

International School

**Capstone Project 2**

CMU-SE 451

**Database Design**

Version 1.1

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**SENIOR PROJECT MANAGEMENT SYSTEM**

**FOR INTERNATIONAL SCHOOL**

**Submitted by**

Tien, Nguyen Van

Phuoc, Ha Duc

Huy, Truong Dong

Dat, Nguyen Thanh

**Approved by**

Chau, Truong Ngoc

**Proposal Review Panel Representative:**

Name Signature Date

**Capstone Project 2- Mentor:**

Name Signature Date

**PROJECT INFORMATION**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Project acronym** | Senior Project Management System for International School | | | | |
| **Project Title** | SPMS | | | | |
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| **Lead Institution** | International School, Duy Tan University | | | | |
| **Project Mentor** | Chau, Truong Ngoc | | | | |
| **Scrum master / Project Leader & contact details** | Tien, Nguyen Van  Email: cnnguyenvantien@gmail.com  Tel: 0704.042.832  Student ID: 24211208536 | | | | |
| **Partner Organization** |  | | | | |
| **Project Web URL** |  | | | | |
| **Team members** | **Name** | **Email** | | | **Tel** |
| 24211202634 | Phuoc, Ha Duc | dphuoc432000@gmail.com | | | 0961622464 |
| 24211206538 | Huy, Truong Dong | huydongtruong@gmail.com | | | 0358040650 |
| 24211206470 | Dat, Nguyen Thanh | ngthanhdat521@gmail.com | | | 0767836541 |

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|  |  |  |  |  |
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**SIGNATURE**

**Document Approvals:** *The following signatures are required for approval of this document.*

|  |  |  |
| --- | --- | --- |
| Chau, Truong Ngoc  *Mentor* |  | Date: |
| Tien, Nguyen Van  *Scrum Master* |  | Date: |
| Phuoc, Ha Duc  *Product Owner* |  | Date: |
| Huy, Truong Dong  *Member* |  | Date: |
| Dat, Nguyen Thanh  *Member* |  | Date: |

1. **Introduction**
   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. **Scope**
* This Database Design Document provides the basic for “SPMS” Database design.
* 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 tables performance considerations requirements. 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 is composed of definitions for database objects derived by mapping entities to tables attributes to columns, unique identifiers to unique keys and relationships to foreign keys.
* 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. **Data Storage Platform**
* Data of application is stored in PostgreSQL database.
* In PostgreSQL, data structure is stored as tables that the database objects that behave as containers for the data, in which the data will be logically organized in rows and columns format.
  1. **Definition, Acronyms and Abbreviations**

**Table 1.4:** *Definition, 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 |

1. **Database Design**
   1. **Collection Overview**

**Table 2.1:** *Table Overview.*

|  |  |  |
| --- | --- | --- |
| **No.** | **Table name** | **Description** |
| 1 | departments | This table shows all information about the department. |
| 2 | majors | This table shows all information about major. |
| 3 | councils | This table shows all information about council. |
| 4 | roles | This table shows all information about roles in the system. |
| 5 | users | This table shows all information about user |
| 6 | file\_storages | This table shows all information about files storage in the system |
| 7 | notifications | This table shows all information about notification |
| 8 | user\_roles | This table shows all information about the user’s role |
| 9 | notification\_files | This table shows all information about the file attached to the notification |
| 10 | lecturers | This table shows all information about lecturer |
| 11 | groups | This table shows all information about groups |
| 12 | student | This table shows all information about student |
| 13 | group\_lecturers | This table shows all information about the group’s mentor |
| 14 | projects | This table shows all information about topic template and project |
| 15 | project\_files | This table shows all information about the file attached to the topic template |
| 16 | stages | This table shows all information about the stages |
| 17 | listTasks | This table shows all information about the stage’s task list |
| 18 | tasks | This table shows all information about the task in task list |
| 19 | task\_assignments | This table shows all information about the members assign to the task |
| 20 | comments | This table shows all information about the member’s comments on the task |
| 21 | council\_members | This table shows all information about the council’s member |
| 22 | scores | This table shows all information about the student’s score |

* 1. **Detail**
     1. **departments**

**Table 2.2.1:** *departments table.*

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute** | **Data Type** | **Null** | **Note** |
| depId | uuid | No | Primary key |
| depCode | varchar(10) | No |  |
| depName | varchar(50) | No |  |
| depDesc | text | Yes |  |
| createdAt | timestamptz | No |  |
| updatedAt | timestamptz | No |  |

* + 1. **majors**

**Table 2.2.2:** *majors table.*

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute** | **Data Type** | **Null** | **Note** |
| majorId | uuid | No | Primary key |
| majorCode | varchar(10) | No |  |
| majorName | varchar(50) | No |  |
| majorDesc | text | Yes |  |
| depId | uuid | Yes | Foreign key |
| createdAt | timestamptz | No |  |
| updateAt | timestamptz | No |  |

