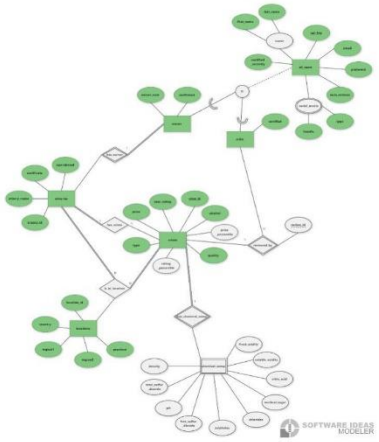
Converting (E)ER to Relational Mapping

Step 1: Mapping of regular(strong) entitiy types



wines

BIGINT wine_id	VARCHAR(50) type	FLOAT price	FLOAT user_rating	TINYINT quality	FLOAT alcohol

wineries

BIGINT winery_id	VARCHAR(50) winery_name	TINYINT(1) certificate	TINYINT(1) operational

locations

BIGINT location_id	VARCHAR(50) country	VARCHAR(50) province	VARCHAR(50) region1	VARCHAR(50) region2

all_users

BIGINT api_key	VARCHAR(50) first_name	VARCHAR(50) email	VARCHAR(50) password	BIGINT num_reviews	TINYINT(1) verified_recently

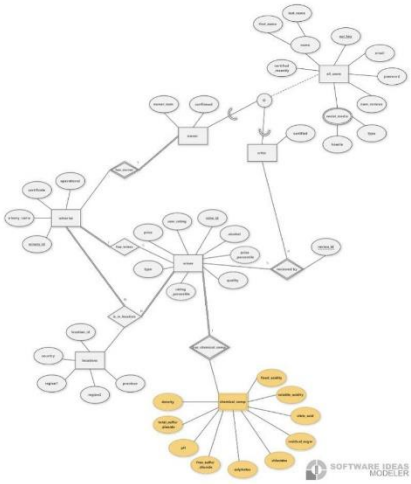
critic

BIGINT api_key	TINYINT(1) certified

owner

BIGINT api_key	BIGINT owner_num	TINYINT(1) confirmed

Step 2: Mapping of weak entitiy type



wines

BIGINT wine_id	VARCHAR(50) type	FLOAT price	FLOAT user_rating	TINYINT quality	FLOAT alcohol

wineries

BIGINT winery_id	VARCHAR(50) winery_name	TINYINT(1) certificate	TINYINT(1) operational

locations

BIGINT location_id	VARCHAR(50) country	VARCHAR(50) province	VARCHAR(50) region1	VARCHAR(50) region2

all_users

BIGINT api_key	VARCHAR(50) first_name	VARCHAR(50) email	VARCHAR(50) password	BIGINT num_reviews	TINYINT(1) verified_recently

critic

BIGINT api_key	TINYINT(1) certified

owner

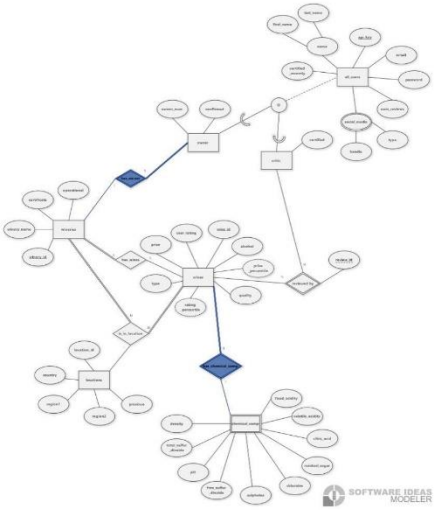
BIGINT api_key	BIGINT owner_num	TINYINT(1) confirmed

chemical_comp

VARCHAR(8,4) density	INT total_sulfur_dioxide	VARCHAR(4,2) pH	INT free_sulfur_dioxide	VARCHAR(4,2) sulphates	VARCHAR(5,3) chlorides	VARCHAR(5,2) residual_sugar	VARCHAR(5,2) citric_acid	VARCHAR(5,2) volatile_acidity	VARCHAR(5,2) fixed_acidity

