



Final Project Report

for

CELS Management System

By

Peaky Blinders

WD 08

Client - Cambridge English Language School

Version 1.0

Prepared by

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Project Manager of Peaky Blinders

Declaration

We hereby declare that the project work entitled “CELS Management System”, submitted to the SLIIT Academy (Pvt.) Ltd. a subsidiary of Sri Lanka Institute of Information Technology is a record of an original work done by us, under the guidance of our lecturer in charge Mr. D.M.R.P. Jayawardana and supervisor Ms. Lakna Gammedda. This project work is submitted in the partial fulfillment of the requirement for the award of the Diploma in Information Technology. The Results embodied in this report have not been submitted to any other University or Institution for the award of any degree or diploma. Information derived from the published or unpublished work of others has been acknowledged in the text and a list of references is given.

Date of Submission: 29th November 2020

Name of the supervisor: Ms. Lakna Gammedda

.....

Signature of the Supervisor.

Acknowledgement

First and foremost, we would like to thank our lecturer in charge Mr. Roshan Jayawardana and supervisor Ms. Lakna Gammedda for your assistance and dedicated involvement in every step throughout the process. Without your active guidance, help and encouragement we would not have made the headway in the project.

We are extremely thankful for the Principle and the staff of Cambridge English Language School who provided us with the opportunity to develop this project with regard to their institution. They have been unwavering in their personal and professional support during requirement gathering sessions.

We would also like to show gratitude to all our lecturers /instructors at SLIIT Academy who have always supported us in our academics.

Most importantly, none of this could have happened without our families that has been kind and supportive to us over the project development period.

At last but not least gratitude goes to all our friends who directly and indirectly supported us in completing this project.

Thank you.

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Acronyms and Abbreviations

IDE : Integrated Development Environment	9, 13
MSSQL : Microsoft Structured Query Language	9
SDLC : Software Development Life Cycle	10
CELS : Cambridge English Language School.....	i, ii, 1, 2, 3, 5, 6, 8, 16

Revision History

Revision made by	Date	Reason for Changes	Version
H G L S Nawarathna	29/11/2020	Initial Draft	1.0

Group Members

Name	Role	Responsibilities
H G L S Nawarathna (IT 19 1021 60)	Project Manager	Project management, documentations and leading the team
H A E I Jayawardhana (IT 19 0306 54)	Programmer	Handling the coding side
N M V S Nawarathna (IT 19 7770 78)	Database Manager	Database implementation and management
Y M L D K Yapa (IT 19 0650 90)	UI Designer	Designing user interfaces

1 Executive Summary

Main goal of this system is backing the management of the Cambridge English Language School. Cambridge Language School is one of the institutes which provide valuable service to the both school children and employees in the Anuradhapura area. This institute was started by Mr. M.D. Sarathchandra Mapitiyage on 1997. On 2019, Mrs. S.C. Dilrukshi was appointed as the Principal of the institute. Currently this institute has a manual student management system, which can identify as a traditional paper-based system.

This system is known as CELS Management System. Principal of the CELS and the receptionist have the access to this system. This system can provide lots of functions to these users. By this, users can obtain benefits like time saving, space saving and money saving.

This system is a computer-based system. Management of students, staff, classes, exams, documents and transactions can be done through this system easily and quickly. As well as sending announcements and generating reports for different sections can be done with this CELS management system. To give a very user-friendly experience this system contains user understandable interfaces and contents.

2 Project Background

2.1 Introduction

Cambridge English Language School Management System is the future management system of the CELS institute. Currently this institute functions using manual system. They are using this manual system to manage and keep track of manage various records of students, staff, classes, exams, documents, announcements and transactions. Because of this manual system, principal of CELS and staff have faced various problems. There are so many drawbacks of this manual system.

CELS management system, being a computer-based system, directly connect with one database. This will help to manage so many things within the institute. Principal and receptionist will be able to work with this system. They have accounts which differ from each other. There are some limitations to the receptionist. But there is no ant limitation to the principal to access the system since he is playing the administrator role.

