Bola Ghaly
CSC315 Midterm Exam

- Question 4:

A. Show a portfolio of the Flubs by a professor.

- RA:

$\Pi_{flub\_id,\ content,\ purpose,\ moment,\ inventor}\ \sigma_{professor\_id=1}\ (flub \times professor)$

- DRC:

$\{ <A,B,C,D,E> \mid <A,B,C,D,E> \in Flub \wedge \exists F,G,H,I,J\ (<F,G,H,I,J> \in professor \wedge F=1) \}$

B. Show a portfolio of all Flubs and Bounces (the Flubs bounced) by all of a Professor's Colleagues.

- RA:

For all Flubs:

$\Pi_{pcbc.professor\_id,\ pcbc.colleague\_id,\ f.flub\_id}\ (\rho_{pcbc}\ professor\_can\_be\_colleague \bowtie pcbc.professor\_id = 1\ AND\ f.inventor = pcbc.colleague\_id\ \rho_f\ flub)$

For all bounces:

$\Pi_{pcbc.professor\_id,\ pcbc.colleague\_id,\ b.bounce\_id}\ (\rho_{pcbc}\ professor\_can\_be\_colleague \bowtie pcbc.professor\_id = 1\ AND\ b.professor\_id = pcbc.colleague\_id\ \rho_b\ bounce)$

- DRC:

For all flubs:

$$\{\langle X, Y, A\rangle \mid \langle X, Y\rangle \in \text{Professor\_Can\_Be\_Colleague} \wedge \exists A, B, C, D, E\,(\langle A, B, C, D, E\rangle \in \text{flub} \wedge X = 1 \wedge E = Y)\}$$

For all bounces:

$$\{\langle X, Y, A\rangle \mid \langle X, Y\rangle \in \text{Professor\_Can\_Be\_Colleague} \wedge \exists A, B, C\,(\langle A, B, C\rangle \in \text{bounce} \wedge X = 1 \wedge B = Y)\}$$