# Stage 4 - Elaboration: Design

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# Before BCNF Normalization

(In 3NF)

USER

| User_ID | FName | Email | Pword | DOB | Astro_Sign | MB_type | City | State | Gender | Description |
|---|---|---|---|---|---|---|---|---|---|---|

USER PREFERENCES

| User_ID | Pref_City | Pref_State | Gender_Pref | Age_Range |
|---|---|---|---|---|

POTENTIAL MATCH

| User_ID | PM ID | Match Rating |
|---|---|---|

VOTES

| User_ID | PM ID | Yes/No |
|---|---|---|

ASTROLOGICAL COMPATIBILITY

| User Sign | Sign_1_Rating | …. | Sign_12_Rating |
|---|---|---|---|

PERSONALITY COMPATIBILITY

| Personality Type | Type_1_Rating | ... | Type_16_Rating | |
|---|---|---|---|---|

# BCNF Normalization

USER

| User_ID | FName | Email | Pword | DOB | MB_type | City | State | Gender | Description |
|---|---|---|---|---|---|---|---|---|---|

SIGN DATES

| Start_Date | End_Date | Sign Name |
|---|---|---|

USER PREFERENCES

| User_ID | Pref_City | Pref_State | Gender_Pref | Age_Range |
|---|---|---|---|---|

VOTES

| PM ID | Yes/No |
|---|---|

RATING

| PM ID | Match Rating |
|---|---|

POTENTIAL MATCH

| User_ID | PM ID |
|---|---|

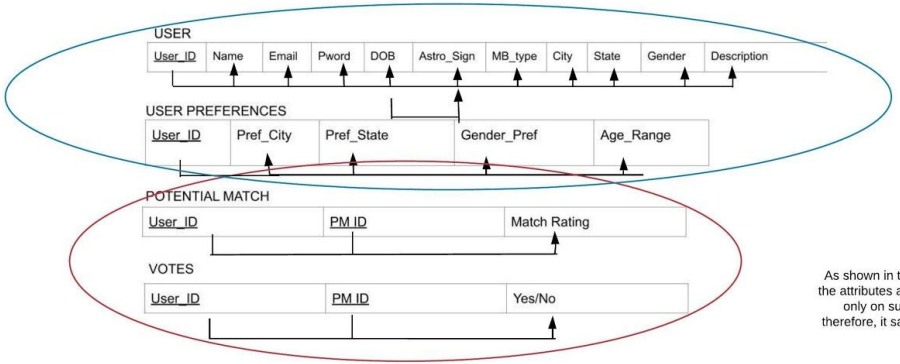
ASTROLOGICAL COMPATIBILITY

| User Sign | Sign_1_Rating | …. | Sign_12_Rating |
|---|---|---|---|

PERSONALITY COMPATIBILITY

| Personality Type | Type_1_Rating | ... | Type_16_Rating |
|---|---|---|---|

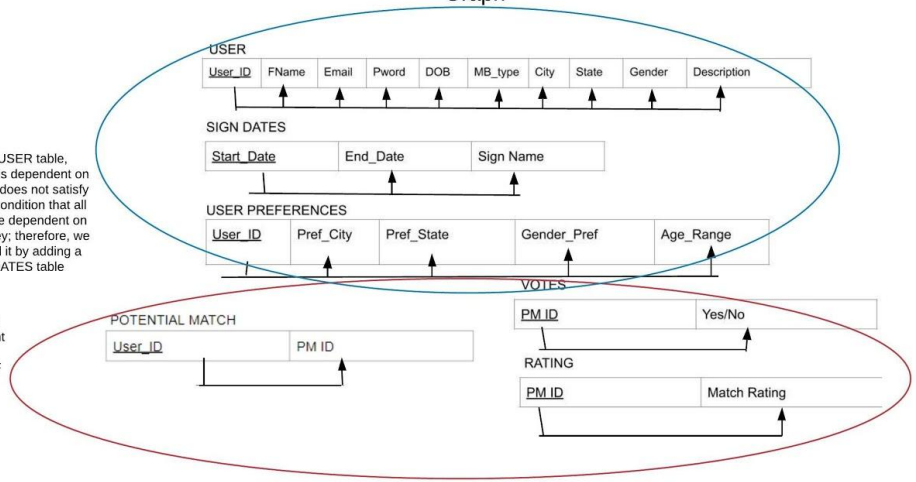
## Original Schema Graph




For the USER table, Astro_Sign is dependent on DOB which does not satisfy the BCNF condition that all atributes are dependent on the super key; therefore, we normalized it by adding a SIGN DATES table

As shown in the tables, all the attributes are dependent only on super keys; therefore, it satisfies BCNF

## Normalized Schema Graph



# “Transactional Queries”

# Create

**CREATE TABLE** <USER>

(<User_Id> <INT>, <Name> <VARCHAR(15)>, <Email> <VARCHAR(30)>, <Pword> <VARCHAR(15)>, <DOB> <DATE>, <MB_type> <DECIMAL(0,15)>, <City> <VARCHAR(15)>, <State> <CHAR(2)>, <Gender> <DECIMAL(0,2)>, <Description> <VARCHAR(30)>)

**CREATE TABLE** <USER PREFERENCES>

(<User_Id> <INT>, <Pref_City><VARCHAR(15)>,<Pref_State><CHAR(2)>, <Gender_Pref><DECIMAL(0,2)>, <Age_Min><INT>, <Age_Max><INT>)

# Insert

INSERT INTO user (User_ID, FName, Email, Pword, DOB, MB_type, City, State, Gender, Desc)

VALUES (‘66666’, ‘bob’, ‘bob@gmail.com’, ‘bobdabest’, ‘12121990’, ‘7’, ‘ewing’, ‘NJ’, ‘m’, ‘ABC’)

INSERT INTO user (User_ID, FName, Email, Pword, DOB, MB_type, City, State, Gender, Desc)

VALUES (‘11111’, ‘alice’, ‘alice@gmail.com’, ‘12345abc’, ‘06061996’, ‘11’, ‘NYC’, ‘NY’, ‘f’, ‘DCE’)

INSERT INTO user_prefs (User_ID, Pref_city, Gender_Pref, Age_Min, Age_Max)

VALUES (‘11111’, ‘1’, ‘m’, ‘20’, ‘30’)

# Modify

**UPDATE** USER

SET Name = “Ally”

WHERE User_ID = “88888”

**UPDATE** USER

SET Description= “Hello world I am human”

WHERE User_ID = “69866”

**UPDATE** USER_PREFERENCES

SET Gender_Pref = “f”

WHERE User_ID = “77249”

# Delete

DELETE FROM user

WHERE User_ID = ‘12345’

DELETE FROM user

WHERE City = ‘NYC’ & State = ‘NY’

DELETE FROM user

WHERE User_ID = ‘77777’