2.2 Current System

Cambridge English Language School Management System is the proposed future management system for the CELS institute. Currently this institute use a file based manual system. They are using this manual system to manage and keep track of various records of students, staff, classes, exams, documents, announcements and transactions. The principal of CELS and staff have faced numerous problems because there are many drawbacks of this manual system like data redundancy, lack of security, requirement of lot of labor and data inconsistency.

CELS management system, being a computer-based system. Which directly connect with one database. This will help to store and retrieve database information in a fast and efficient manner. Principal and receptionist will be the persons who handle this system. They have two different roles which differ from each other. There are some limitations to the receptionist. But there is no ant limitation to the principal to access the system since he is the administrator.

2.3 System to be Developed

After holding few meetings with Principal of CELS and Manager of the CELS we could identify their requirements. They needed system which can manage,

- Students
- Staff
- Classes
- Exams
- Documents
- Transactions
- Announcements

With the help of student management function user can add students to the system, update student details, delete student from the system or view student details.

Users can use staff management function to add staff member to the system, update staff member details, delete staff member from the system and view staff member details.

Above two functions help to prevent wasting time, wasting money, unnecessary usage of resources and space management.

Classes management function helps to manage all the classes. This is like timetable. By this user can add new classes, view class details, edit class details and delete class from the system.

This institute offers exams for several course such as IELTS, FCE, KET, PET and Spoken English. User can add, update, delete and view exams with the help of this function. As well as user can register students for the exams.

This institute uses cupboards to keep copies of documents such as exam papers, certificates, tutorials. With this function they can keep copy of those documents in the system.

Only principal has access to the transaction management part. This function helps to keep transaction details securely and updated up to date.

With the help of announcement management system, user can send any announcement to selected students of staff members.

3 Problem Definition and Requirement Analysis

3.1 Problem Definition

Cambridge English Language School currently uses a fully manual paper-based system. Major drawbacks of this system are time wasting, losing of documents, resources wasting and unnecessary manpower usage.

3.1.1 People Affected

- Principal of the CELS
- Receptionist
- Students
- Staff members

3.1.2 Limitations of Current System

- Low security and privacy to the data
- Time wasting
- Cannot view details when needed
- Data redundancy
- Loss of documents
- Damaging documents
- Cannot update details easily
- Unnecessary usage of resources and space

3.2 Requirement Analysis

3.2.1 Gathering Requirements

Due to pandemic situation of the country, we had to face some difficulties when gathering requirements. As solution for that we held zoom meetings with Principal of CELS and Manager of CELS.

3.2.1.1 Interviews

We held many zoom meetings with our client and we could gather so many requirements from this (*appendix A 1*).

By this we could get basic ideas about client's requirements. We identified what are the main functions they are willing through this system.

3.2.1.2 Existing Documents

To further usage, principal of CELS send us a letter (*appendix B 1*) and student registering applications (*appendix C 1*) to get better idea about their requirements

3.2.2 General Objectives

- Increasing the security of storing data
- Reduce the manpower
- Reduce the time wasting
- Manage unnecessary usage of space
- Time saving
- Provide efficiency at storing data

3.2.3 Specified Objectives

There are two main users of this system. They are Principal and receptionist of the institute. This is stand-alone system and Principal and receptionist have different access levels to the system. Admin of this system is principal and receptionist act as a user. And this system will be run on two separate computers. One for admin and one for user.

Both admin and user can:

- Add, update, delete and view student details.
- Mark the student attendance.
- Add, update, delete and view staff member details.
- Add, update, delete and view class details.
- Add, update, delete and view exam details.
- Add documents to the system or delete documents from the system.
- Send announcements to the students and staff members.

Only admin can:

- Add transaction details, update transaction details, delete transaction or view transaction history.
- Create user profiles.

