# Converting (E)ER to Relational Mapping

## Step 1: Mapping of regular(strong) entitiy types


**all_users**

| VARCHAR(32) api_key | VARCHAR(32) first_name | VARCHAR(64) last_name | VARCHAR(50) email | VARCHAR(64) password | VARCHAR(12) salt | INT() num_reviews | DATE() last_verified | TINYINT(1) certified_critic |
|---|---|---|---|---|---|---|---|---|

**wines**

| INT() wine_id | VARCHAR(50) type | VARCHAR(64) grape_type | VARCHAR(255) image | VARCHAR(255) description | FLOAT() price | TINYINT(1) quality | FLOAT() alcohol |
|---|---|---|---|---|---|---|---|

**wineries**

| INT() winery_id | VARCHAR(64) winery_name | TINYINT(1) certified | TINYINT(1) operational | TINYINT(1) offers_tours | VARCHAR(64) eco_friendly |
|---|---|---|---|---|---|

**locations**

| INT() location_id | VARCHAR(12) country | VARCHAR(30) province | VARCHAR(50) region1 | VARCHAR(50) region2 |
|---|---|---|---|---|

## Step 2: Mapping of weak entitiy type


**all_users**

| VARCHAR(32) api_key | VARCHAR(32) first_name | VARCHAR(64) last_name | VARCHAR(50) email | VARCHAR(64) password | VARCHAR(12) salt | INT() num_reviews | DATE() last_verified | TINYINT(1) certified_critic |
|---|---|---|---|---|---|---|---|---|

**reviews**

| VARCHAR(32) api_key | INT() wine_id | INT() review_id | FLOAT() rating | VARCHAR(255) comment |
|---|---|---|---|---|

**wines**

| INT() wine_id | VARCHAR(50) type | VARCHAR(64) grape_type | VARCHAR(255) image | VARCHAR(255) description | FLOAT() price | TINYINT(1) quality | FLOAT() alcohol |
|---|---|---|---|---|---|---|---|

**wineries**

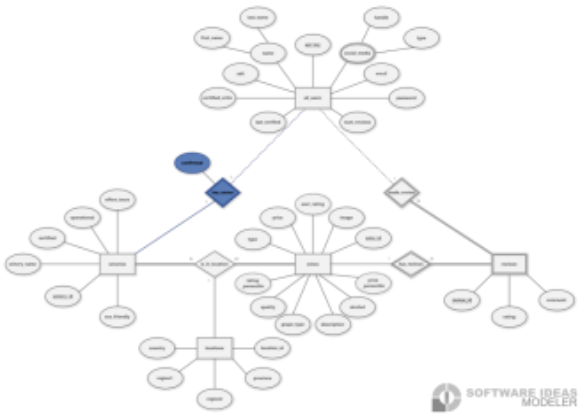
| INT() winery_id | VARCHAR(64) winery_name | TINYINT(1) certified | TINYINT(1) operational | TINYINT(1) offers_tours | VARCHAR(64) eco_friendly |
|---|---|---|---|---|---|

**locations**

| INT() location_id | VARCHAR(12) country | VARCHAR(30) province | VARCHAR(50) region1 | VARCHAR(50) region2 |
|---|---|---|---|---|

## Step 3: Mapping binary (1:1) relationships

Approach take : Foreign key approach (approach 1)




**all_users**

| VARCHAR(32) api_key | VARCHAR(32) first_name | VARCHAR(64) last_name | VARCHAR(50) email | VARCHAR(64) password | VARCHAR(12) salt | INT() num_reviews | DATE() last_verified | TINYINT(1) certified_critic |
|---|---|---|---|---|---|---|---|---|

**reviews**

| VARCHAR(32) api_key | INT() wine_id | INT() review_id | FLOAT() rating | VARCHAR(255) comment |
|---|---|---|---|---|

**wines**

| INT() wine_id | VARCHAR(50) type | VARCHAR(64) grape_type | VARCHAR(255) image | VARCHAR(255) description | FLOAT() price | TINYINT(1) quality | FLOAT() alcohol |
|---|---|---|---|---|---|---|---|

