1. **Introduction**

This document is the design report for the development of University Eligibility checking System with more enhancement features than the existing system. It contains details under 4 main chapters namely ‘Overall System Architecture, Software Architecture, Data Design & Interface Design.

In the Overall system architecture it is described about the presentation layer, application layer and the data link layer of the developing system with the aid of diagram. In the next section it is explained about the software architecture of the system. It contains the information about the modules which are presented in the system, roles and privileges of accessing these modules. First there is an overview of the overall software architecture which is followed by the list of modules and the detailed explanations about the key modules.

In this document 3rd section is dedicated for describing the data design of the system. It contains the conceptual data design, which is the EER model and then the conversion of EEP in to the relations. This section also contains the database relationship diagrams followed by a description of tables in the data base with their attributes and their data types with lengths.

As the final section it contains the interface designs for various forms available in the system with brief description about each of them followed by a summary of this document to end the report.

1. **Overall System Architecture**

**C:\Users\user\Downloads\icons8-user-50.png C:\Users\user\Downloads\icons8-web-application-firewall-24.png**

**User UECS Web Application**

Internet

C:\Users\user\Downloads\icons8-database-administrator-50.png

Database

C:\Users\user\Downloads\icons8-admin-settings-male-30.png C:\Users\user\Downloads\icons8-server-50.png

Admin Application

Server

Presentation Layer Application Layer Data Layer

Architectural design defines the overall structure of the system and form a solution before move on to the detail design or the low level design which includes the design of specific components details. The architectural design is given according to the three-tier-architecture where overall design is spilt in to three layers of Client Tier, Application Tier and Data Tier.

**2.1 Application Layer**

The process of the UECS will be executed at this application layer. Application layer will interact with both presentation layer where the interfaces of UECS are running & the data layer where the information is stored. The information gathered from user inputs will be stored and subjected into filtering scenario and gives the output as requested by the users.

**2.2 Data Layer**

Data layer manage the data storage operations of the overall system where the database management applications are running. A database containing the details about degree programs with respect to each universities and Z-scores will be stored in several tables in the UECS in order to improve the efficiency. Information gathered from the interfaces of the application layer will be stored in respective tables.

**2.3 Presentation Layer**

The presentation layer is responsible for the registering process of users in the UECS. In order to access the details of the system user must be first register as a member of the system. Information gathered at this layer will be provided into the application layer to manipulate according to the given instructions. Other interfaces are designed to get the inputs as required to provide the most accurate results for the user.

**3.0 Software Architecture**

Software architecture was based on modularized approach where the software is divided into parts. Each module is assigned to execute one or more tasks of the overall system in order to achieve the ultimate objectives expected. Since the program is developed using open resource platform such as PHP, HTML, CSS, will ease the development and maintenance of the system.

**3.1 Overall Software Architecture**

Following figure represents the overall software architecture of the developing system.

C:\Users\user\Downloads\icons8-user-50.png

Login Interface

**Candidate**

**C:\Users\user\Downloads\icons8-admin-settings-male-30.png**

Internet

**Admin**

**Presentation Layer**

C:\Users\user\Downloads\icons8-identification-documents-error-30.png

Authentication

Administrator Login UECS User Login

View Eligibility View Priority View Filtered List Analysis

Database Interface

* Enter Z-Score
* Stream
* District
* Year (G.C.E. AL)

**Application Layer**

C:\Users\user\Downloads\icons8-database-administrator-50.pngUECS Database **Data Layer**

Main approaches of the system are then break into core modules to perform required tasks of the system. Further details of these modules and their tasks will be discussed in detailed in below sections.

**3.2 Module Architecture**

The developing UECS Web Application contains several modules to make the complete system. This section will describe about the organization of the modules that it consists.

**3.2.1 An Overview of Module Architecture**

In the below shown is an enumerated list of requirements for the new system development.

Module 1: “Authentication/Login Module”

1.1: Administrator Login

1.2: User Login

Module 2: “View Priority”

2.1: Enter the Z-Score

2.2: Enter the stream

2.3: Enter the district

2.4: Enter the year

Module 3: “View Filtered List”

3.1: Enter the Z-Score

3.2: Enter the stream

3.3: Enter the district

3.4: Enter the year

Module 4: “Analysis”

**3.2.2 Module Architecture in Detail**

There are several modules for various functions in the developing UECS. In the below it is described in detail about those modules.

