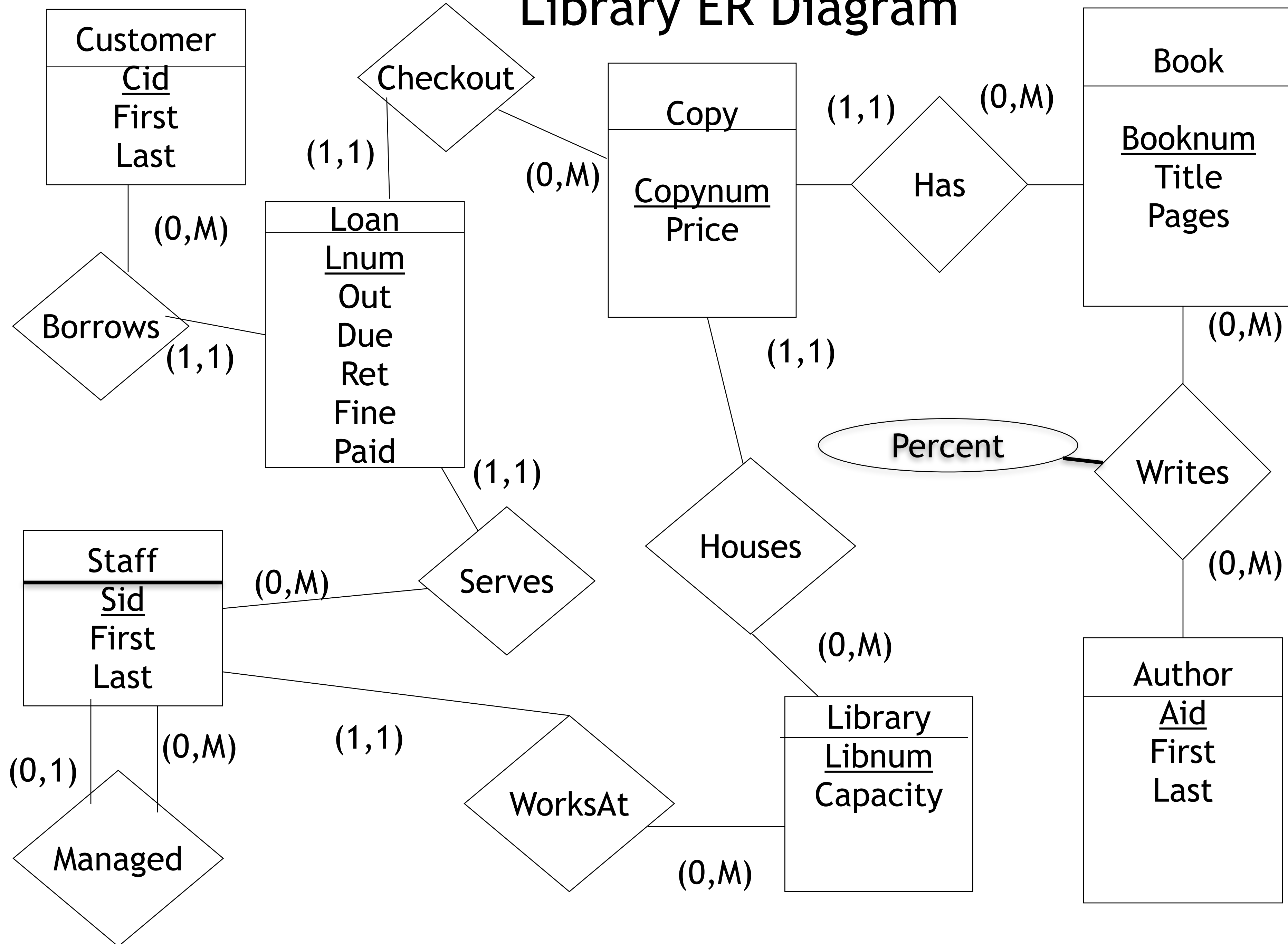


Quiz 8 Solution

Library ER Diagram



Quiz 8 Solution

Author **A**

Writes **W**

Book **B**

Copy **Co**

Library **L**

Loan **Lo**

Customer **Cu**

1. Find the libnum of libraries that contain a copy of a book written by George Saunders.

$-\Pi$ libnum ($\sigma_{\text{first}} = \text{'George'}$ and last = 'Saunders' (A \bowtie W \bowtie B \bowtie Co))

$-\Pi$ libnum ($\sigma_{\text{first}} = \text{'George'}$ and last = 'Saunders' (A \bowtie W \bowtie Co))

2. Find the names of customers who have never borrowed a book longer than 200 pages.

— $\pi \text{ first, last} \left(\left(\pi \text{ cid, first, last } \mathbf{Cu} \right) - \left(\pi \text{ cid, first, last} \left(\sigma_{\text{pages} > 200} \left(\mathbf{Cu} \bowtie \mathbf{Lo} \bowtie \mathbf{Co} \bowtie \mathbf{B} \right) \right) \right) \right)$

3. Find the names of customers who have borrowed at least one copy of a book written by Hannah Arendt and at least one copy of a book written by Isaiah Berlin.

— $\pi_{\text{first, last}} (\text{Cu} \bowtie ((\pi_{\text{cid}}(\sigma_{\text{first} = \text{'Hannah'} \text{ and } \text{last} = \text{'Arendt'}} (\text{Lo} \bowtie \text{Co} \bowtie \text{W} \bowtie \text{A}))) \cap (\pi_{\text{cid}}(\sigma_{\text{first} = \text{'Isaiah'} \text{ and } \text{last} = \text{'Berlin'}} (\text{Lo} \bowtie \text{Co} \bowtie \text{W} \bowtie \text{A}))))))$