

Capstone Project 2

CMU-SE 451

Database Design Document

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Craft Village Pollution Monitor System

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PROJECT INFORMATION

| Project acronym | CVPMS | | | | | | |
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DOCUMENT NAME

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| 1.2 | 20/10/2022 | Create survey Hua Hoang Phuc system | | Ng/MS |
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1. Introduction

1.1. Purpose

Place information system's database design document describes structure of database and file structure of system. Database Design document will introduce all attribute the System that will help developer and tester base on this design to implement and test.

1.2. Goal

To create database tables most accurate.

1.3. Scope

- This Database Design Document provides the basic for "Craft Village Pollution Monitor System" Database design.
- It defines the database that will support the "Craft Village Pollution Monitor System" Data Model.
- ❖ It describes both logical and physical definition, non-functional issues, and the database interfaces; storage aspects are defined in the physical database design sections.
- ❖ The following topics are covered in this document:
 - Assumptions and decisions on database design.
 - > Entity-mapping.
 - > Table column definitions.
 - > Primary, unique and foreign key definitions.
 - Column and row level validation rules (check constraints).
 - ➤ Rule for populating specific columns (sequences, derivations, demoralized (column)).
 - ➤ Interfaces and dependencies with other components.
 - > Data access description.
- ❖ The database design for "Craft Village Pollution Monitor System" is composed of definitions for database objects derived by mapping entities to tables attributes to columns, unique identifiers to unique keys and relationship to foreign keys.

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❖ During design, these initial definitions are enhanced to support the functionality described in the functional specification/ user stories and defined in the primary and supporting modules of the application high level design.

1.4. Definitions, Acronyms and Abbreviations

Table 1. Definitions, Acronyms and Abbreviations

| Abbreviations | Description | Comment |
|---------------|-----------------------------|-----------------------------|
| PK/FK | Primary/ Foreign Key | Use to indicate a file is a |
| | | Primary or Foreign key in a |
| | | table |
| ERD | Entity Relationship Diagram | Show the relationship |
| | | between entities in the |
| | | system |
| Auto | Auto increment | Auto increment |

2. Database Design For Sprint 1

2.1. Table Overview

Table 2. Table Overview Sprint 1

| No | Table name | Short Description |
|----|-------------|--|
| 1 | AD_COUNTRY | This table contains the information about countries. |
| 2 | AD_PROVINCE | This table contains the information about provinces |
| 3 | AD_DISTRICT | This table contains the information about districts |
| 4 | UR_USER | This table shows all information of user |
| 5 | UR_ROLE | This table contains the roles |
| 6 | USER_ROLE | This table shows the roles of users |
| 7 | UR_SESSION | This table saves the sessions |

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| No | Table name | Short Description |
|----|---------------------------|--|
| 8 | USER_SURVEY | This table saves surveys of personal user |
| 9 | SR_SURVEY_QUESTION | This table contains the information about questions in household survey. |
| 10 | SR_SURVEY_QUESTION_ANSWER | This table contains the information about answers for each question. |
| 11 | HOUSEHOLD_SURVEY | This table contains the information about household answers. |

2.2. Entity Relationship Diagram

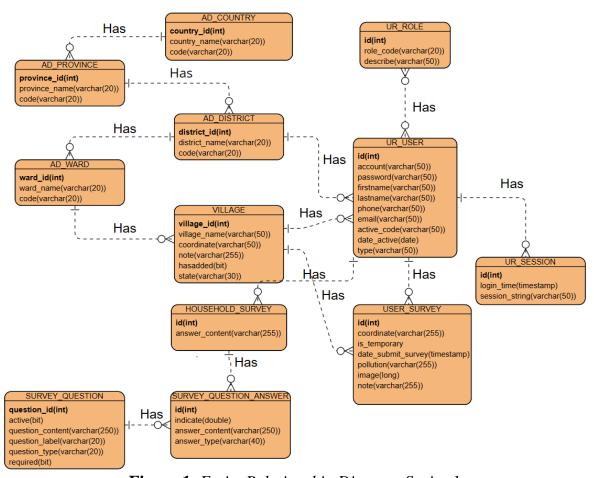


Figure 1. Entity Relationship Diagram Sprint 1

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ad_country ad_province ad_district ad_ward country_id integer province_id integer 4 district_id integer ward_id integer country_name varchar province_name varchar district_name varchar ward_name varchar varchar province_code varchar district_code varchar ward_code varchar country_id coordinate integer varchar district_id integer province_id integer integer login_time datetime sesstion_string varchar ur_user ur_id integer } integer household_survey varchar integer varchar password answer_content varchar active_code household integer integer 1 sr_sqa_id email varchar phone varchar varchar type integer district_id integer village coordinate varchar integer * village_id village_id integer date_submit_survey villae name varchar image longtext hasadded integer is_temporary note varchar note varchar state varchar user_role pollution varchar integer) ward id ur_id integer integer ur id ur_role_id integer ur_role village_id integer sr_survey_question role_code id integer integer > answer_content varchar question_content