**Module1: “Authentication/Login Module”**

**1.1: Admin Login**

UECS

Home Interface

**C:\Users\user\Downloads\icons8-admin-settings-male-30.png Request C:\Users\user\Downloads\icons8-login-50.png Request**

**Admin Login**

View Eligibility

Analysis

View Priority

View Filtered List

User Accounts

Request Respond

**Database Interface**

Store Retrieve

C:\Users\user\Downloads\icons8-database-administrator-50.png

UECS Database

Administrator can log into the system and access every module that a user can access and an additional module called Administration module.

**1.2: General User Login**

Each and every general user of the system needs to be logged on to the system before using the system. Each user will be provides with a unique username and password to access the system by the administrator. When they are entered in the login interface those values will be verified using the data in the database and redirect the user to the system in order to achieve the results as user required.

UECS

Home Interface

C:\Users\user\Downloads\icons8-user-50.png **Request C:\Users\user\Downloads\icons8-login-50.png Request**

**User Login**

View Priority

View Filtered List

View Eligibility

Analysis

Request Respond

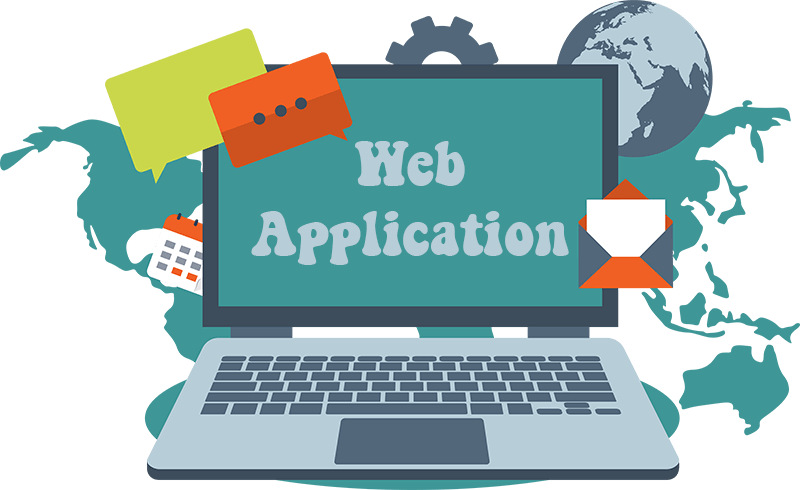
**Database Interface**

Store Retrieve

C:\Users\user\Downloads\icons8-database-administrator-50.png

UECS Database

**Module 2: “View Eligibility”**

C:\Users\user\Downloads\icons8-user-50.png **Request C:\Users\user\Downloads\icons8-login-50.png Request**  ****

UECS Home Interface

View Eligibility

**UECS User Login**

**Request Respond**

**Request**

Database Interface

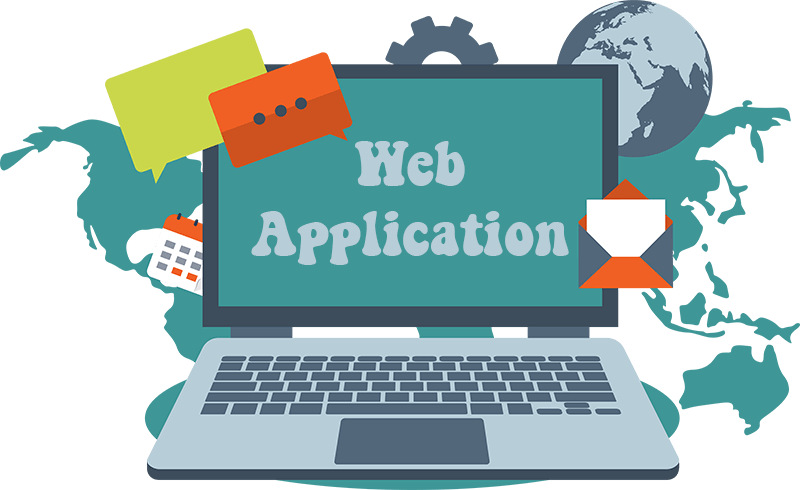
**Request Respond**

C:\Users\user\Downloads\icons8-database-administrator-50.png

UECS Database

When the user is log into the system he/she can request for their individual need by providing necessary information by filling the form. After that the updates are stored in the database and the output will be received as required. Here the user can check about the eligible degree programs that he/she can apply with their results into the state universities.

