Databases
Additional Materials

Timothy G. Griffin

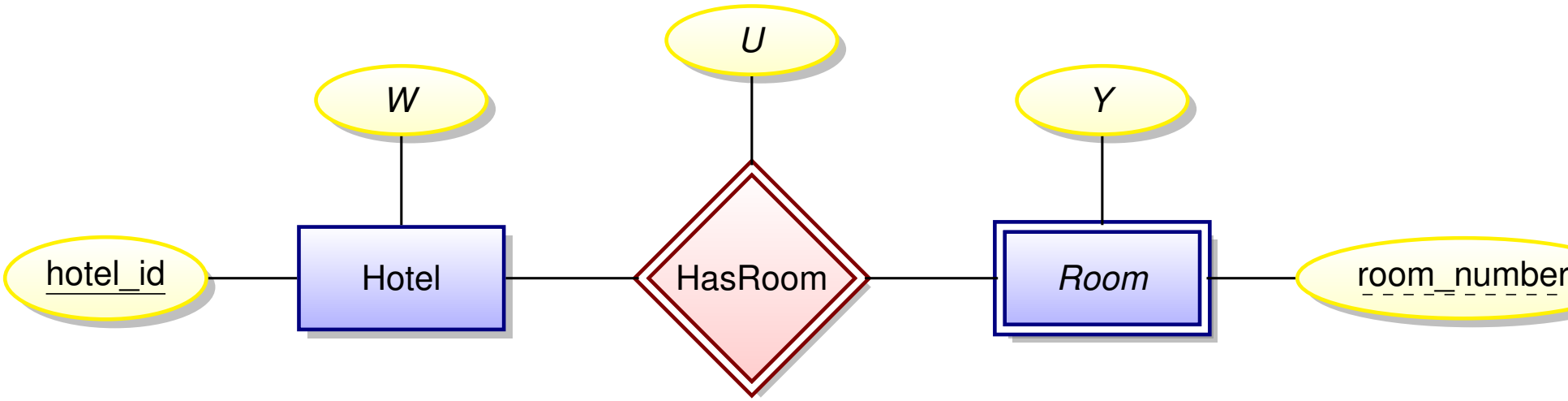
Computer Laboratory
University of Cambridge, UK

Michaelmas 2019

Lecture 8

- Corrections to Weak entities (ignore slides 32, 33, and 70).
- Entity hierarchy, revisited

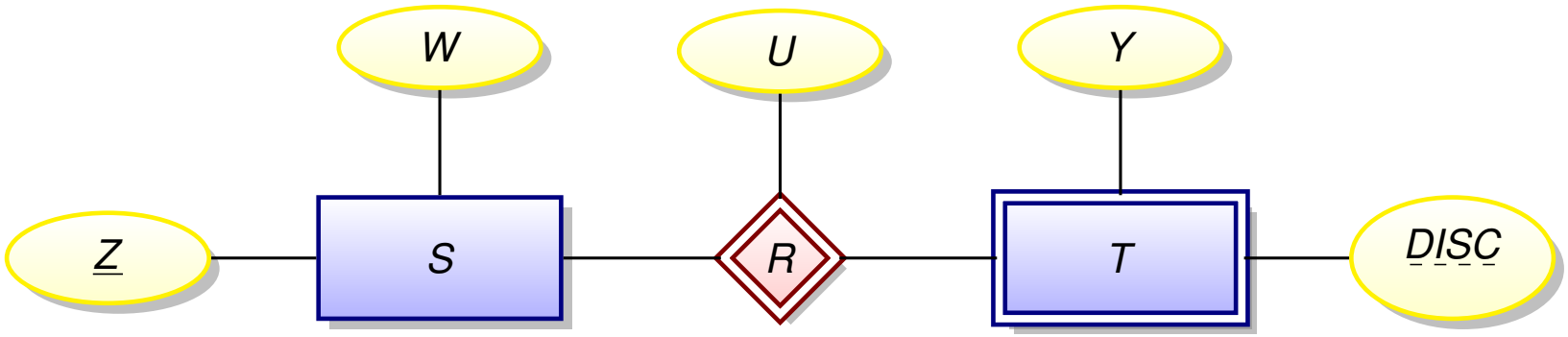
Example of a weak entity



Remarks

- A room cannot exists without being associated with a particular hotel.
- The attribute room_number is called a *discriminator*.
- Discriminators are not keys. To uniquely identify a room, we need both a **hotel_id** and a **room_number**.

