

**Project Report**

**Datenbanken und Web-Techniken**

**Summer Semester 2021**

**School Grading System Web Application**

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**Matriculation # 676614**

**Master in Automotive Software Engineering**

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# Introduction

A school wants to switch its grading system from paper to digital in order to have a better overview of the test result and

# Technology Used

* Stored Procedures
* ASP.NET
* WebApi 2
* Ajax
* JSON
* JavaScript/JQuery
* JavaScript
* HTML

# System Requirement

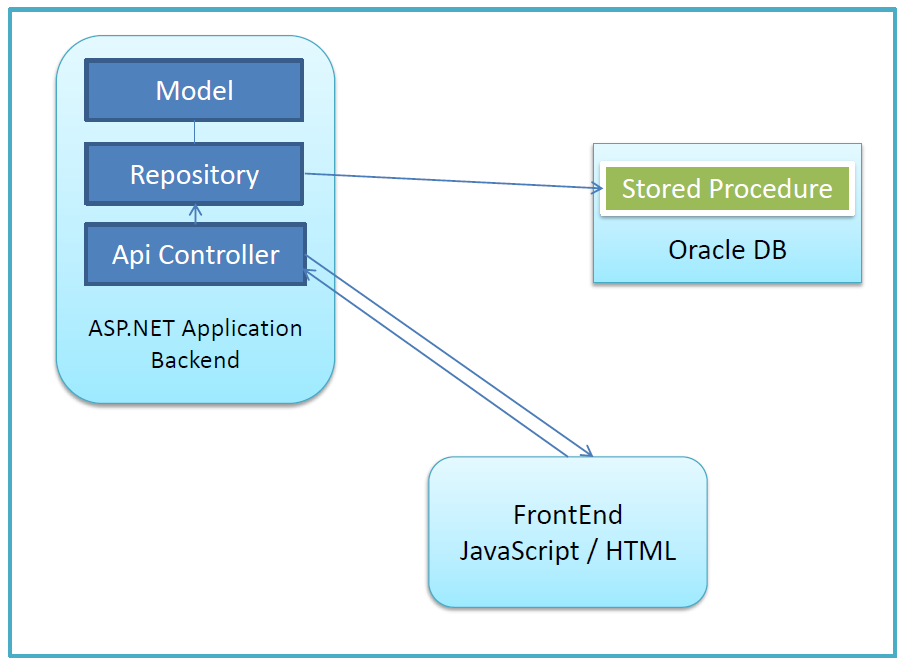
* Oracle 12c Database
* Minimum 1GB Ram
* Windows 8/10 64 Bit OS

# Designs

## 4.1 Use Case

A use case portrays how a client utilizes a framework to achieve a specific objective. A use case chart comprises of the system, the related use cases and actors and related to these to one another to picture: what is being depicted? (System), who is utilizing the framework? (Actors) and what would the actors like to accomplish? (Use cases), subsequently, use cases help guarantee that the right framework is created by catching the necessities from the client's perspective.

## 4.1 Application Layer Pattern

 The above diagram depicts the **M**odel, **R**epository and **C**ontroller to the AP.NET high level architecture. The controller is an Api Controller implemented with a Asp.Net WebApi 2, the model is implemented with Repository, which calls database stored procedure, and in stored procedure, all business logics are implemented.

This is the architectural overview of the Asp.Net WebApi2 Repository pattern. We will go through each component in more detail in the subsequent chapters.

## 4.2 Tables

|  |
| --- |
| **Table TUC\_SYS\_USER\_MAST** |

|  |
| --- |
| Columns |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Type** | **Optional** | **Default** | **Comments** |
| **ID** | VARCHAR2(100) |  | SYS\_GUID() | a system generated unique id |
| **USERNAME** | VARCHAR2(50) |  |  | a unique username which can be used for login |
| **FIRST\_NAME** | VARCHAR2(50) |  |  | forename |
| **LAST\_NAME** | VARCHAR2(50) |  |  | surname |
| **EMAIL** | VARCHAR2(50) |  |  | this email will be used for sending passwar through email and email should be unique |
| **PHONE\_NUMBER** | VARCHAR2(20) | Y |  |  |
| **PASSWORD** | VARCHAR2(500) |  |  | encrypted password |
| **ENC\_KEY** | VARCHAR2(100) |  |  | encryption key |
| **STATUS** | CHAR(1) |  | 'R' | A = archived, R = active/running |
| **ROLE\_ID** | NUMBER(8) |  |  |  |
| **MAKER\_ID** | VARCHAR2(100) |  | 'SYSTEM' |  |
| **MAKER\_TIME** | DATE |  | SYSDATE |  |
| **LAST\_UPDATE\_BY** | VARCHAR2(100) |  | 'SYSTEM' |  |
| **LAST\_UPDATE\_TIME** | DATE |  | SYSDATE |  |
| **LAST\_LOGGED\_IN** | DATE | Y |  |  |
| **SESSION\_ID** | VARCHAR2(100) | Y |  |  |
| **SESSION\_EXP\_TIME** | DATE | Y |  |  |
| **CLASS\_ID** | NUMBER(8) | Y |  |  |