4 Design and Implementation

4.1 High Level Architecture Design

CELS Management system is managed by two users; the Admin and the Receptionist. The data will be stored in the database and both can access to the database. The following high-level architecture diagram which includes hardware and software, shows the components of the system and their relationship.

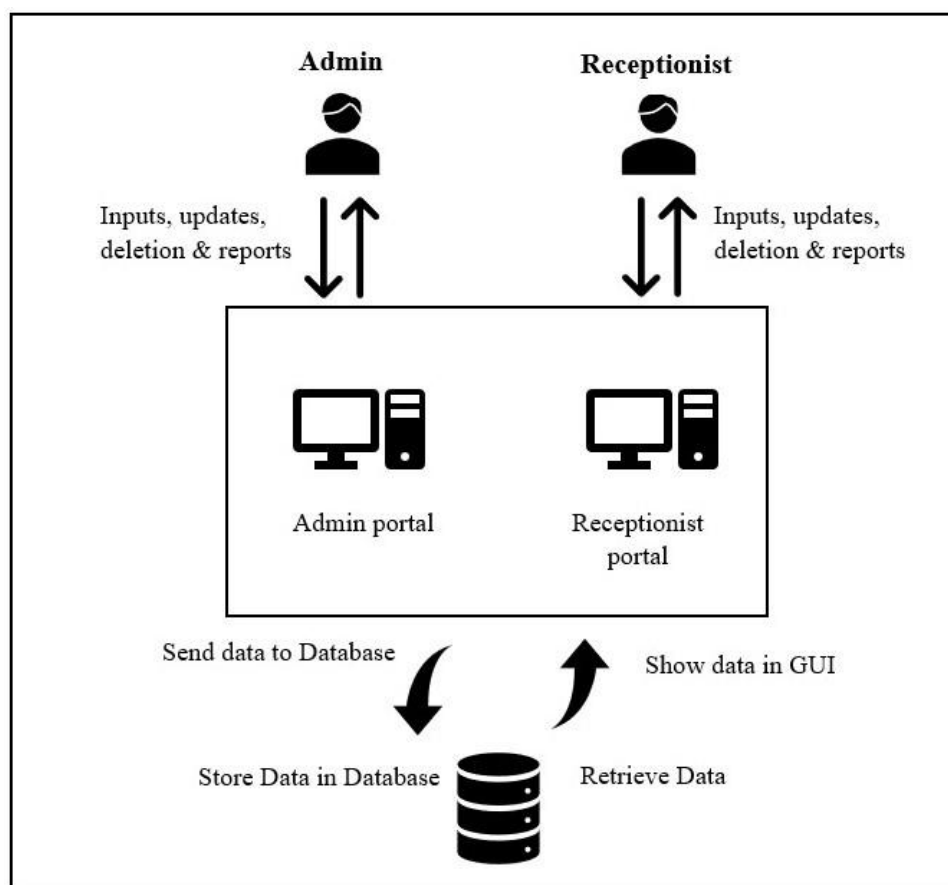


figure 4.1. 1 High-level architecture Diagram

4.2 Hardware, Software and Communication Interfaces

4.2.1 Hardware Requirements

- 4GB RAM x 2
- 5GB space on hard drive x 2
- Keyboard x 2
- Mouse x 2
- Monitor x 2
- Intel dual core processor x 2

4.2.2 Software Requirements

- Windows 7 or above operating system.
- Programming Language. Oracle Java SE development kit 8.
- NetBeans IDE 8.
- MSSQL server 2019.

4.2.3 Liveware Requirements

- Need users with good knowledge about handling the system.

4.3 Non-Functional Requirements

4.3.1 Operational Requirements

- System should compatible with Windows operating system.

4.3.2 Performance Requirements

- System should response to the user within few seconds.
- System should have the ability to generate the report to the user immediately.

4.3.3 Security Requirements

- Admin should be able to access to every part in the system and should be able to add, update and deletion.
- Receptionist only have access to Student, attendance marking, transaction and to register a student for an exam. Other functions should not be available for the receptionist.