**wineries**

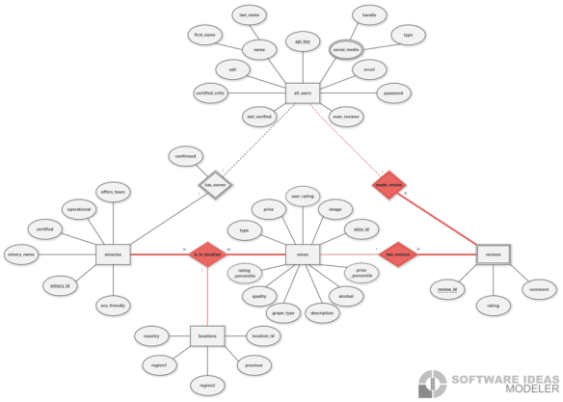
| INT() winery_id | VARCHAR(32) api_key | TINYINT(1) confirmed | VARCHAR(64) winery_name | TINYINT(1) certified | TINYINT(1) operational | TINYINT(1) offers_tours | VARCHAR(64) eco_friendly |
|---|---|---|---|---|---|---|---|

**locations**

| INT() location_id | VARCHAR(12) country | VARCHAR(30) province | VARCHAR(50) region1 | VARCHAR(50) region2 |
|---|---|---|---|---|

## Step 4: Mapping binary (1:N) relationships

Second approach take: creating seperate relation for 1:N




**all_users**

| VARCHAR(32) api_key | VARCHAR(32) first_name | VARCHAR(64) last_name | VARCHAR(50) email | VARCHAR(64) password | VARCHAR(12) salt | INT() num_reviews | DATE() last_verified | TINYINT(1) certified_critic |
|---|---|---|---|---|---|---|---|---|

**reviews**

| VARCHAR(32) api_key | INT() wine_id | INT() review_id | FLOAT() rating | VARCHAR(255) comment |
|---|---|---|---|---|

**wines**

| INT() wine_id | VARCHAR(50) type | VARCHAR(64) grape_type | VARCHAR(255) image | VARCHAR(255) description | FLOAT() price | TINYINT(1) quality | FLOAT() alcohol |
|---|---|---|---|---|---|---|---|

**is_in_location**

| INT() location_id | INT() winery_id | INT() wine_id |
|---|---|---|

**wineries**

| INT() winery_id | VARCHAR(32) api_key | TINYINT(1) confirmed | VARCHAR(64) winery_name | TINYINT(1) certified | TINYINT(1) operational | TINYINT(1) offers_tours | VARCHAR(64) eco_friendly |
|---|---|---|---|---|---|---|---|

**locations**

| INT() location_id | VARCHAR(12) country | VARCHAR(30) province | VARCHAR(50) region1 | VARCHAR(50) region2 |
|---|---|---|---|---|

## Step 5: Mapping binary (M:N) relationships


**all_users**

| VARCHAR(32) api_key | VARCHAR(32) first_name | VARCHAR(64) last_name | VARCHAR(50) email | VARCHAR(64) password | VARCHAR(12) salt | INT() num_reviews | DATE() last_verified | TINYINT(1) certified_critic |
|---|---|---|---|---|---|---|---|---|

**reviews**

| VARCHAR(32) api_key | INT() wine_id | INT() review_id | FLOAT() rating | VARCHAR(255) comment |
|---|---|---|---|---|

**wines**

| INT() wine_id | VARCHAR(50) type | VARCHAR(64) grape_type | VARCHAR(255) image | VARCHAR(255) description | FLOAT() price | TINYINT(1) quality | FLOAT() alcohol |
|---|---|---|---|---|---|---|---|

**is_in_location**

| INT() location_id | INT() winery_id | INT() wine_id |
|---|---|---|

**wineries**

| INT() winery_id | VARCHAR(32) api_key | TINYINT(1) confirmed | VARCHAR(64) winery_name | TINYINT(1) certified | TINYINT(1) operational | TINYINT(1) offers_tours | VARCHAR(64) eco_friendly |
|---|---|---|---|---|---|---|---|

**locations**

| INT() location_id | VARCHAR(12) country | VARCHAR(30) province | VARCHAR(50) region1 | VARCHAR(50) region2 |
|---|---|---|---|---|