2.3. Table Relationship Diagram

indicate

sr_sq_id

answer_type

integer

varchar

integer

Figure 2. Table Relationship Diagram Sprint 1

varchar

varchar

question_label

question_type

required

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2.4. Detail

2.4.1. AD_COUNTRY

Table 3. AD_COUNTRY

| Attributes | Datatype | Null | Key | Default | Extra |
|--------------|-------------|-------|-----|---------|-------|
| Country_id | int | Not | PK | | Auto |
| Country_name | varchar(50) | Not | | | |
| code | varchar(20) | Allow | | | |

2.4.2. AD_PROVINCE

Table 4. *AD_PROVINCE*

| Attributes | Datatype | Null | Key | Default | Extra |
|---------------|-------------|-------|-----|---------|-------|
| Province_id | int | Not | PK | | Auto |
| Province_name | varchar(50) | Not | | | |
| code | varchar(20) | Allow | | | |
| Country_id | int | Not | FK | | |

2.4.3. AD_DISTRICT

Table 5. *AD_DISTRICT*

| Attributes | Datatype | Null | Key | Default | Extra |
|---------------|-------------|-------|-----|---------|-------|
| District_id | int | Not | PK | | Auto |
| District_name | varchar(50) | Not | | | |
| Code | varchar(20) | Allow | | | |
| Coordinate | Varchar(50) | Not | | | |
| Province_id | int | Not | FK | | |

2.4.4. AD_WARD

Table 6. *AD_WARD*

| Attributes | Datatype | Null | Key | Default | Extra |
|-------------|-------------|-------|-----|---------|-------|
| ward_id | int | Not | PK | | Auto |
| ward_name | varchar(50) | Not | | | |
| Code | varchar(20) | Allow | | | |
| district_id | int | Not | FK | | |

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2.4.5. VILLAGE

Table 7. VILLAGE

| Attributes | Datatype | Null | Key | Default | Extra |
|--------------|--------------|-------|-----|---------|-------|
| village_id | int | Not | PK | | Auto |
| village_name | varchar(50) | Not | | | |
| Coordinate | varchar(50) | Not | | | |
| Note | varchar(255) | Allow | | | |
| Hasadded | int | Not | | 0 | |
| State | Varchar(3) | Not | | "000" | |
| ward_id | int | Not | FK | | |

2.4.6. UR_USER

Table 8. UR_USER

| Attributes | Datatype | Null | Key | Default | Extra |
|-------------|-------------|-------|-----|---------|-------|
| Id | int(11) | Not | PK | | Auto |
| Account | varchar(50) | Not | | | |
| password | varchar(50) | Not | | | |
| Firstname | varchar(50) | Not | | | |
| Lastname | varchar(50) | Not | | | |
| Phone | varchar(50) | Not | | | |
| Active_code | varchar(50) | Not | | | |
| Date_active | timestamp | Not | | | |
| District_id | int | Allow | FK | | |
| Village_id | int | Allow | FK | | |

2.4.7. UR_ROLE

Table 9. UR_ROLE

| Attributes | Datatype | Null | Key | Default | Extra |
|------------|-------------|-------|-----|---------|-------|
| Id | int | Not | PK | | Auto |
| Role_code | varchar(20) | Not | | | |
| Describe | varchar(50) | Allow | | | |

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2.4.8. USER_ROLE

Table 10. USER_ROLE

| Attributes | Datatype | Null | Key | Default | Extra |
|------------|----------|------|--------|---------|-------|
| Ur_id | int | Not | PK, FK | | |
| Ur_role_id | int | Not | PK, FK | | |

2.4.9. UR_SESSION

Table 11. *UR_SESSION*

| Attributes | Datatype | Null | Key | Default | Extra |
|----------------|-------------|------|-----|---------|-------|
| Id | int | Not | PK | | Auto |
| Login_time | timestamp | Not | | | |
| Session_string | varchar(50) | Not | | | |
| Ur_id | int | Not | FK | | |

2.4.10. USER_SURVEY

Table 12. *USER_SURVEY*

| Attributes | Datatype | Null | Key | Default | Extra |
|--------------------|--------------|-------|-----|---------|-------|
| Id | int | Not | PK | | Auto |
| Coordinate | varchar(255) | Not | | | |
| Is_temporary | varchar(20) | Not | | | |
| Date_submit_survey | timestamp | Not | | | |
| Pollution | varchar(255) | Not | | | |
| Note | varchar(255) | Allow | | | |
| Image | longtext | Not | | | |
| Village_id | int | Not | FK | | |
| Ur_id | int | Not | FK | | |