Step 3: Mapping binary (1:1) relationships

Approach take : Foreign key approach (approach 1)



wines

BIGINT wine_id	VARCHAR(50) type	FLOAT price	FLOAT user_rating	TINYINT quality	FLOAT alcohol

wineries

BIGINT winery_id	BIGINT api_key	VARCHAR(50) winery_name	TINYINT(1) certificate	TINYINT(1) operational

locations

BIGINT location_id	VARCHAR(50) country	VARCHAR(50) province	VARCHAR(50) region1	VARCHAR(50) region2

all_users

BIGINT api_key	VARCHAR(50) first_name	VARCHAR(50) email	VARCHAR(50) password	BIGINT num_reviews	TINYINT(1) verified_recently

critic

BIGINT api_key	TINYINT(1) certified

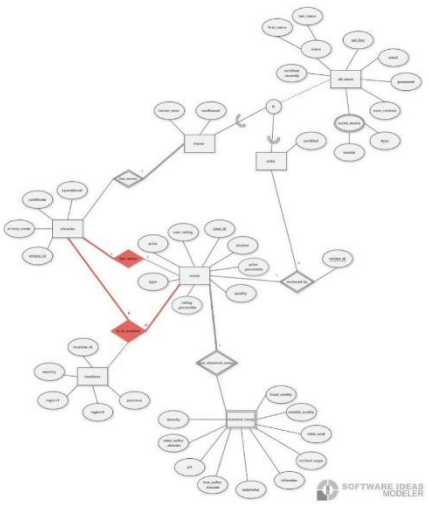
owner

BIGINT api_key	BIGINT owner_num	TINYINT(1) confirmed

chemical_comp

BIGINT wine_id	VARCHAR(8,4) density	INT total_sulfur_dioxide	VARCHAR(4,2) pH	INT free_sulfur_dioxide	VARCHAR(4,2) sulphates	VARCHAR(5,3) chlorides	VARCHAR(5,2) residual_sugar	VARCHAR(5,2) citric_acid	VARCHAR(5,2) volatile_acidity	VARCHAR(5,2) fixed_acidity

Step 4: Mapping binary (1:N) relationships



wines

BIGINT wine_id	BIGINT winery_id	VARCHAR(50) type	FLOAT price	FLOAT user_rating	TINYINT quality	FLOAT alcohol	BIGINT location_id

wineries

BIGINT winery_id	BIGINT api_key	VARCHAR(50) winery_name	TINYINT(1) certificate	TINYINT(1) operational	BIGINT location_id

locations

BIGINT location_id	VARCHAR(50) country	VARCHAR(50) province	VARCHAR(50) region1	VARCHAR(50) region2

all_users

BIGINT api_key	VARCHAR(50) first_name	VARCHAR(50) email	VARCHAR(50) password	BIGINT num_reviews	TINYINT(1) verified_recently

critic

BIGINT api_key	TINYINT(1) certified

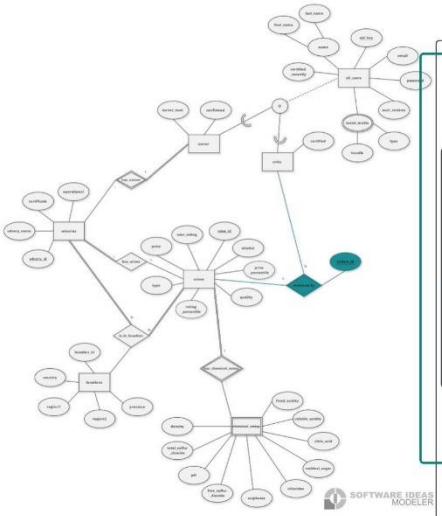
owner

BIGINT api_key	BIGINT owner_num	TINYINT(1) confirmed

chemical_comp

BIGINT wine_id	VARCHAR(8,4) density	INT total_sulfur_dioxide	VARCHAR(4,2) pH	INT free_sulfur_dioxide	VARCHAR(4,2) sulphates	VARCHAR(5,3) chlorides	VARCHAR(5,2) residual_sugar	VARCHAR(5,2) citric_acid	VARCHAR(5,2) volatile_acidity	VARCHAR(5,2) fixed_acidity

