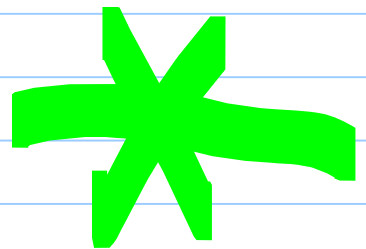


Announcements.

1. Tutorial again
watch for announce on Piazza.

2. Suggest. worky

3. MP Volunteer for
Table vs. Zombie,



Name	city	Beer
Alex	C	Bud
Alex	C	Michelob

Bob C Bud

Bob C S.A.

Name	City
Alex	C
Bob	C.



city	Beer
C	Bud
C	M
C	Bud
C	S.A.

Lossy

Decomp

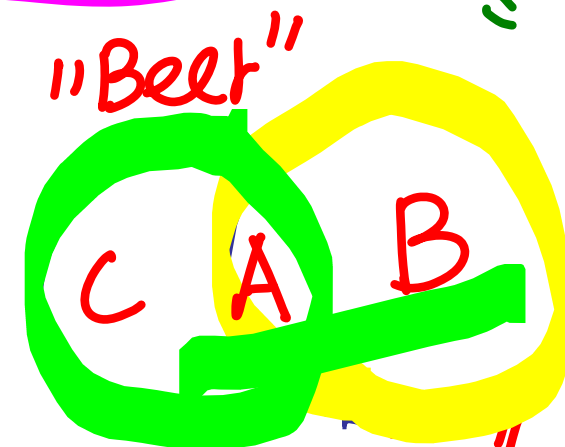
BCNF won't
Loseless

Decompose it into BCNF

Name	City	Like Beer
Alex	Champaign IL	Bud
Alex	Champaign IL	Michelob
Bob	Urbana IL	Bud
Bob	Urbana IL	Sam Adam

Name	City
Alex	Champaign IL
Bob	Urbana IL

Name	Beer
Alex	Bud
Alex	Michelob
Bob	Bud
Bob	Sam Adam



Why
= "A"
in
middle?

"Name" → "city"

What About This?

Name	CityLike	FaavoriteBeer
Alex	Champaign IL	Bud
Bob	Urbana IL	Sam Adam

$R \rightarrow R^*$ in BCNF

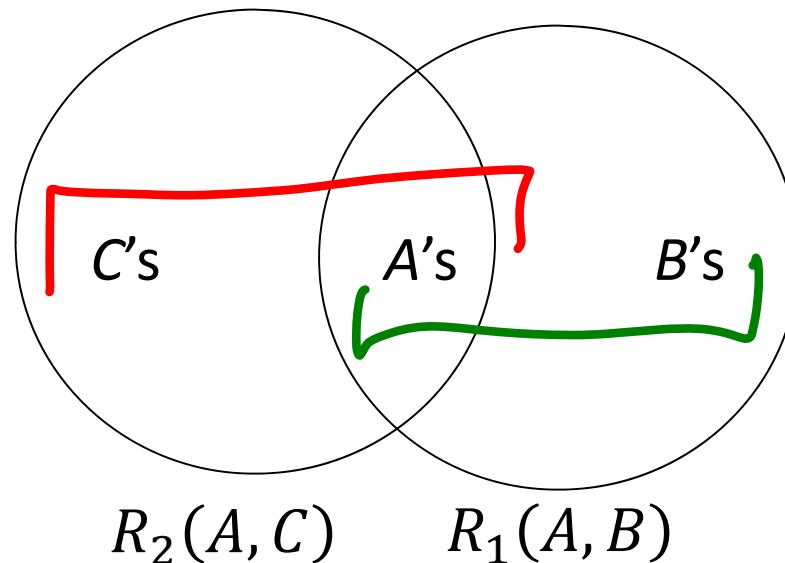
bad F.D.

