

# Assignment 4: The Relational Algebra

Hien Tu - tun1

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## The requested queries

1.  $\sigma_{\text{startdate} < \text{enddate}}(\text{event})$
2.  $\pi_{\text{U.uid}, \text{E.eid}}(\rho_{\text{U}}(\text{user}) \bowtie_{\text{U.postcode} = \text{E.postcode}} \rho_{\text{E}}(\text{event}))$
3.  $X := \rho_{\text{E}}(\text{event}) \bowtie_{\text{E.eid} = \text{EnoRv.eid}} \rho_{\text{EnoRv}}(\pi_{\text{eid}}(\text{event}) \setminus \pi_{\text{event}}(\text{review}))$   
 $\pi_{\text{E.eid}, \text{E.title}, \text{E.description}, \text{E.startdate}, \text{E.enddate}, \text{E.organizer}, \text{E.postcode}}(X)$
4. Select events with at least 3 keywords  
 $X := \rho_{K_1}(\text{keyword}) \times \rho_{K_2}(\text{keyword}) \times \rho_{K_3}(\text{keyword})$   
 $Y := \sigma_{K_1.\text{word} \neq K_2.\text{word} \wedge K_1.\text{word} \neq K_3.\text{word} \wedge K_2.\text{word} \neq K_3.\text{word}}(X)$   
 $Z := \sigma_{K_1.\text{event} = K_2.\text{event} \wedge K_1.\text{event} = K_3.\text{event}}(Y)$

Select events with at least 2 keywords

$$\begin{aligned} A &:= \rho_{K_4}(\text{keyword}) \times \rho_{K_5}(\text{keyword}) \\ B &:= \sigma_{K_4.\text{word} \neq K_5.\text{word}}(A) \\ C &:= \sigma_{K_4.\text{event} = K_5.\text{event}}(B) \end{aligned}$$

Select events with exactly 3 keywords

$$\pi_{K_4.\text{event}}(C) \setminus \pi_{K_1.\text{event}}(Z)$$