4.4 Implementation

4.4.1 Development Methodology

In the SDLC there are different methodologies that people follow when working on a project. In each methodology has different phases to follow. Each phase has different steps, deliverables and different techniques.

We have selected Waterfall methodology as our development methodology for our project. In Waterfall methodology, the development steps are moving from phase to phase. So each phase

is begins or originates only after the previous phase has finished. With this development methodology, our team had to identify the system requirements before the development begin. So we could develop an efficient system according to our client's requirements.

In waterfall methodology there are 4 different phases to follow. Planning, analysis, designing and implementation are the sequence of phases to follow in waterfall methodology.

During the Planning phase, we identify the opportunities and project manager create a work plan to control and direct the project along with the SDLC.

During the Analysis phase, we identify the users of the system, what they are expecting from the system and when they are going to use the system. This phase is conducted through interviews with the client and some questionnaires.

The next phase is Design. During design phase, we focus on our design strategy. Designing interfaces of the system and creating the database for the system will be done during this phase.

Next, we have to move to Implementation phase. In here we construct and install the system. During the construction period, programming and testing should be done. Developing the system and testing the system is done during construction period. Finally we can install the system and establish a support plan for the system. [1]

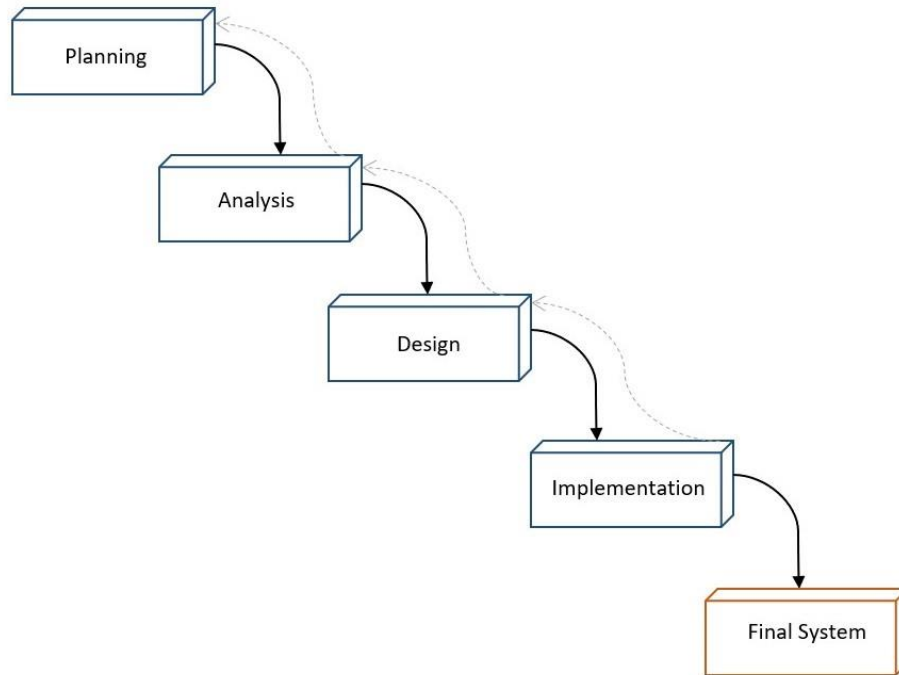


figure 4.4.1. 1 Waterfall Methodology

4.4.2 Development Technologies

4.4.2.1 Coding Environment

We select our coding environment as NetBeans using Java language. Java is Object oriented which means, everything in the language behaves like an object. So it is easy to develop the system according to our client's requirements.

