

# **CSCI235: Database Systems**

## **Assignment 1**

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## Task 2

PLAYER ( player-full-name, date-of-birth, preferred-position-played, team-name )

- i) Player-full-name, date-of-birth  $\rightarrow$  team-name
- ii) Player-full-name, date-of-birth  $\rightarrow$  team-name

Minimal key: player-full-name, date-of-birth, preferred-position-played

- iii) Schema satisfies 1NF as all columns are single value (assuming multiples in preferred-position-played are separate entries)  
Schema does not satisfy 2NF as team-name is dependent on a subset of minimal key
- iv) PLAYER( player-full-name, date-of-birth, preferred-position-played)

PLAYERLIST( player-full-name, date-of-birth, team-name )  
Player-full-name, date-of-birth  $\rightarrow$  team-name

TEAM ( name, city, street, player-full-name, date-of-birth )

- i) Name  $\rightarrow$  city, street  
Player-full-name, date-of-birth  $\rightarrow$  name
- ii) Name  $\rightarrow$  city, street  
Player-full-name, date-of-birth  $\rightarrow$  name therefore by transitive rule player-full-name, date-of-birth  $\rightarrow$  city, street

Minimal key: player-full-name, date-of-birth

- iii) Schema satisfies 1NF as all columns are single value  
Schema satisfies 2NF as all attributes are fully dependant on primary keys  
Schema does not satisfy 3NF as minimal key has a transitive functional dependency
- iv) TEAM ( name, city, street)  
Name  $\rightarrow$  city, street  
PLAYERLIST ( name, player-full-name, date-of-birth)  
Player-full-name, date-of-birth  $\rightarrow$  name

GAME ( home-team-name, away-team-name, start-date-time, venue )

- i) Start-date-time, venue  $\rightarrow$  home-team-name, away-team-name
- ii) Start-date-time, venue  $\rightarrow$  home-team-name, away-team-name

Minimal key: start-date-time, venue

- iii) Schema satisfies 1NF as all columns are single value  
Schema satisfies 2NF as all attributes are fully dependant on primary keys  
Schema satisfies 3NF as there are no transitive functional dependencies

Schema satisfies BCNF as all minimal keys are super keys

iv) Already in BCNF