School Management System

# View and update Student/Staff Details

Design Document

# Purpose

The document illustrates the design of view and update student/staff details.

# For the Associates:

Associates should refer the following documents to understand the screen design and the high level design.

* CaseStudyScreenDesign.doc – Ilustrates the screen design the associates to follow for developing the application.
* CaseStudyMasterDesign.docx – Ilustrates the class hierarchy, flow sequence , packaging details and exception handling mechanism for developing the application.

# Database Design

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Table Name | Column Name | Column Discription | Data Type | Data Size | Primary Key | Foreign Key |
| STUDENT  \_INFO | STUDENT\_ID | Column is used for storing student register number | varchar2 | 5 | Yes |  |
|  | STUDENT\_NAME | Column is used for storing student name | varchar2 | 30 | No |  |
|  | DATE\_OF\_BIRTH | Column is used for storing the student’s date of birth. | date |  |  |  |
|  | GUARDIAN\_TYPE | Column is used for storing the guardian type | char  Values can be ‘G’ or ‘P’ |  |  |  |
|  | GUARDIAN\_NAME | Column is used for storing the guardian name | varchar2 | 30 |  |  |
|  | ADDRESS | Column is used for storing the student address | varchar2 | 50 |  |  |
|  | COUNTRY\_ID | Column is used for storing the id of the country. | varchar2 | 5 |  | Yes  COUNTRY\_INFO |
|  | CONTACT\_NO | Column is used for storing the student contact number | number | 10 |  |  |
|  | MAIL\_ID | Column is used for storing the student mail id | varchar2 | 30 |  |  |
|  | GENDER | Column is used for storing the student gender | char  Values can be ‘M’ or ‘F’ |  |  |  |
|  | STANDARD | Column is used for the storing the student standard | Varchar2 | 3 |  | Yes  FEES\_INFO |
|  | STANDARD\_CATEGORY | Column is used for the storing the student standard category | char  Values can be ‘P’ or ‘S’ or ‘H’ |  |  |  |
|  | TRANSPORT | Column is used for storing the transport facility selection | char  Values can be ‘Y’ or ‘N’ |  |  |  |
|  | NET\_FEES | Column is used for storing the fees payable by the student | number | (7,2) |  |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Table Name | Column Name | Column Discription | Data Type | Data Size | Primary Key | Foreign key |
| COUNTRY\_INFO | COUNTRY\_ID | Column is used for storing countryid | varchar2 | 10 | Yes |  |
|  | COUNTRY\_NAME | Column is used for storing the storing the country name | varchar2 | 25 |  |  |
|  | STATE\_NAME | Column is used for storing the state name | varchar2 | 25 |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Table Name | Column Name | Column Discription | Data Type | Data Size | Primary Key |
| STUDENT\_MARK\_PRIMARY | STUDENT ID | Column is used for storing student id | varchar2 | 5 | Yes |
|  | ENGLISH\_MARK | Column is used for storing the english subject mark of the student | Number | 3 |  |
|  | HINDI\_MARK | Column is used for storing the hindi subject mark of the student | Number | 3 |  |
|  | SCIENCE\_MARK | Column is used for storing the science subject mark of the student | Number | 3 |  |
|  | MATHS\_MARK | Column is used for storing the maths subject mark of the student | Number | 3 |  |
|  | TOTAL\_MARK | Column is used for storing the total mark of the student | Number | 3 |  |
|  | AVERAGE\_MARK | Column is used for storing the average mark of the student | Number | 5,2 |  |