4.4.2.2 Database Environment

A database is a collection of components that comprise and regulates the group of data, management and use of data which consist of software, hardware, people and techniques of handling database. [2]

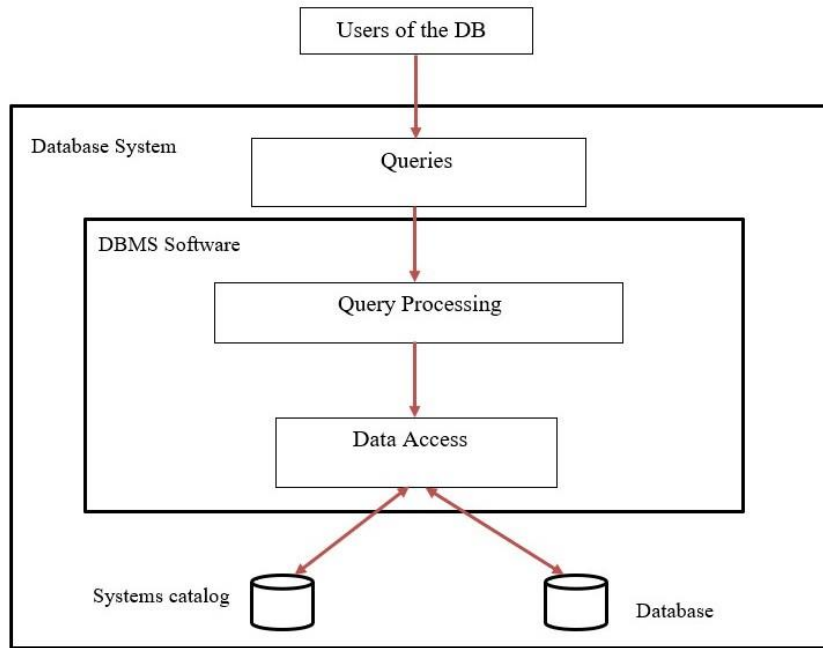


figure 4.4.2.2. 1 Database environment

4.4.3 Development Tools

4.4.3.1 Coding IDE

- NetBeans IDE8.2

4.4.3.2 Database Management System

- Microsoft SQL Server Management studio 2018

4.4.3.3 Reporting Tools

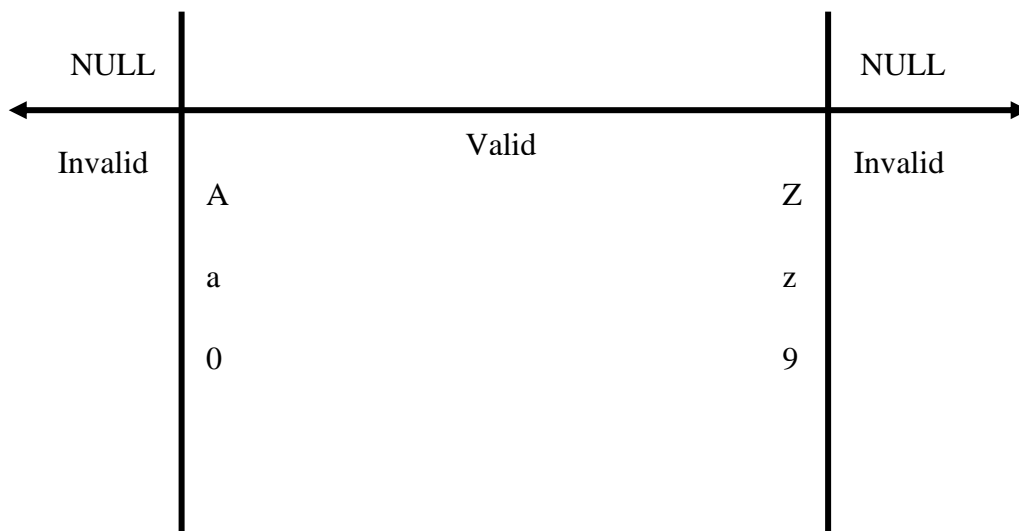
- Generating Student details report
- Generating Staff member detail report
- Generating a receipt for payments
- Generating an admission for exam registration

5 Testing and Deployment

5.1 Login

- Test ID : 01
- Tester Name : H.G.L.S. Nawarathna
- Test Type :
 - Character validations
 - Range Validations
 - Null Validations