Implementing weak entities



One approach:

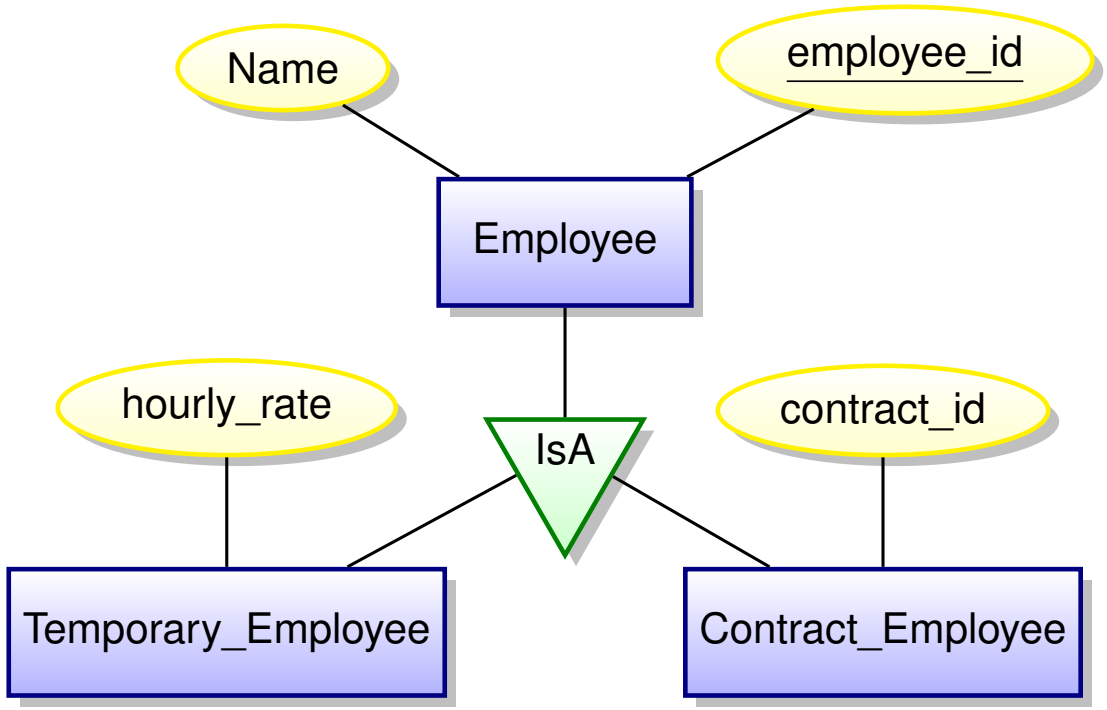
- $S(\underline{Z},\ W)$
- $R(\underline{Z,\ DISC},\ U)$ with $\pi_Z(R) \subseteq \pi_Z(S)$
- $T(\underline{Z,\ DISC},\ Y)$ with $\pi_Z(T) \subseteq \pi_Z(S)$

Another approach:

- $S(\underline{Z},\ W)$
- $R(\underline{Z,\ DISC},\ U,\ Y)$ with $\pi_Z(R) \subseteq \pi_Z(S)$

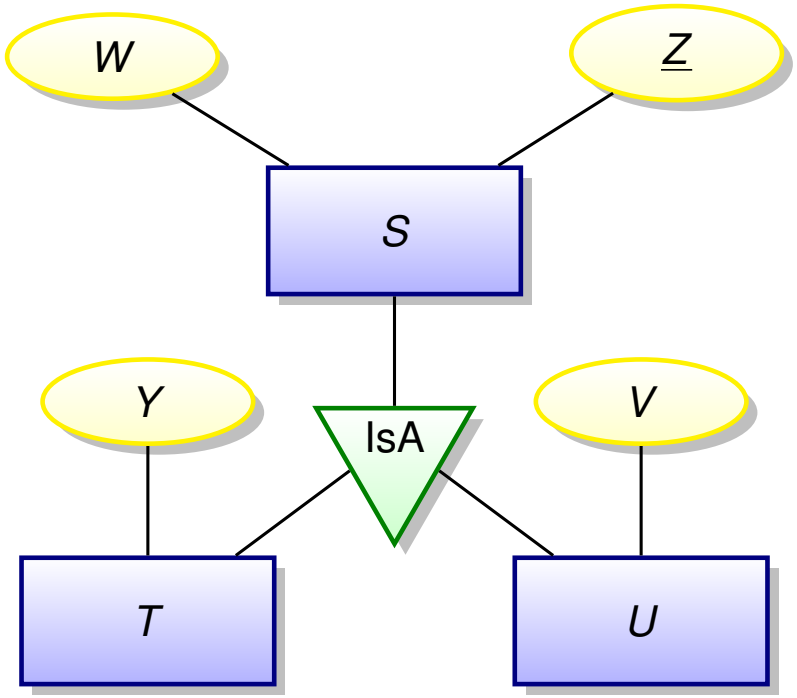
Entity hierarchy (correction to slide 34)

Sometimes an entity can have “sub-entities”. Here is an example:



Sub-entities inherit the attributes and relationships of the parent entity.
NOTE: the attributes hourly_rate and contract_id were incorrectly underlined as keys on slide 34.

Implementation of entity hierarchy



One approach:

- $S(\underline{Z},\ W)$
- $T(\underline{Z},\ Y)$ with $\pi_Z(T) \subseteq \pi_Z(S)$
- $U(\underline{Z},\ V)$ with $\pi_Z(U) \subseteq \pi_Z(S)$

Could we combine these tables into one with type tags?