|  | GRADE | Column is used for storing the student grade | Char  Values can be ‘A’ or ‘B’ or ‘C’ or ‘F’ |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Table Name | Column Name | Column Discription | Data Type | Data Size | Primary Key |
| STUDENT\_MARK\_SECONDARY | STUDENT ID | Column is used for storing student id | varchar2 | 5 | Yes |
|  | ENGLISH\_MARK | Column is used for storing the english subject mark of the student | Number | 3 |  |
|  | HINDI\_MARK | Column is used for storing the hindi subject mark of the student | Number | 3 |  |
|  | SCIENCE\_MARK | Column is used for storing the science subject mark of the student | Number | 3 |  |
|  | SOCIAL\_MARK | Column is used for storing the social subject mark of the student | Number | 3 |  |
|  | MATHS\_MARK | Column is used for storing the maths subject mark of the student | Number | 3 |  |
|  | TOTAL\_MARK | Column is used for storing the total mark of the student | Number | 3 |  |
|  | AVERAGE\_MARK | Column is used for storing the average mark of the student | Number | 5,2 |  |
|  | GRADE | Column is used for storing the student grade | Char  Values can be ‘A’ or ‘B’ or ‘C’ or ‘F’ |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Table Name | Column Name | Column Discription | Data Type | Data Size | Primary Key |
| STUDENT\_MARK\_HIGHER | STUDENT ID | Column is used for storing student id | varchar2 | 5 | Yes |
|  | ENGLISH\_MARK | Column is used for storing the english subject mark of the student | Number | 3 |  |
|  | TAMIL\_MARK | Column is used for storing the tamil subject mark of the student | Number | 3 |  |
|  | PHYSICS\_MARK | Column is used for storing the physics subject mark of the student | Number | 3 |  |
|  | CHEMISTRY\_MARK | Column is used for storing the chemistry subject mark of the student | Number | 3 |  |
|  | COMPUTER\_MARK | Column is used for storing the computer subject mark of the student | Number | 3 |  |
|  | MATHS\_MARK | Column is used for storing the maths subject mark of the student | Number | 3 |  |
|  | TOTAL\_MARK | Column is used for storing the total mark of the student | Number | 3 |  |
|  | AVERAGE\_MARK | Column is used for storing the average mark of the student | Number | 5,2 |  |
|  | GRADE | Column is used for storing the student grade | Char  Values can be ‘A’ or ‘B’ or ‘C’ or ‘F’ |  |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Table Name | Column Name | Column Discription | Data Type | Data Size | Primary Key | Foreign Key |
| STAFF  \_INFO | STAFF\_ID | Column is used for storing staff register number | Varchar2 | 5 | Yes | NO |
|  | STAFF\_NAME | Column is used for storing staff name | varchar2 | 25 | No |  |
|  | DATE\_OF\_BIRTH | Column is used for storing the staff’s date of birth | date |  | No |  |
|  | ADDRESS | Column is used for storing the address | varchar2 | 5 |  |  |
|  | GENDER | Column is used for storing the gender | char  Values can be ‘M’ or ‘F’ | 1 |  |  |
|  | SALARY | Column is used for storing salary | number | (7,2) |  | YES  FK  STAFF  \_SALARY |
|  | HIGHEST\_QUALIFICATION | Column is used for storing the highest qualification | varchar2 | (20) |  |  |
|  | EMAIL\_ID | Column for storing the email id | varchar2 | 20 |  |  |
|  | CONTACT\_NUMBER | Column for storing the contact number | number | 10 |  |  |
|  | DESIGNATION | Column for storing the designation | Varchar2 | 20 |  |  |
|  | YEAR\_PASSED\_OUT | Column is used for storing the year of passing | number | 5 |  |  |
|  | EXPERIENCE | Column is used for storing the experience | number | 2 |  |  |
|  | DOJ | Column is used for storing the date of joining | date |  |  |  |