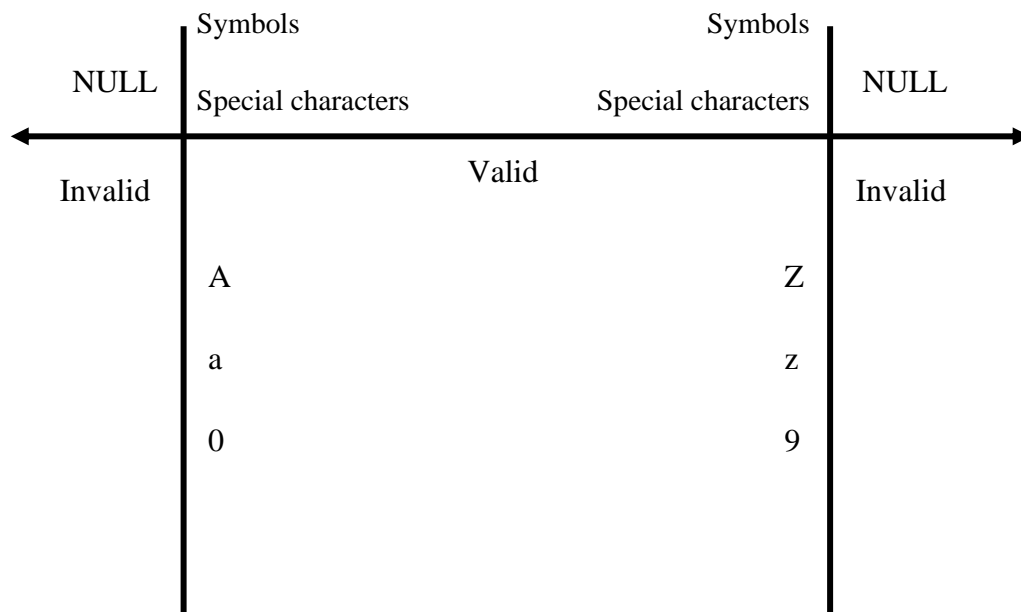
User Name:



Condition	Valid Partition	Invalid Partition	Valid Boundaries	Invalid Boundaries
If (username! = null)	A-Z, a-z, 0-9	Symbols and Special characters	A-Z, a-z, 0-9	Symbols and Special characters

table 5.1 1 User Name validation

Password:



Condition	Valid Partition	Invalid Partition	Valid Boundaries	Invalid Boundaries
If (password! = null)	A-Z, a-z, 0-9, symbols and special characters		A-Z, a-z, 0-9	A-Z, a-z, 0-9, symbols and special characters

table 5.1 2 Password validation

Test Case ID	Test Scenario	Test Steps	Test Data	Expected Results	Actual Results	Pass/Fail
01	Check Login with valid username and password	1. Go to Login 2. Enter username 3. Enter password 4. Click Login	Username: User404 Password: User@404	User or Admin must direct to the Home of CELS management system.	As expected,	Pass
02	Check Login with invalid username	1. Go to Login 2. Enter username 3. Enter password 4. Click Login	Username: User405 Password: User@404	Prompt error message “Invalid username or password”	As expected,	Pass
03	Check Login with invalid password	1. Go to Login 2. Enter username 3. Enter password	Username: User404 Password: User403	Prompt error message “Invalid username or password”	As expected,	Pass