Step 5: Mapping binary (M:N) relationships



wines

BIGINT wine_id	BIGINT winery_id	VARCHAR(50) type	FLOAT price	FLOAT user_rating	TINYINT quality	FLOAT alcohol	BIGINT location_id

wineries

BIGINT winery_id	BIGINT api_key	VARCHAR(50) winery_name	TINYINT(1) certificate	TINYINT(1) operational	BIGINT location_id

locations

BIGINT location_id	VARCHAR(50) country	VARCHAR(50) province	VARCHAR(50) region1	VARCHAR(50) region2

all_users

BIGINT api_key	VARCHAR(50) first_name	VARCHAR(50) email	VARCHAR(50) password	BIGINT num_reviews	TINYINT(1) verified_recently

critic

BIGINT api_key	TINYINT(1) certified

owner

BIGINT api_key	BIGINT owner_num	TINYINT(1) confirmed

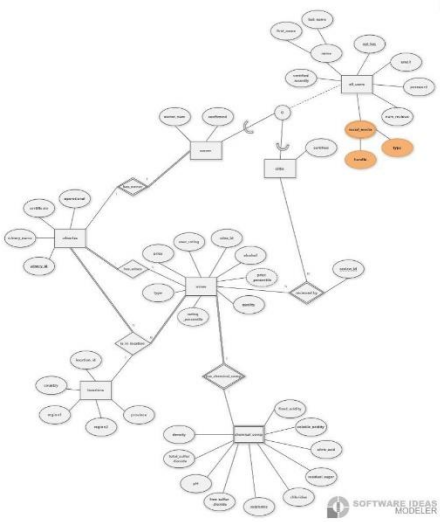
reviewed_by

BIGINT wine_id	BIGINT api_key	BIGINT review_id

chemical_comp

BIGINT wine_id	VARCHAR(8,4) density	INT total_sulfur_dioxide	VARCHAR(4,2) pH	INT free_sulfur_dioxide	VARCHAR(4,2) sulphates	VARCHAR(5,3) chlorides	VARCHAR(5,2) residual_sugar	VARCHAR(5,2) citric_acid	VARCHAR(5,2) volatile_acidity	VARCHAR(5,2) fixed_acidity

Step 6: Mapping multivalued attributes



wines

BIGINT wine_id	BIGINT winery_id	VARCHAR(50) type	FLOAT price	FLOAT user_rating	TINYINT quality	FLOAT alcohol	BIGINT location_id

wineries

BIGINT winery_id	BIGINT api_key	VARCHAR(50) winery_name	TINYINT(1) certificate	TINYINT(1) operational	BIGINT location_id

locations

BIGINT location_id	VARCHAR(50) country	VARCHAR(50) province	VARCHAR(50) region1	VARCHAR(50) region2

all_users

BIGINT api_key	VARCHAR(50) first_name	VARCHAR(50) email	VARCHAR(50) password	BIGINT num_reviews	TINYINT(1) verified_recently

critic

BIGINT api_key	TINYINT(1) certified

owner

BIGINT api_key	BIGINT owner_num	TINYINT(1) confirmed

social_media

BIGINT api_key	VARCHAR(50) handle	VARCHAR(50) type

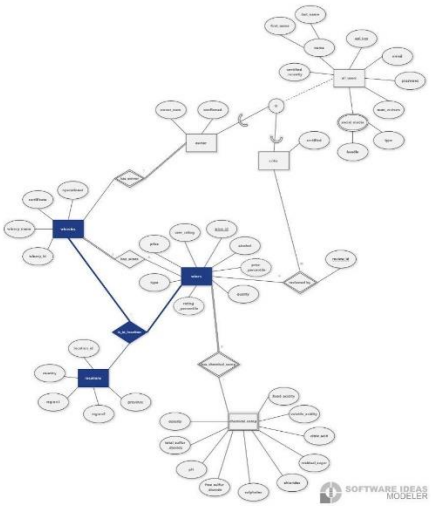
reviewed_by

BIGINT wine_id	BIGINT api_key	BIGINT review_id

chemical_comp

BIGINT wine_id	VARCHAR(8,4) density	INT total_sulfur_dioxide	VARCHAR(4,2) pH	INT free_sulfur_dioxide	VARCHAR(4,2) sulphates	VARCHAR(5,3) chlorides	VARCHAR(5,2) residual_sugar	VARCHAR(5,2) citric_acid	VARCHAR(5,2) volatile_acidity	VARCHAR(5,2) fixed_acidity