# Required Objects, Services, and Libraries

### Value Objects:

|  |  |
| --- | --- |
| **Value Object Name** | **Value Object Description** |
| StudentVO | This VO is used for transferring the student details from presentation to the back end. |
| StaffVO | This VO is used for transferring the staff details from presentation to the back end. |
| MarkVO | This VO is used for transferring the student mark details from presentation to the back end. |

# Technical Specifications

## View screen: This screen is used by admin to enter the student/staff details into the system.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Data Element** | **Control type** | **Default Values**  **From database** | **Editable Field** | **Restrictions** | **Mandatory/**  **Non Mandatory** | **Data Type** | **Data Size** |
| Category | Dropdownbox | Yes | No | Student/Staff | Mandatory | Varchar | 30 |
| Id | Dropdownbox | Yes | No | Should be populated from the appropriate tables based on the category | Mandatory | Varchar | 30 |
| View | Submit Button | No | No | By Clicking the button, all fields of appropriate record should be displayed. | Mandatory |  |  |



## Update Student screen :step1: This screen is used by admin to display the student details from the system.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Data Element** | **Control type** | **Default Values**  **From database** | **Editable Field** | **Restrictions** | **Mandatory/**  **Non Mandatory** | **Data Type** | **Data Size** |
| Student Id | Textbox | Yes | No | Should be populated from the student\_info table | Mandatory |  |  |
| Student Name | Textbox | Yes | No | Should be populated from the student\_info table based on the selection of student id | Mandatory | Varchar | 30 |
| DOB | Textbox | Yes | No | Should be populated from the student\_info table based on the selection of student id | Mandatory |  |  |
| Grade | Textbox | Yes | No | Should be populated from the appropriate table based on  the standard retrieved (based on the student\_id)from the student\_info table | Mandatory |  |  |
| Guardian Name | Textbox | Yes | No | Should be populated from the student\_info table based on the selection of student id | Mandatory | Varchar | 30 |
| Country | Textbox | Yes | No | Country should be populated from the country\_info table based on  the country\_id retrieved (based on the student\_id)from the student\_info table | Mandatory |  |  |
| State | Textbox | Yes | No | State should be populated from the country\_info table based on  the country\_id retrieved (based on the student\_id)from the student\_info table | Mandatory |  |  |
| Address | TextArea | Yes | No | Should be populated from the student\_info table based on the selection of student id | Mandatory | Varchar | 50 |
| Contact No. | Textbox | Yes | No | Should be populated from the student\_info table based on the selection of student id | Mandatory | Number | 10 |
| Mail Id | Textbox | Yes | No | Should be populated from the student\_info table based on the selection of student id | Mandatory | Varchar | 30 |
| Date of Joining | Textbox | Yes | No | Should be populated from the student\_info table based on the selection of student id | Mandatory |  |  |
| Gender | Textbox | Yes | No | Should be populated from the student\_info table based on the selection of student id | Mandatory |  |  |
| Standard | Textbox | Yes | No | Should be populated from the student\_info table based on the selection of student id | Mandatory | Varchar | 3 |
| SubjectName | Textbox | Yes | No | Should be populated from the student\_info table based on the selection of student id | Mandatory | Number | 3 |
| Transport | Radio Button | Yes | No | Yes/No | Mandatory |  |  |
| NetFee | Textbox | Yes | No | Should be populated from the student\_info table based on the selection of student id | Mandatory |  |  |
| Update | Submit Button | No | No | By Clicking the button, update student screen :step2 will be displayed which turns some non-editable fields to editable fields  (Refer section 4.0 in requirement document for the student details) | Mandatory |  |  |

## 

## Update Student screen: step 2: This screen is used by admin to update the student details into the system.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Data Element** | **Control type** | **Default Values**  **From database** | **Editable Field** | **Restrictions** | **Mandatory/**  **Non Mandatory** | **Data Type** | **Data Size** |
| Student Id | Textbox | Yes | No | Should be populated from the student\_info table | Mandatory |  |  |
| Student Name | Textbox | Yes | No | Should be populated from the student\_info table based on the selection of student id | Mandatory | Varchar | 30 |
| DOB | Textbox | Yes | No | Should be populated from the student\_info table based on the selection of student id | Mandatory |  |  |
| Grade | Textbox | Yes | No | Should be populated from the appropriate table based on  the standard retrieved (based on the student\_id)from the student\_info table | Mandatory |  |  |
| Guardian Name | Textbox | Yes | No | Should be populated from the student\_info table based on the selection of student id | Mandatory | Varchar | 30 |
| Country | Textbox | Yes | No | Country should be populated from the country\_info table based on  the country\_id retrieved (based on the student\_id)from the student\_info table | Mandatory |  |  |
| State | Textbox | Yes | Yes | State should be populated from the country\_info table based on  the country\_id retrieved (based on the student\_id)from the student\_info table | Mandatory |  |  |
| Address | TextArea | Yes | Yes | Should be populated from the student\_info table based on the selection of student id | Mandatory | Varchar | 50 |
| Contact No. | Textbox | Yes | Yes | Should be populated from the student\_info table based on the selection of student id | Mandatory | Number | 10 |
| Mail Id | Textbox | Yes | Yes | Should be populated from the student\_info table based on the selection of student id | Mandatory | Varchar | 30 |
| Date of Joining | Textbox | Yes | No | Should be populated from the student\_info table based on the selection of student id | Mandatory |  |  |
| Gender | Textbox | Yes | No | Should be populated from the student\_info table based on the selection of student id | Mandatory |  |  |
| Standard | Textbox | Yes | No | Should be populated from the student\_info table based on the selection of student id | Mandatory | Varchar | 3 |
| SubjectName | Textbox | Yes | No | Should be populated from the student\_info table based on the selection of student id | Mandatory | Number | 3 |
| Transport | Radio Button | Yes | Yes | Yes/No | Mandatory |  |  |
| NetFee | Textbox | Yes | No | Refer section 5.2 | Mandatory |  |  |
| Update | Submit Button | No | No | By Clicking the button, the contents in all the fields will be updated in the student\_info table | Mandatory |  |  |