**Module 3: “View Priority”**

C:\Users\user\Downloads\icons8-user-50.png **Request C:\Users\user\Downloads\icons8-login-50.png Request**  ****

View Priority

UECS Home Interface

**UECS User Login**

**Request Respond**

**Request**

Database Interface

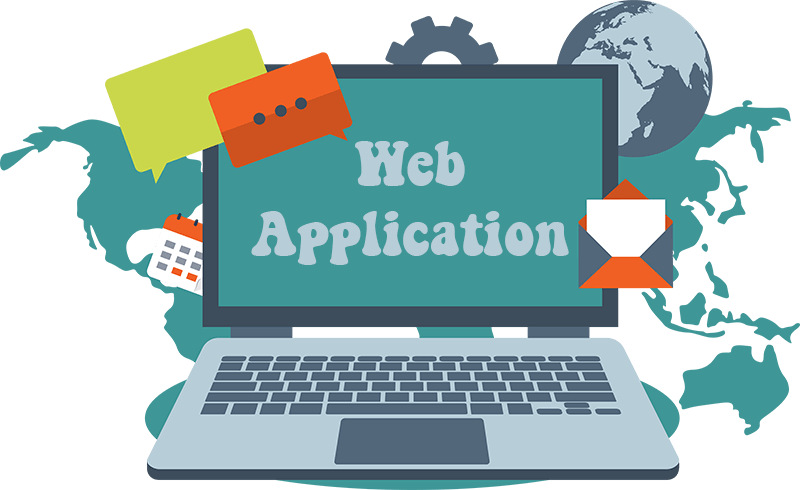
**Request Respond**

C:\Users\user\Downloads\icons8-database-administrator-50.png

UECS Database

When the user is log into the system he/she can request for their individual need by providing necessary information by filling the form. After that the updates are stored in the database and the output will be received as required. The degree programs the user is eligible are displayed according to the most priority.

**Module 4: “View Filtered List”**

C:\Users\user\Downloads\icons8-user-50.png **Request C:\Users\user\Downloads\icons8-login-50.png Request** ****

UECS Home Interface

View Filtered Lists

**UECS User Login**

**Request Respond**

**Request**

Database Interface

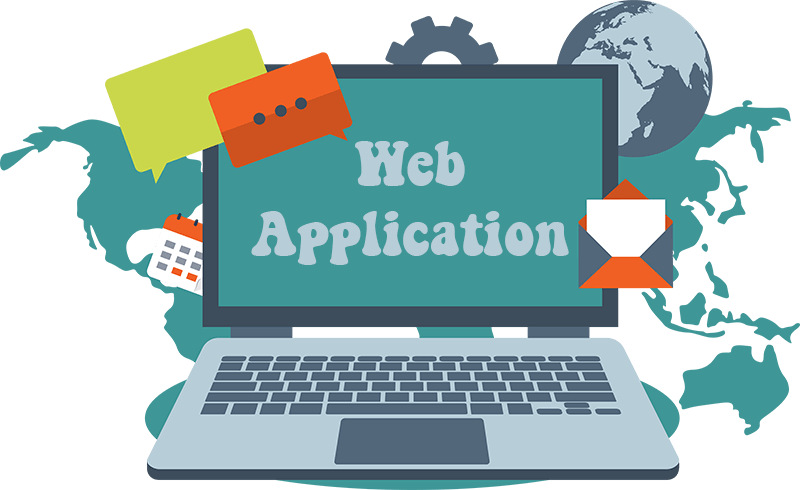
**Request Respond**

C:\Users\user\Downloads\icons8-database-administrator-50.png

UECS Database

When the user is log into the system he/she can request for their individual need by providing necessary information by filling the form. After that the updates are stored in the database and the output will be the list of eligible degree programs which are filtered according to stream wise.