- Find a FD that violates the BCNF condition:

$$\Rightarrow A_1 A_2 \dots A_n \rightarrow B_1 B_2 \dots B_n$$

Heuristics: choose $B_1 B_2 \dots B_n$ "as large as possible"

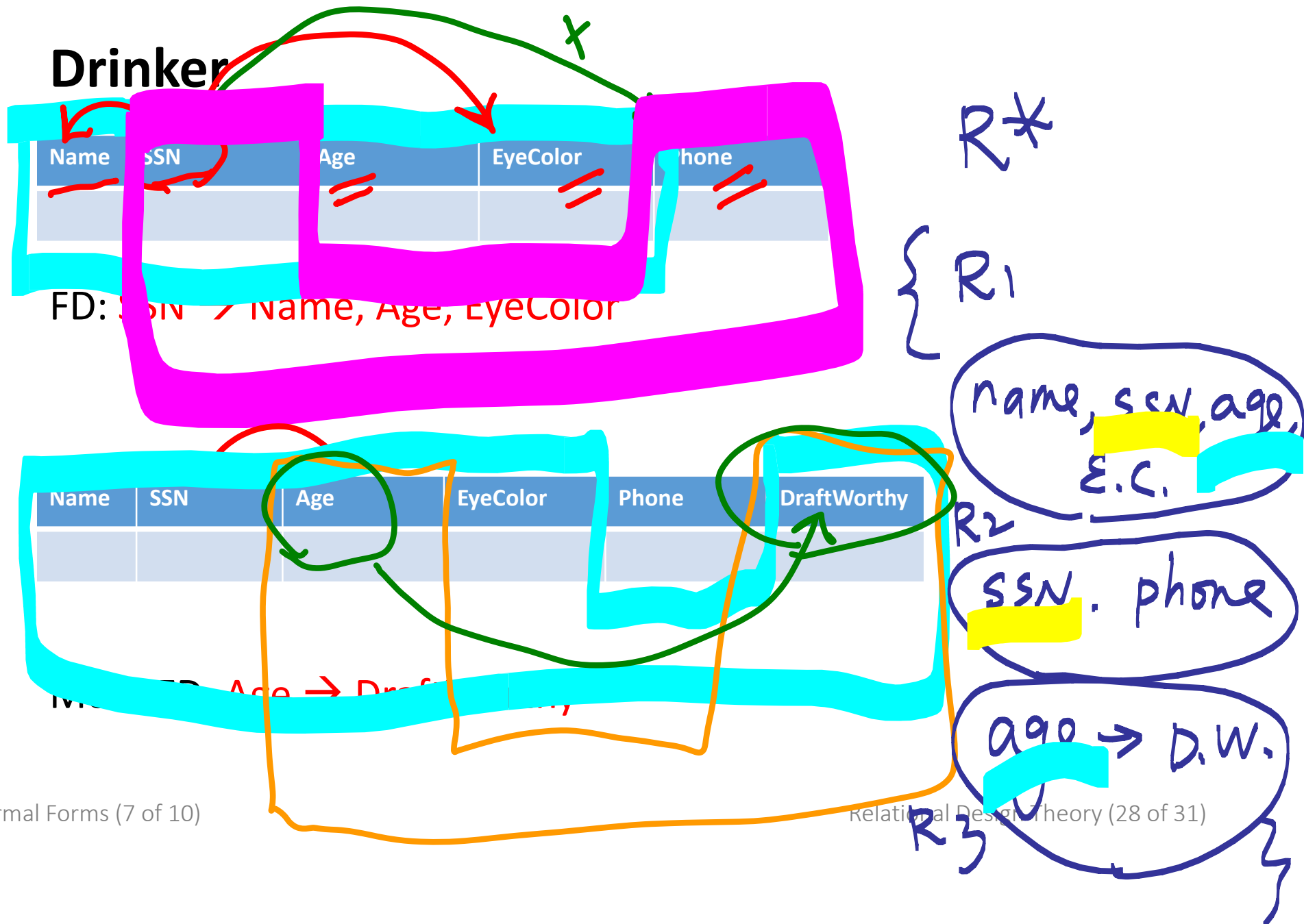
- Decompose into $R_1(A, B)$ and



Until no more
BCNF violations.

- Until no such FDs exist.

Example Decomposition



Properties of BCNF

- BCNF removes certain types of redundancy
 - those caused by adding many-many or one-many relations
- For examples of redundancy that it cannot remove, see "multivalued redundancy"
- BCNF avoids information loss

Q: Is BCNF unique?