## Update Staff screen: step 1: This screen is used by admin to display the staff details from the system.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Data Element** | **Control type** | **Default Values from database** | **Editable Field** | **Restrictions** | **Mandatory/**  **Non Mandatory** | **Data Type** | **Data Size** |
| Staff id | Textbox | Yes | No | Should be populated from the staff\_info table | Mandatory |  |  |
| Staff Name | Textbox | Yes | No | Should be populated from the staff\_info table based on the selection of staff id | Mandatory |  |  |
| DOB | Textbox | Yes | No | Should be populated from the staff\_info table based on the selection of staff id | Mandatory |  |  |
| Address | TextArea | Yes | No | Should be populated from the staff\_info table based on the selection of staff id | Mandatory |  |  |
| Country | Textbox | Yes | No | Country should be populated from the country\_info table based on  the country\_id retrieved (based on the staff\_id)from the staff\_info table | Mandatory |  |  |
| State | Textbox | Yes | Yes | State should be populated from the country\_info table based on  the country\_id retrieved (based on the staff\_id)from the staff\_info table | Mandatory |  |  |
| Contact No. | Textbox | Yes | No | Should be populated from the staff\_info table based on the selection of staff id | Mandatory |  |  |
| Mail Id | Textbox | Yes | No | Should be populated from the staff\_info table based on the selection of staff id | Mandatory |  |  |
| Gender | Textbox | Yes | No | Should be populated from the staff\_info table based on the selection of staff id | Mandatory |  |  |
| Highest Qualification | Text box | Yes | No | Should be populated from the staff\_info table based on the selection of staff id | Mandatory |  |  |
| Experience | Text box | Yes | No | Should be populated from the staff\_info table based on the selection of staff id | Mandatory |  |  |
| YOP | Textbox | Yes | No | Should be populated from the staff\_info table based on the selection of staff id | Mandatory |  |  |
| Date of Joining | Textbox | Yes | No | Should be populated from the staff\_info table based on the selection of staff id | Mandatory |  |  |
| Salary | Textbox | Yes | No | Should be populated from the staff\_info table based on the selection of staff id | Mandatory |  |  |
| Update | Submit Button | No | No | By Clicking the button, update staff screen :step2 will be displayed which turns some non-editable fields to editable fields  (Refer section 5.0 in requirement document for the staff details) | Mandatory |  |  |

## Update Staff screen:step 2: This screen is used by admin to update the student details into the system.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Data Element** | **Control type** | **Default Values from database** | **Editable Field** | **Restrictions** | **Mandatory/**  **Non Mandatory** | **Data Type** | **Data Size** |
| Staff id | Textbox | Yes | No | Should be populated from the staff\_info table | Mandatory |  |  |
| Staff Name | Textbox | Yes | No | Should be populated from the staff\_info table based on the selection of staff id | Mandatory |  |  |
| DOB | Textbox | Yes | No | Should be populated from the staff\_info table based on the selection of staff id | Mandatory |  |  |
| Address | TextArea | Yes | Yes | Should be populated from the staff\_info table based on the selection of staff id | Mandatory |  |  |
| Country | Textbox | Yes | No | Country should be populated from the country\_info table based on the country\_id retrieved (based on the staff\_id)from the staff\_info table | Mandatory |  |  |
| State | Textbox | Yes | Yes | State should be populated from the country\_info table based on  the country\_id retrieved (based on the staff\_id)from the staff\_info table | Mandatory |  |  |
| Contact No. | Textbox | Yes | Yes | Should be populated from the staff\_info table based on the selection of staff id | Mandatory |  |  |
| Mail Id | Textbox | Yes | Yes | Should be populated from the staff\_info table based on the selection of staff id | Mandatory |  |  |
| Gender | Textbox | Yes | No | Should be populated from the staff\_info table based on the selection of staff id | Mandatory |  |  |
| Highest Qualification | Text box | Yes | No | Should be populated from the staff\_info table based on the selection of staff id | Mandatory |  |  |
| Experience | Text box | Yes | Yes | Should be populated from the staff\_info table based on the selection of staff id | Mandatory |  |  |
| YOP | Textbox | Yes | No | Should be populated from the staff\_info table based on the selection of staff id | Mandatory |  |  |
| Date of Joining | Textbox | Yes | No | Should be populated from the staff\_info table based on the selection of staff id | Mandatory |  |  |
| Salary | Textbox | Yes | No | Should be populated from the staff\_info table based on the selection of staff id | Mandatory |  |  |
| Update | Submit Button | No | No | By Clicking the button, update staff screen :step2 will be displayed which turns some non-editable fields to editable fields  (Refer section 5.0 in requirement document for the staff details) | Mandatory |  |  |

