Database Design
CS 6360.003: Quiz #2

Due on Thursday September 15, 2016 at 10pm

Nurcan Yuruk

Hanlin He (hxh160630)
hanlin.he@utdallas.edu

Problem 1

$$
\begin{aligned}
BOOK\_INFO &\leftarrow BOOK \star BOOK\_COPIES \\
LIB\_BOOK\_INFO &\leftarrow BOOK\_INFO \star LIBRARY\_BRANCH \\
BOOK\_NEEDED &\leftarrow \sigma_{(Title='TheLostTribe')}(LIB\_BOOK\_INFO) \\
RESULT &\leftarrow \pi_{\,Branch\_name,\ No\_of\_copies}\ (BOOK\_NEEDED)
\end{aligned}
$$

Problem 2

$$
\begin{aligned}
BORROWER\_BOOK\_LOANS &\leftarrow BOOK\_LOANS \star BORROWER \\
BORROWED &\leftarrow \pi_{\,Card\_no,\ Name}\ (BORROWER\_BOOK\_LOANS) \\
ALL &\leftarrow \pi_{\,Card\_no,\ Name}\ (BORROWER) \\
NOT\_BORROWED\_INFO &\leftarrow ALL - BORROWED \\
RESULT &\leftarrow \pi_{\,Name}\ (NOT\_BORROWED\_INFO)
\end{aligned}
$$

Problem 3

$$
\begin{aligned}
LIB\_BOOK &\leftarrow BOOK\_LOAN \star LIBRARY\_BRANCH \\
LIB\_BOOK\_BORROW &\leftarrow LIB\_BOOK \star BORROWER \\
DESIRED\_INFO &\leftarrow \sigma_{Branch\_name='Sharpstown'\ \textbf{AND}\ Due\_date=September15,2016}(LIB\_BOOK\_BORROW) \\
RESULT &\leftarrow \pi_{\,Title,\ Name,\ Address}(DESIRED\_INFO)
\end{aligned}
$$

Problem 4

$$
\begin{aligned}
LIB\_BOOK\_LOANS &\leftarrow LIBRARY\_BRANCH \star BOOK\_LOANS \\
RESULT &\leftarrow \rho_{(Bname,\ Book\_loan\_num)}(_{Branch\_name}\mathcal{F}_{\,COUNT\ Book\_id}(LIB\_BOOK\_LOANS))
\end{aligned}
$$

Problem 5

$$
\begin{aligned}
BRW\_BOOK\_LOANS &\leftarrow BOOK\_LOANS \star BORROWER \\
BRW\_LOANS\_NUM &\leftarrow \rho_{(Name,\ Address,\ Book\_loan\_num)}(_{Name,\ Address}\mathcal{F}_{\,COUNT\ Book\_id}(BRW\_BOOK\_LOANS)) \\
RESULT &\leftarrow \sigma_{\,Book\_loan\_num\ >\ 5}\ (BRW\_LOANS\_NUM)
\end{aligned}
$$