* + 1. **councils**

**Table 2.3.3:** *councils table.*

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute** | **Data Type** | **Null** | **Note** |
| councilId | uuid | No | Primary key |
| councilName | varchar(50) | Yes |  |
| councilDesc | varchar(100) | Yes |  |
| time | timestamptz | Yes |  |
| location | varchar(100) | Yes |  |
| createdAt | timestamptz | No |  |
| updateAt | timestamptz | No |  |

* + 1. **roles**

**Table 2.3.4:** *roles table.*

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute** | **Data Type** | **Null** | **Note** |
| roleId | uuid | No | Primary key |
| roleName | varchar(10) | No |  |
| createdAt | timestamptz | No |  |
| updatedAt | timestamptz | No |  |

* + 1. **users**

**Table 2.3.5:** *users table.*

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute** | **Data Type** | **Null** | **Note** |
| userId | uuid | No | Primary key |
| firstName | varchar(20) | Yes |  |
| lastName | varchar(15) | Yes |  |
| dateOfBirth | timestamptz | Yes |  |
| email | varchar(30) | Yes |  |
| password | varchar(100) | Yes |  |
| phone | varchar(11) | Yes |  |
| majorId | uuid | Yes | Foreign key |
| createdAt | timestamptz | No |  |
| updatedAt | timestamptz | No |  |

* + 1. **file\_storages**

**Table 2.3.6:** *file\_storages table.*

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute** | **Data Type** | **Null** | **Note** |
| fileId | uuid | No | Primary key |
| fileName | varchar(255) | No |  |
| type | varchar(255) | No |  |
| path | text | No |  |
| userId | uuid | Yes | Foreign key |
| createdAt | timestamptz | No |  |
| updatedAt | timestamptz | No |  |

* + 1. **notifications**

**Table 2.3.7:** *notifications table.*

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute** | **Data Type** | **Null** | **Note** |
| notificationId | uuid | No | Primary key |
| title | varchar(150) | No |  |
| content | text | No |  |
| userId | uuid |  | Foreign key |
| fileId1 | uuid |  | Foreign key |
| fileId2 | uuid |  | Foreign key |
| fileId3 | uuid |  | Foreign key |
| fileId4 | uuid |  | Foreign key |
| createdAt | timestamptz | No |  |
| updatedAt | timestamptz | No |  |

* + 1. **user\_roles**

**Table 2.3.8:** *user\_roles table.*

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute** | **Data Type** | **Null** | **Note** |
| userId | uuid | No | Primary key  Foreign key |
| roleId | uuid | No | Primary key  Foreign key |
| createdAt | timestamptz | No |  |
| updatedAt | timestamptz | No |  |

* + 1. **notification\_files**

**Table 2.3.9:** *notification\_files table.*

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute** | **Data Type** | **Null** | **Note** |
| notificationId | uuid | No | Primary key  Foreign key |
| fileId | uuid | No | Primary key  Foreign key |
| createdAt | timestamptz | No |  |
| updatedAt | timestamptz | No |  |

* + 1. **lecturers**

**Table 2.2.10:** *lecturers table.*

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute** | **Data Type** | **Null** | **Note** |
| notificationId | uuid | No | Primary key |
| userId | uuid | Yes | Foreign key |
| academiLevel | varchar(50) | Yes |  |
| createdAt | timestamptz | No |  |
| updatedAt | timestamptz | No |  |

* + 1. **groups**

**Table 2.2.11:** *groups table.*

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute** | **Data Type** | **Null** | **Note** |
| groupId | uuid | No | Primary key |
| groupName | varchar(50) | No |  |
| groupDesc | varchar(100) | Yes |  |
| isScientificGroup | boolean | Yes |  |
| typeCapstone | integer | Yes |  |
| councilId | uuid | Yes | Foreign key |
| createdAt | timestamptz | No |  |
| updatedAt | timestamptz | No |  |

* + 1. **students**

**Table 2.2.12:** *students table.*

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute** | **Data type** | **Null** | **Note** |
| stuId | uuid | No | Primary key |
| stuCode | varchar(11) | Yes |  |
| gpa | float | Yes |  |
| courseCredits | integer | Yes |  |
| codeLevel | integer | Yes |  |
| note | text | Yes |  |
| class | varchar(10) | Yes |  |
| isApproved | boolean | Yes |  |
| userId | uuid | Yes | Foreign key |
| groupId | uuid | Yes | Foreign key |
| typeCapstone | integer | Yes |  |
| createdAt | timestamptz | No |  |
| updatedAt | timestamptz | No |  |

* + 1. **group\_lecturers**

**Table 2.2.13:** *group\_lecturers table.*

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute** | **Data Type** | **Null** | **Note** |
| groupId | uuid | No | Primary key  Foreign key |
| lecturerId | uuid | No | Primary key  Foreign key |
| createdAt | timestamptz | No |  |
| updatedAt | timestamptz | No |  |