## Application Components Specification:

Refer to the sequence and class diagram in the master design document for details on the components hierarchy, how they structured and integrated.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Component Name** | **Method Name** | | **Method input** | | **Method Output** | | **Description** | | **Algorithm** |
| SchoolViewUpdateDelegate | viewDetails | | Category, id | | boolean | | This method invokes the facades and throws School and SchoolBusiness Exception. | | Not applicable |
| ServiceLocator | Locate | | Façade name | | Façade Object | | Method used for locating the appropriate façade based on the input name and return the object. Throws SchoolException when any runtime error occurs. | | Not applicable. |
| SchoolViewUpdateFacade | viewDetails | | Category, id | | boolean | | Method invokes the appropriate BO’s and returns the value to the screens. Handles exceptions, logs it and throws it back to the presentation tier. | | Not applicable. |
| ViewUpdateBO | viewDetails | | Category, id | | boolean | | Method invokes the corresponding method based on the given category. Throws School and SchoolBusinessException when any runtime error occurs. | | Not applicable |
| ViewUpdateBO | viewStudentDetails | | id | | boolean | | Method invokes the DAO to display the student details based on the given criteria. Throws School and SchoolBusinessException. | | Not applicable |
| ViewUpdateBO | viewStaffDetails | | id | | boolean | | Method invokes the DAO to display the staff details based on the given criteria. Throws School and SchoolBusinessException. | | Not applicable |
| ViewUpdateBO | updateStudentDetails | | StudentVO | | int | | Method invokes the DAO to update the student details based on the given data. Throws School and SchoolBusinessException. | | Not applicable |
| ViewUpdateBO | updateStaffDetails | | StaffVO | | Int | | Method invokes the DAO to update the staff details based on the given data. Throws School and SchoolBusinessException. | | Not applicable |
| ViewUpdateDAO | viewStudentDetails | | StudentVO,MarkVO | | Set<student\_Details> | | Method retrives the student details (from the tables student\_info, mark details table based on the standard category) from the StudentVO and MarkVO. | | Refer section 4.0 in requirement document for the student details |
| ViewUpdateDAO | | viewStaffDetails | StaffVO | Set<staff\_Details> | | Method retrives the staff details (from the staff\_info table )from the Staff VO. | | Refer section 5.0 in requirement document for the staff details | |
| ViewUpdateDAO | | updateStudentDetails | StudentVO | Int | | Method updates the student details given in the student Updation screen :step 2 into the student\_info table.Throws School and SchoolBusinessException. | | Refer section 5.2 for fees calculation | |
| ViewUpdateDAO | | updateStaffDetails | StaffVO | Int | | Method updates the staff details given in the staff Updation screen: step 2 into the staff\_info table. Throws School and SchoolBusinessException. | | NA | |



# Algorithms



### Validations

* If Email Id does not contains @ and . throw business exception with error code 502
* If Contact no does contain alphabets and >10 digits throw business exception with error code 506

### Fee Calculation

**Step 1 :** Get the net fee for the standard from the fees\_info table using the updateStudentDetails method of the DAO.

**Step 2 :** Calculate the net fee as per the conditions below

1. If the student is using the transport, then retrieve the transport fee from the fees\_info using the updateStudentDetails method of DAO.

i.e : net fees=standardfees+transport fee

1. If the student is not using the transport, then assign zero to the transport fee.

i.e : net fees=standardfees-transport fee

### Student Updation

**Step 1** : Perform all the business validation

**Step 2 :**Identify the standard Category(P/S/H) based on the student Standard.

**Step 3 :** Calculate the net fees

**Step 4 :** Load the details into the student\_info table .

### Staff Updation

**Step 1** : Perform all the business validation

**Step 2 :** Load the details into the staff\_info table.