## Step 6: Mapping multivalued attributes


**social_media**

| VARCHAR(32) api_key | VARCHAR(64) handle | VARCHAR(32) type |
|---|---|---|

**all_users**

| VARCHAR(32) api_key | VARCHAR(32) first_name | VARCHAR(64) last_name | VARCHAR(50) email | VARCHAR(64) password | VARCHAR(12) salt | INT() num_reviews | DATE() last_verified | TINYINT(1) certified_critic |
|---|---|---|---|---|---|---|---|---|

**reviews**

| VARCHAR(32) api_key | INT() wine_id | INT() review_id | FLOAT() rating | VARCHAR(255) comment |
|---|---|---|---|---|

**wines**

| INT() wine_id | VARCHAR(50) type | VARCHAR(64) grape_type | VARCHAR(255) image | VARCHAR(255) description | FLOAT() price | TINYINT(1) quality | FLOAT() alcohol |
|---|---|---|---|---|---|---|---|

**is_in_location**

| INT() location_id | INT() winery_id | INT() wine_id |
|---|---|---|

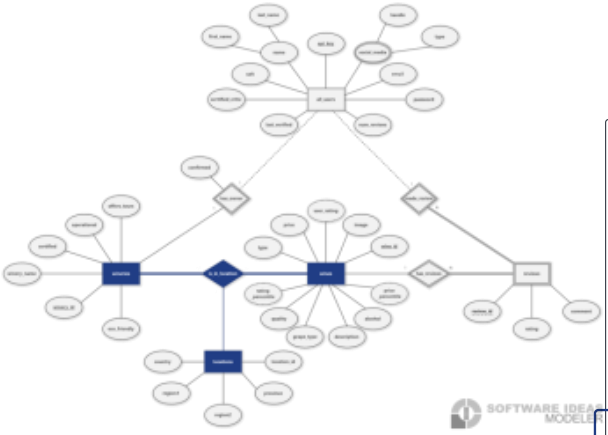
**wineries**

| INT() winery_id | VARCHAR(32) api_key | TINYINT(1) confirmed | VARCHAR(64) winery_name | TINYINT(1) certified | TINYINT(1) operational | TINYINT(1) offers_tours | VARCHAR(64) eco_friendly |
|---|---|---|---|---|---|---|---|

**locations**

| INT() location_id | VARCHAR(12) country | VARCHAR(30) province | VARCHAR(50) region1 | VARCHAR(50) region2 |
|---|---|---|---|---|

## Step 7: Mapping N-ary relationships



**social_media**

| VARCHAR(32) api_key | VARCHAR(64) handle | VARCHAR(32) type |
|---|---|---|

**all_users**

| VARCHAR(32) api_key | VARCHAR(32) first_name | VARCHAR(64) last_name | VARCHAR(50) email | VARCHAR(64) password | VARCHAR(12) salt | INT() num_reviews | DATE() last_verified | TINYINT(1) certified_critic |
|---|---|---|---|---|---|---|---|---|

**reviews**

| VARCHAR(32) api_key | INT() wine_id | INT() review_id | FLOAT() rating | VARCHAR(255) comment |
|---|---|---|---|---|

**wines**

| INT() wine_id | VARCHAR(50) type | VARCHAR(64) grape_type | VARCHAR(255) image | VARCHAR(255) description | FLOAT() price | TINYINT(1) quality | FLOAT() alcohol |
|---|---|---|---|---|---|---|---|

**is_in_location**

| INT() location_id | INT() winery_id | INT() wine_id |
|---|---|---|

**wineries**

| INT() winery_id | VARCHAR(32) api_key | TINYINT(1) confirmed | VARCHAR(64) winery_name | TINYINT(1) certified | TINYINT(1) operational | TINYINT(1) offers_tours | VARCHAR(64) eco_friendly |
|---|---|---|---|---|---|---|---|

**locations**

| INT() location_id | VARCHAR(12) country | VARCHAR(30) province | VARCHAR(50) region1 | VARCHAR(50) region2 |
|---|---|---|---|---|

## Step 8: Mapping Specialization and generalization

N/A No specialization/generalization needed to be mapped