|  |
| --- |
| Primary Key |

|  |  |
| --- | --- |
| **Name** | **Columns** |
| **SYS\_USER\_MASTER\_TUC\_PK** | ID |

|  |
| --- |
| Unique Keys |

|  |  |
| --- | --- |
| **Name** | **Columns** |
| **SYS\_USER\_MASTER\_TUC\_UK1** | USERNAME |

|  |
| --- |
| Indexes |

|  |  |  |
| --- | --- | --- |
| **Name** | **Columns** | **Type** |
| **SYS\_USER\_MASTER\_TUC\_PK** | ID | Unique |
| **SYS\_USER\_MASTER\_TUC\_UK1** | USERNAME | Unique |
|  |  |  |
| **Table TUC\_SYS\_ROLE** | | | |

|  |
| --- |
| Columns |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Type** | **Optional** | **Default** | **Comments** |
| **ROLE\_ID** | NUMBER(8) |  |  |  |
| **ROLE\_NAME** | VARCHAR2(20) |  |  | A UNIQUE ROLE NAME |
| **ROLE\_DESCRIPTION** | VARCHAR2(100) |  |  | ROLE DESCRIPTION |
| **STATUS** | CHAR(1) |  | 'R' | A = archived, R = active/running |
| **MAKER\_ID** | VARCHAR2(100) |  | 'SYSTEM' |  |
| **MAKER\_TIME** | DATE |  | SYSDATE |  |
| **LAST\_UPDATE\_TIME** | DATE |  | SYSDATE |  |
| **LAST\_UPDATE\_BY** | VARCHAR2(50) |  | 'SYSTEM' |  |

|  |
| --- |
| Primary Key |

|  |  |
| --- | --- |
| **Name** | **Columns** |
| **SYS\_ROLE\_TUC\_PK** | ROLE\_ID |

|  |
| --- |
| Unique Keys |

|  |  |
| --- | --- |
| **Name** | **Columns** |
| **SYS\_ROLE\_TUC\_UK** | ROLE\_NAME |

|  |
| --- |
| Indexes |

|  |  |  |
| --- | --- | --- |
| **Name** | **Columns** | **Type** |
| **SYS\_ROLE\_TUC\_PK** | ROLE\_ID | Unique |
| **SYS\_ROLE\_TUC\_UK** | ROLE\_NAME | Unique |
|  |  |  |
| **Table TUC\_SUBJECT** | | | |

|  |
| --- |
| Columns |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Type** | **Optional** | **Default** | **Comments** |
| **SUBJECT\_ID** | NUMBER(5) |  |  |  |
| **SUBJECT\_NAME** | VARCHAR2(50) |  |  |  |
| **TEACHER\_ID** | VARCHAR2(100) |  |  |  |
| **STATUS** | CHAR(1) |  | 'R' |  |
| **MAKER\_ID** | VARCHAR2(100) |  | 'SYSTEM' |  |
| **MAKER\_TIME** | DATE |  | SYSDATE |  |
| **LAST\_UPDATE\_BY** | VARCHAR2(100) |  | 'SYSTEM' |  |
| **LAST\_UPDATE\_TIME** | DATE |  | SYSDATE |  |

|  |
| --- |
| Primary Key |

|  |  |
| --- | --- |
| **Name** | **Columns** |
| **TUC\_SUBJECT\_PK** | SUBJECT\_ID |

|  |
| --- |
| Foreign Keys |

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Columns** | **Referencing Table** | **Columns** |
| **TUC\_SUBJECT\_FK** | TEACHER\_ID | TUC\_SYS\_USER\_MAST | ID |

