A PARTIAL EXAMPLE DATABASE FOR A (VERY SMALL) LIBRARY

Borrower(borrowerID, lastName, firstName)

+----+--------+--------+
| 12345 | Aardvark | Anthony |
| 20174 | Cat      | Charlene |
| 89754 | Dog      | Donna   |
| 60984 | Fox      | Frederick |
| 41237 | Gopher   | Gertrude |
| 54872 | Zebra    | Zelda   |

Book(accessionNo, title, author, callNo)

-- assume library is small, so no more than one copy of any book

+----+-------------------+--------+--------+
| 10074 | Wenham Zoo Guide  | Elephant | QA76.093 |
| 21873 | Fire-hydrants I have known | Dog | RZ12.905 |
| 34938 | 21 ways to cook a cat  | Dog | LM925.04 |
| 44809 | Karate Koala | Koala | AB123.40 |

CheckedOut(callNo, borrowerID, dateDue)

+---------+---------+----------+
| RZ12.905 | 89754   | 2001-1-20 |
| LM925.04 | 89754   | 2001-1-20 |
| AB123.40 | 20174   | 2001-2-15 |

SOME POSSIBLE QUERIES AGAINST THIS DATABASE

What is the book whose call number is RZ12.905?

\[
\begin{align*}
\sigma_{\text{callNo}} & \text{Book} \\
\text{callNo} & = 'RZ12.905'
\end{align*}
\]

What books are written by Dog?

\[
\sigma_{\text{author}} \text{Book} \\
\text{author} & = 'Dog'
\]

List the names of all borrowers

\[
\Pi_{\text{Borrower}} \text{select lastName, firstName} \\
\text{from Borrower;}
\]

What is the title of the book whose call number is QA76.093?

\[
\Pi_{\text{title}} \sigma_{\text{callNo}} \text{Book} \\
\text{title} & = 'QA76.093' \\
\text{callNo} & = 'QA76.093'
\]

When is/are the book(s) Charlene Cat has checked out due?

\[
\Pi_{\text{dateDue}} \sigma_{\text{ CheckedOut |X| Borrower}} \\
\text{dateDue} & = 'Cat' and firstName = 'Charlene'
\]

What borrower(s) have book(s) checked out whose author has the same name as them?

\[
\Pi_{\text{lastName}} \sigma_{\text{ Book |X| CheckedOut |X| Borrower}} \\
\text{lastName} & = \text{author} \\
\text{lastName} & = \text{author}
\]