Step 7: Mapping N-ary relationships



wines

BIGINT wine_id	BIGINT winery_id	VARCHAR(50) type	FLOAT price	FLOAT user_rating	TINYINT quality	FLOAT alcohol	BIGINT location_id

wineries

BIGINT winery_id	BIGINT api_key	VARCHAR(50) winery_name	TINYINT(1) certificate	TINYINT(1) operational	BIGINT location_id

locations

BIGINT location_id	VARCHAR(50) country	VARCHAR(50) province	VARCHAR(50) region1	VARCHAR(50) region2

is_in_location

BIGINT location_id	BIGINT wine_id	BIGINT winery_id

all_users

BIGINT api_key	VARCHAR(50) first_name	VARCHAR(50) email	VARCHAR(50) password	BIGINT num_reviews	TINYINT(1) verified_recently

critic

BIGINT api_key	TINYINT(1) certified

owner

BIGINT api_key	BIGINT owner_num	TINYINT(1) confirmed

social_media

BIGINT api_key	VARCHAR(50) handle	VARCHAR(50) type

reviewed_by

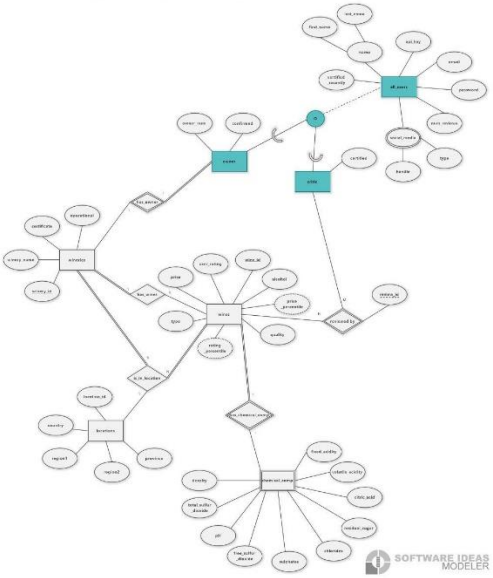
BIGINT wine_id	BIGINT api_key	BIGINT review_id

chemical_comp

BIGINT wine_id	VARCHAR(8,4) density	INT total_sulfur_dioxide	VARCHAR(4,2) pH	INT free_sulfur_dioxide	VARCHAR(4,2) sulphates	VARCHAR(5,3) chlorides	VARCHAR(5,2) residual_sugar	VARCHAR(5,2) citric_acid	VARCHAR(5,2) volatile_acidity	VARCHAR(5,2) fixed_acidity

Step 8: Mapping Specialization and generalization

Option 8A: Multiple relations - superclass and subclasses



wines

BIGINT wine_id	BIGINT winery_id	VARCHAR(50) type	FLOAT price	FLOAT user_rating	TINYINT quality	FLOAT alcohol	BIGINT location_id

wineries

BIGINT winery_id	BIGINT api_key	VARCHAR(50) winery_name	TINYINT(1) certificate	TINYINT(1) operational	BIGINT location_id

locations

BIGINT location_id	VARCHAR(50) country	VARCHAR(50) province	VARCHAR(50) region1	VARCHAR(50) region2

is_in_location

BIGINT location_id	BIGINT wine_id	BIGINT winery_id

all_users

BIGINT api_key	VARCHAR(50) first_name	VARCHAR(50) email	VARCHAR(50) password	BIGINT num_reviews	TINYINT(1) verified_recently

critic

BIGINT api_key	TINYINT(1) certified

owner

BIGINT api_key	BIGINT owner_num	TINYINT(1) confirmed

social_media

BIGINT api_key	VARCHAR(50) handle	VARCHAR(50) type

reviewed_by

BIGINT wine_id	BIGINT api_key	BIGINT review_id

chemical_comp

BIGINT wine_id	VARCHAR(8,4) density	INT total_sulfur_dioxide	VARCHAR(4,2) pH	INT free_sulfur_dioxide	VARCHAR(4,2) sulphates	VARCHAR(5,3) chlorides	VARCHAR(5,2) residual_sugar	VARCHAR(5,2) citric_acid	VARCHAR(5,2) volatile_acidity	VARCHAR(5,2) fixed_acidity