Homework 4 Question 1

Functional dependencies represent the relationship between the attributes in the given database. Based on our ER model, here are the examples of functional dependencies

Normalization (2nd Normal Form and 3rd Normal Form)

In the **cryptocurrency entity**, the attribute crypto_id which is the unique identifier determines the values of 'name', 'symbol', and 'date_created' which represents a functional dependency. This means, it only corresponds to one value of name, symbol, and date_created for the primary key (crypto_id). Given that there should be no transitive functional dependencies, date_created is an example of a transitive dependency.

crypto_id -> name

crypto_id -> symbol

crypto_id -> date_created

In the **exchange entity**, the attribute exchange_id uniquely determines the values of 'name', 'country', and 'date_created' This means, it only corresponds to one value of name, country, and date_created for the primary key (exchange_id). Given that there should be no transitive functional dependencies, date_created is an example of a transitive dependency.

exchange_id -> name

exchange_id -> country

exchange_id -> date_created

Same as the **prices entity**, the attribute price_id uniquely determines the values of 'name', 'price', and 'value_date' This means, it only corresponds to one value of name, price, and value_date for the primary key (price_id)

price_id -> name

price_id -> price

price_id -> value_date

In the **wallets entity**, the attributes wallet_id uniquely determines the values of ‘name’, ‘address’, and ‘name_tag’ This means, it only corresponds to one value of name, address, and name_tag for the primary key (wallet_id)

wallet_id -> name

wallet_id -> address

wallet_id -> name_tag

In the **users entity,** the attribute user_id uniquely determines the values of ‘name’, and ‘user_name’ This means, it only corresponds to one value of name, and user_name for the primary key (user_id)

user_id -> name

user_id -> user_name

Lastly, in the **marketcap entity**, the attribute market_id uniquely determines the values of ‘name’, ‘marketcap_value’, and ‘ATH’ This means, it only corresponds to one value of name, market_value, and ATH for the primary key (market_id)

market_id -> name

market_id -> market_value

market_id -> ATH