|  |
| --- |
| Indexes |

|  |  |  |
| --- | --- | --- |
| **Name** | **Columns** | **Type** |
| **TUC\_SUBJECT\_PK** | SUBJECT\_ID | Unique |
|  |  |  |
|  |  |  |
| **Table TUC\_CLASS** | | | |

|  |
| --- |
| Columns |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Type** | **Optional** | **Default** | **Comments** |
| **CLASS\_ID** | NUMBER(5) |  |  |  |
| **CLASS\_NAME** | VARCHAR2(50) |  |  |  |
| **STATUS** | CHAR(1) |  | 'R' |  |
| **MAKER\_ID** | VARCHAR2(100) |  | 'SYSTEM' |  |
| **MAKER\_TIME** | DATE |  | SYSDATE |  |
| **LAST\_UPDATE\_BY** | VARCHAR2(100) |  | 'SYSTEM' |  |
| **LAST\_UPDATE\_TIME** | DATE |  | SYSDATE |  |

|  |
| --- |
| Primary Key |

|  |  |
| --- | --- |
| **Name** | **Columns** |
| **TUC\_CLASS\_PK** | CLASS\_ID |

|  |
| --- |
| Indexes |

|  |  |  |
| --- | --- | --- |
| **Name** | **Columns** | **Type** |
| **TUC\_CLASS\_PK** | CLASS\_ID | Unique |

|  |
| --- |
| **Table TUC\_CLASS\_SUBJECT\_MAP** |

|  |
| --- |
| Columns |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Type** | **Optional** | **Default** | **Comments** |
| **CLASS\_ID** | NUMBER(5) |  |  |  |
| **SUBJECT\_ID** | VARCHAR2(50) |  |  |  |
| **STATUS** | CHAR(1) |  | 'R' |  |
| **MAKER\_ID** | VARCHAR2(100) |  | 'SYSTEM' |  |
| **MAKER\_TIME** | DATE |  | SYSDATE |  |
| **LAST\_UPDATE\_BY** | VARCHAR2(100) |  | 'SYSTEM' |  |
| **LAST\_UPDATE\_TIME** | DATE |  | SYSDATE |  |
| **LAST\_LOGGED\_IN** | DATE | Y |  |  |
| **SESSION\_ID** | VARCHAR2(100) | Y |  |  |
| **SESSION\_EXP\_TIME** | DATE | Y |  |  |

|  |
| --- |
| Primary Key |

|  |  |
| --- | --- |
| **Name** | **Columns** |
| **TUC\_CLASS\_SUBJECT\_MAP\_PK** | CLASS\_ID |

|  |
| --- |
| Indexes |

|  |  |  |
| --- | --- | --- |
| **Name** | **Columns** | **Type** |
| **TUC\_CLASS\_SUBJECT\_MAP\_PK** | CLASS\_ID | Unique |

|  |
| --- |
| **Table TUC\_TEST** |

|  |
| --- |
| Columns |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Type** | **Optional** | **Default** | **Comments** |
| **TEST\_ID** | NUMBER(5) |  |  |  |
| **TEST\_NAME** | VARCHAR2(50) |  |  |  |
| **SUBJECT\_ID** | VARCHAR2(100) |  |  |  |
| **TEST\_DATE** | DATE |  |  |  |
| **STATUS** | CHAR(1) |  | 'R' |  |
| **MAKER\_ID** | VARCHAR2(100) |  | 'SYSTEM' |  |
| **MAKER\_TIME** | DATE |  | SYSDATE |  |
| **LAST\_UPDATE\_BY** | VARCHAR2(100) |  | 'SYSTEM' |  |
| **LAST\_UPDATE\_TIME** | DATE |  | SYSDATE |  |

|  |
| --- |
| Primary Key |

|  |  |
| --- | --- |
| **Name** | **Columns** |
| **TUC\_TEST\_PK** | TEST\_ID |

|  |
| --- |
| Indexes |

|  |  |  |
| --- | --- | --- |
| **Name** | **Columns** | **Type** |
| **TUC\_TEST\_PK** | TEST\_ID | Unique |

|  |
| --- |
| **Table TUC\_RESULT** |

|  |
| --- |
| Columns |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Type** | **Optional** | **Default** | **Comments** |
| **RESULT\_ID** | NUMBER(5) |  |  |  |
| **TEST\_ID** | NUMBER(5) |  |  |  |
| **GRADE** | NUMBER(8,2) |  |  |  |
| **STATUS** | CHAR(1) |  | 'R' |  |
| **MAKER\_ID** | VARCHAR2(100) |  | 'SYSTEM' |  |
| **MAKER\_TIME** | DATE |  | SYSDATE |  |
| **LAST\_UPDATE\_BY** | VARCHAR2(100) |  | 'SYSTEM' |  |
| **LAST\_UPDATE\_TIME** | DATE |  | SYSDATE |  |

