CSC343 Worksheet 2 Solution

June 11, 2020

1. **Exercise 2.4.1:**

   a) $\sigma_{speed \geq 3.0}(\text{Movies})$

   Models 1005, 1006, 1013 have speed greater than 3.0

model	speed	ram	hd	price
1001	2.66	1024	250	2114
1002	2.10	512	250	995
1003	1.42	512	80	478
1004	2.80	1024	250	649
→ 1005	3.20	512	250	630
→ 1006	3.20	1024	320	1049
1007	2.20	1024	200	510
1008	2.20	2048	250	770
1009	2.00	1024	250	650
1010	2.80	2048	300	770
1011	1.86	2048	160	959
1012	2.80	1024	160	649
→ 1013	3.06	512	80	529

   Notes:

   - Select
     - Is indicated by σ
     - **Syntax:** $\sigma_{\text{QUERY}}\text{SCHEMA\_NAME}$
     - e.g $\sigma_{length \geq 100 \textbf{ AND } studioName='Fox'}(\text{Movies})$

   Relation - Movies

title	year	length	inColor	studioName	producerC#
Star Wars	1977	124	sciFi	Fox	12345
Galaxy Quest	1999	104	comedy	DreamWorks	67890

b) **Notes:**

- Project
  - **Syntax:** $\pi_{A_1,A_2,\cdots,A_n}(\text{Rel})$
    * $A_1, \cdots, A_n$ represents attributes
  - Picks certain columns
  - e.g

    What are the titles and years of movies made by Fox that are at least 100 minutes long?

    $$\pi_{title,year}(\sigma_{length \geq 100 \text{ AND } studioName=\text{'Fox'}})(\text{Movies})$$

- Cross-Product / Cartesian Product
  - Combines two relations
  - **Syntax:** Relation 1 $\times$ Relation 2
  - e.g. Names and GPAs of students with $HS > 1000$ who applied to CS and were rejected

    $\pi_{sName,GPA}(\sigma_{Student.sID=Apply.sID \text{ AND } HS>1000 \text{ AND } major=\text{'cs'} \text{ AND } dec=\text{'R'}})(\text{Student} \times \text{Apply})$