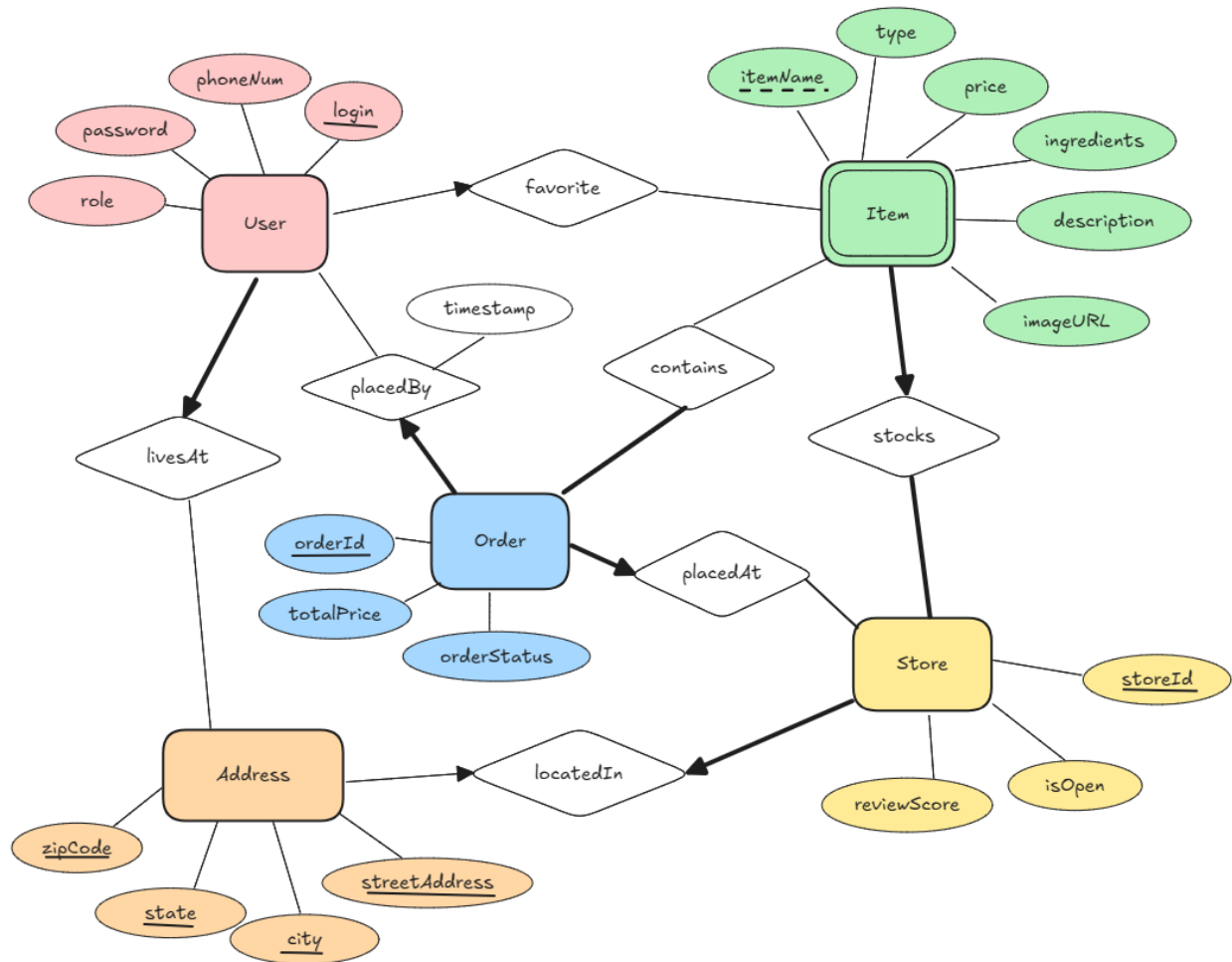


Phase 1

Entity-Relationship Diagram



List of Cardinality/Participation Constraints

- The “livesAt” relationship between user and address:
 - is one-to-many because each user must have exactly one address and each address may be lived at by one or more users
 - is mandatory on the user’s side because each user must have one address
 - is optional on the address’ side because every address does not have to be lived at by a user

- The "locatedIn" relationship between store and address:
 - is one-to-one because each store must have exactly one address and each address may be the location for exactly one store
 - is mandatory on the store's side because each store must have one address
 - is optional on the address' side because every address does not have to be location of a store
- The "favorite" relationship between user and item:
 - is one-to-many because each user can only have one favorite item and each item can be favored by multiple users.
 - is optional on the user's side because users do not have to select a favorite item
 - is optional on the item's side because items do not have to be favored by any user
- The "placedBy" relationship between order and user:
 - is one-to-many because each user can place many orders and an order must be placed by exactly one user
 - is mandatory on the order's side because an order must be placed by a user
 - is optional on the user's side because a user does not need to place any orders
- The "placedAt" relationship between order and store:
 - is one-to-many because each order can only be placed at one store and each store can have multiple orders placed
 - is mandatory on the order's side because an order must be placed at a store
 - is optional on the store's side because a store does not need to have orders
- The "contains" relationship between order and item:
 - is many-to-many because each order must contain at least one item and each item can be in multiple orders
 - is mandatory on the order's side because each order must contain at least one item
 - is optional on the item's side because an item does not have to be in an order
- The "stocks" relationship between store and item (owner-to-weak entity relationship):
 - is one-to-many because items are unique between stores (stores can price and describe items differently) and stores can contain multiple items
 - is mandatory on the item's side as an item must be from a store
 - is mandatory on the store's side because a store must have at least one item