 \rightarrow C.CustomerID = B.Customer\_CustomerID$

$\theta_2 \rightarrow B.Reservation\_ID = Rv.ID$

$$\sigma_{CustomerID=1}(C) \bowtie_{\theta_1} B \bowtie_{\theta_2} \sigma_{date='2023-03-14'}(Rv)$$

b)

$H \rightarrow Has$

$R \rightarrow Restaurant$

$\theta_3 \rightarrow Rv.id = H.Reservation\_id$

$\theta_4 \rightarrow H.Restaurant\_id = R.id$

$$Q \rightarrow \pi_{count(Rv.id)}(Rv) \bowtie_{\theta_3} H \bowtie_{\theta_4} \pi_{id,name}(R)$$

$$\rho_{\text{'number of reservations'/'count(Rv.id)'}}(Q)$$

$$\pi_{id,name,number\ of\ reservations}(\tau_{\text{'number of reservations'}}(Q)) \text{ LIMIT } 5$$

c)

$\theta_5 \rightarrow C.CustomerID! = B.Customer\_CustomerID$

$$P1 \rightarrow \pi_{CustomerID}(C) \bowtie_{\theta_5} B \bowtie_{\theta_2} \sigma_{date!='2023-03-12'}(Rv) \bowtie_{\theta_3} H \bowtie_{\theta_4} \pi_{name}(R)$$

$$\pi_{name}P1$$