* + 1. **projects**

**Table 2.2.14:** *projects table.*

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute** | **Data Type** | **Null** | **Note** |
| projectId | uuid | No | Primary key |
| projectName | varchar(255) | No |  |
| projectDesc | text | No |  |
| startDate | timestamptz | Yes |  |
| endDate | timestamptz | Yes |  |
| note | text | Yes |  |
| groupId | uuid | Yes | Foreign key |
| leaderId | uuid | Yes | Foreign key |
| lecturerId | uuid | Yes | Foreign key |
| isApproved | varchar(255) | Yes |  |
| createdAt | timestamptz | No |  |
| updatedAt | timestamptz | No |  |

* + 1. **project\_files**

**Table 2.2.15:** *project\_files table.*

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute** | **Data Type** | **Null** | **Note** |
| projectId | uuid | No | Primary key  Foreign key |
| fileId | uuid | No | Primary key  Foreign key |
| createdAt | timestamptz | No |  |
| updatedAt | timestamptz | No |  |

* + 1. **stages**

**Table 2.2.16:** *stages table.*

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute** | **Data Type** | **Null** | **Note** |
| stageId | uuid | No | Primary key |
| stageName | varchar(50) | Yes |  |
| stageDesc | text | Yes |  |
| projectId | uuid | Yes | Foreign key |
| startDate | timestamptz | Yes |  |
| endDate | timestamptz | Yes |  |
| createdAt | timestamptz | No |  |
| updatedAt | timestamptz | No |  |

* + 1. **listTasks**

**Table 2.2.17:** *listTasks table.*

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute** | **Data Type** | **Null** | **Note** |
| listTaskId | uuid | No | Primary key |
| stageId | uuid | No | Foreign key |
| titile | varchar(50) | No |  |
| description | text | Yes |  |
| createdAt | timestamptz | No |  |
| updatedAt | timestamptz | No |  |

* + 1. **tasks**

**Table 2.2.18:** *tasks table.*

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute** | **Data Type** | **Null** | **Note** |
| taskId | uuid | No | Primary key |
| listTaskId | uuid | No | Foreign key |
| taskName | varchar(50) | No |  |
| taskDesc | text | Yes |  |
| startDate | timestamptz | Yes |  |
| endDate | timestamptz | Yes |  |
| createdAt | timestamptz | No |  |
| updatedAt | timestamptz | No |  |

* + 1. **task\_assignments**

**Table 2.2.19:** *task\_assignments table.*

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute** | **Data Type** | **Null** | **Note** |
| stuId | uuid | No | Primary key  Foreign key |
| taskId | uuid | No | Primary key  Foreign key |
| createdAt | timestamptz | No |  |
| updatedAt | timestamptz | No |  |

* + 1. **comments**

**Table 2.2.20:** *comments table.*

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute** | **Data Type** | **Null** | **Note** |
| commentId | uuid | No | Primary key  Foreign key |
| content | text | No |  |
| userId | uuid | Yes | Foreign key |
| taskId | uuid | Yes | Foreign key |
| createdAt | timestamptz | No |  |
| updatedAt | timestamptz | No |  |

* + 1. **council\_members**

**Table 2.2.21:** *council\_members table.*

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute** | **Data Type** | **Null** | **Note** |
| councilId | uuid | No | Primary key  Foreign key |
| lecturerId | uuid | No | Primary key  Foreign key |
| roleId | uuid | Yes | Foreign key |
| workUnit | varchar(10) | Yes |  |
| createdAt | timestamptz | No |  |
| updatedAt | timestamptz | No |  |

* + 1. **scores**

**Table 2.2.22:** *scores table.*

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute** | **Data Type** | **Null** | **Note** |
| scoreId | uuid | No | Primary key |
| councilId | uuid | Yes | Foreign key |
| stuId | uuid | Yes | Foreign key |
| lecturerId | uuid | Yes | Foreign key |
| mentorScore | float | Yes |  |
| presidentScore | float | Yes |  |
| assistantScore | float | Yes |  |
| reviewerScore | float | Yes |  |
| createdAt | timestamptz | No |  |
| updatedAt | timestamptz | No |  |

* + 1. **evaluate\_stages**

**Table 2.2.23:** *evaluate\_stages table.*

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute** | **Data Type** | **Null** | **Note** |
| stageId | uuid | No | Primary key  Foreign key |
| stuId | uuid | No | Primary key  Foreign key |
| percentage | float | No |  |
| comment | text | Yes |  |
| createdAt | timestamptz | No |  |
| updatedAt | timestamptz | No |  |

* 1. **Entity Relationship Diagram**

**Diagram, schematic

Description automatically generated**

**Figure 2.3:** *Entity Relationship Diagram.*

1. **References**