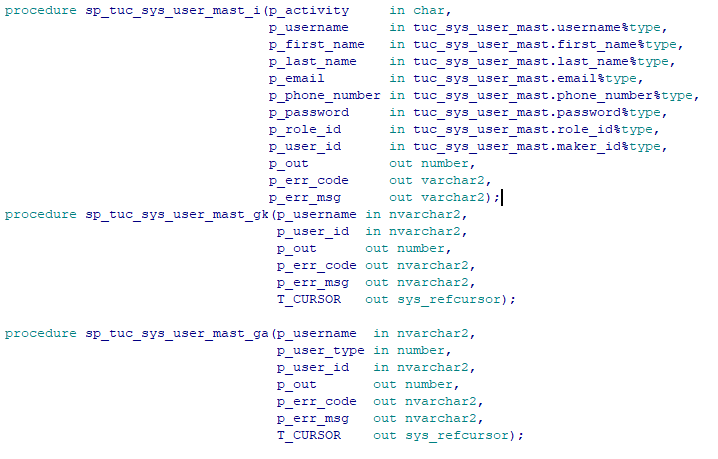
|  |
| --- |
| Primary Key |

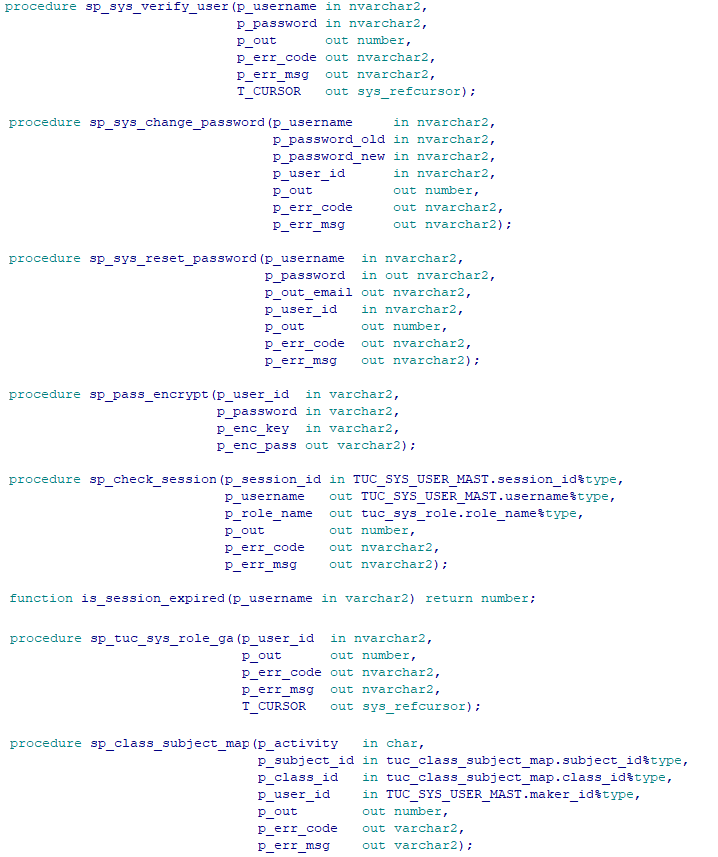
|  |  |
| --- | --- |
| **Name** | **Columns** |
| **TUC\_RESULT\_PK** | RESULT\_ID |

|  |
| --- |
| Indexes |

|  |  |  |
| --- | --- | --- |
| **Name** | **Columns** | **Type** |
| **TUC\_RESULT\_PK** | RESULT\_ID | Unique |

## 4.3 Stored Procedures







# References

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3. [https://www.cloudcomputing-insider.de/was-ist-eine-rest-api-a-611116/](https://www.cloudcomputing-insider.de/was-ist-eine-rest-api-a-611116/%20) [Online] 27.06.2021

6. [https://www.postman.com/](https://www.postman.com/%20) [Online] 27.06.2021

7. <http://localhost:85401/api/> [Online] 27.06.2021