**Module 5: “Background Analysis”**

C:\Users\user\Downloads\icons8-user-50.png **Request C:\Users\user\Downloads\icons8-login-50.png Request** 

UECS Home Interface

Analysis

**UECS User Login**

**Request Respond**

**Request**

Database Interface

**Request Respond**

C:\Users\user\Downloads\icons8-database-administrator-50.png

UECS Database

When the user log into the system, if he/she have no idea about the selection process for the universities based on previous year’s results, through this module we provide a statistical analysis of previous records.

1. **Data Design**

The UECS will have a one centralized database in the server. MySQL database will be used for this purpose. This section of the document represents the conceptual data design of the system, the process of converting the EER diagram in to tables and the database relationship diagram. Furthermore, the tables of the database are also stated with their attributes and data types.

* 1. **Conceptual Database Design**

Following figure shows the EER model for the UECS database.

User

Is a

Member

register

Website

login

view

Form data

Database

store

analyze

Degree

show

**4.2 Mapping of Logical Database to Relations**

The above shown EER model is converted into relations using the 8 step process.

1st Step-Regular Entity Types

MEMBER (first\_name, last\_name, email, phone, index\_number, district, stream, zscore,

student\_id)

USER (Username, email, Password, confirm\_password)

DEGREE (Unicode, zscore, Stream, Course, University, District)

COMMENT (name, email)

2nd Step-Weak Entity Types

USER (Username, email, Password, confirm\_password)

COMMENT (name, email)

3rd Step-Binary One-to-One

MEMBER (first\_name, last\_name, email, phone, index\_number, district, stream, zscore,

member\_id, Username\_FK)

USER (Username, email, Password, confirm\_password)

4th Step-Binary One-to-Many

MEMBER (first\_name, last\_name, email, phone, index\_number, district, stream, zscore,

member\_id)

COMMENT (name, email, member\_id\_FK)

5th Step-Binary Many-to-Many

MEMBER (first\_name, last\_name, email, phone, index\_number, district, stream, zscore,

member\_id)

DEGREE (Unicode, zscore, Stream, Course, University, District)

6th Step-Mapping of Unary Relationships

No Unary Relationships here

7th Step-Mapping of Ternary Relationships

No Ternary Relationships here

8th Step-Mapping Super/Subtype Relationships

No Super/Subtype Relationships

After the normalization to 3rd normalization form there were no changes. Therefore the final 3NF tables is given below.

MEMBER (first\_name, last\_name, email, phone, index\_number, district, stream, zscore,

member\_id, Username\_FK)

USER (user\_id, Username, email, Password, confirm\_password)

COMMENT (name, email, member\_id\_FK)

DEGREE (Unicode, zscore, Stream, Course, University, District)

**4.3 Database Relationship Diagram of the Database**

The diagram shown below indicates the relationship among tables in the database.

MEMBER

first\_name

last\_name

email

phone

index\_no

district

stream

zscore

member\_id

USER

username

email

password

confirm\_password

COMMENT

name

email

DEGREE

unicode

zscore

stream

course

university

district

**4.4 Data Type Design for the Database**

|  |  |  |
| --- | --- | --- |
| TABLE:USER | | |
| Attribute | **Data Type** | **Length** |
| Username | varchar | **255** |
| Email | Varchar | **255** |
| password | Varchar | **255** |
| Confirm\_password | varchar | **255** |

|  |  |  |
| --- | --- | --- |
| TABLE:MEMBER | | |
| Attribute | **Data Type** | **Length** |
| First\_name | varchar | **255** |
| Last\_name | Varchar | **255** |
| Email | Varchar | **255** |
| Phone | text |  |
| Index\_no | varchar | **12** |
| District | Varchar | **255** |
| Stream | Varchar | **255** |
| Zscore | float | **5,4** |
| Member\_id | int | **11** |

|  |  |  |
| --- | --- | --- |
| TABLE:DEGREE | | |
| Attribute | **Data Type** | **Length** |
| Unicode | int | **11** |
| Zscore | double |  |
| Stream | Varchar | **100** |
| Course | varchar | **255** |
| University | Varchar | **150** |
| District | varchar | **255** |

|  |  |  |
| --- | --- | --- |
| TABLE:COMMENT | | |
| Attribute | **Data Type** | **Length** |
| Username | varchar |  |
| Email | Varchar |  |