${\bf 2.4.11.~SR_SURVEY_QUESTION}$

Table 13. SR_SURVEY_QUESTION

| Attributes | Datatype | Null | Key | Default | Extra |
|------------------|--------------|------|-----|---------|-------|
| Id | int | Not | PK | | Auto |
| Question_content | varchar(255) | Not | | | |

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| Attributes | Datatype | Null | Key | Default | Extra |
|----------------|-------------|-------|-----|---------|-------|
| Question_label | varchar(20) | Allow | | | |
| Question_type | Varchar(20) | Not | | | |
| Active | int | Not | | 1 | |
| Required | Int | Not | | 0 | |

2.4.12. SR_SURVEY_QUESTION_ANSWER

Table 14. SR_SURVEY_QUESTION

| Attributes | Datatype | Null | Key | Default | Extra |
|----------------|--------------|-------|-----|---------|-------|
| Id | int | Not | PK | | Auto |
| Answer_content | Varchar(255) | Not | | | |
| Answer_type | varchar(50) | Not | | | |
| indicate | int | Allow | | | |
| Sr_sq_id | Int | Not | FK | | |

2.4.13. HOUSEHOLD_SURVEY

Table 15. HOUSEHOLD_SURVEY

| Attributes | Datatype | Null | Key | Default | Extra |
|----------------|--------------|------|-----|---------|-------|
| Id | double | Not | PK | | Auto |
| Answer_content | Varchar(255) | Not | | | |
| Household | Int | Not | FK | | |
| Sr_sqa_id | Int | Not | FK | | |

3. Database Design For Sprint 4

3.1. Table Overview

 Table 16. Table Overview Sprint 4

| No | Table name | Short Description |
|----|------------|---|
| 1 | DATA_SET | This table contains data to detect and train pollution. |

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3.2. Entity Relationship Diagram

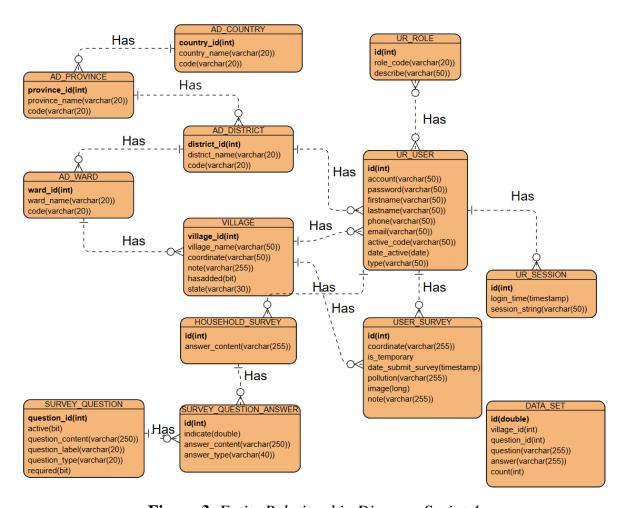


Figure 3. Entity Relationship Diagram Sprint 4

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count

integer

ad_country ad_province ad_district ad_ward country_id integer province_id integer 1 district_id integer ward_id integer 1 country_name province_name varchar varchar district_name ward_name varchar varchar province_code varchar district_code varchar zipcode ward_code varchar country_id district_id integer integer province_id integer login_time datetime sesstion_string varchar ur_user ur_id integer > id integer household_survey integer password varchar answer_content varchar active_code integer 🗦 household date_active datetime integer 4 sr_sqa_id email varchar phone varchar user_survey varchar type integer id district_id integer > village varchar integer ᄎ village_id village_id integer date_submit_survey villae_name image longtext integer is_temporary integer state user_role ward_id ur_id ur_role_id integer 🏃 ur_role integer id integer describe varchar sr_survey_question role_code varchar integer double integer answer_content varchar question_id indicate integer question_label question varchar varchar answer_type question_type varchar answer varchar

3.3. Table Relationship Diagram

Figure 4. Table Relationship Diagram Sprint 4

integer

required

sr_sq_id

integer 3

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3.4. Detail

3.4.1. DATA_SET

Table 17. DATA_SET

| Attributes | Datatype | Null | Key | Default | Extra |
|-------------|--------------|------|-----|---------|-------|
| Id | Double | Not | PK | | |
| Village_id | int | Not | | | |
| Question_id | Int | Not | | | |
| Question | Varchar(255) | Not | | | |
| Answer | Varchar(255) | Not | | | |
| Count | Int | Not | | | |

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