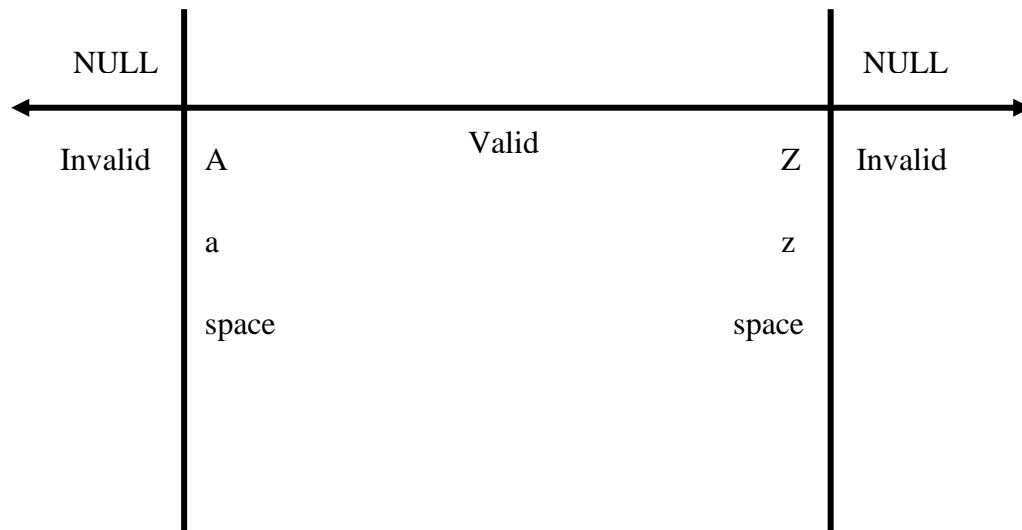
		4. Click Login				
04	Check Login with null username field	1. Go to Login 2. Enter password 3. Click Login	Username: null Password: User404	Prompt error message “Invalid username or password”	As expected,	Pass
05	Check Login with null password field	1. Go to Login 2. Enter password 3. Click Login	Username: User404 Password: null	Prompt error message “Invalid username or password”	As expected,	Pass

table 5.1 3 Test case for Login

5.2 Create Profile

- Test ID : 02
- Tester Name : H.G.L.S. Nawarathna
- Test Type :
 - Character validations
 - Range Validations
 - Null Validations

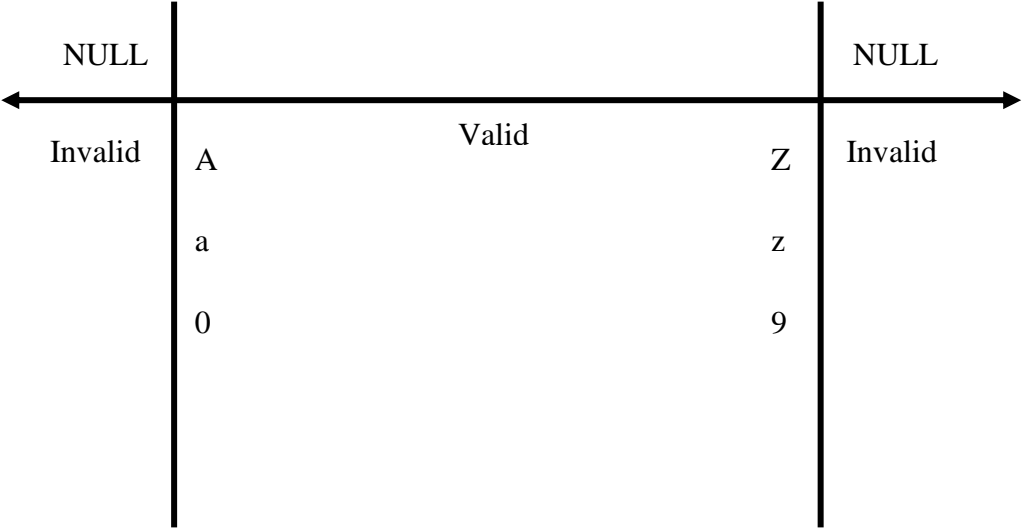
Name:



Condition	Valid Partition	Invalid Partition	Valid Boundaries	Invalid Boundaries
If (name! = null)	A-Z, a-z, Space	Symbols and Special Characters except space	A-Z, a-z	Symbols and special characters except space

table 5.2. 1 Profile name validation

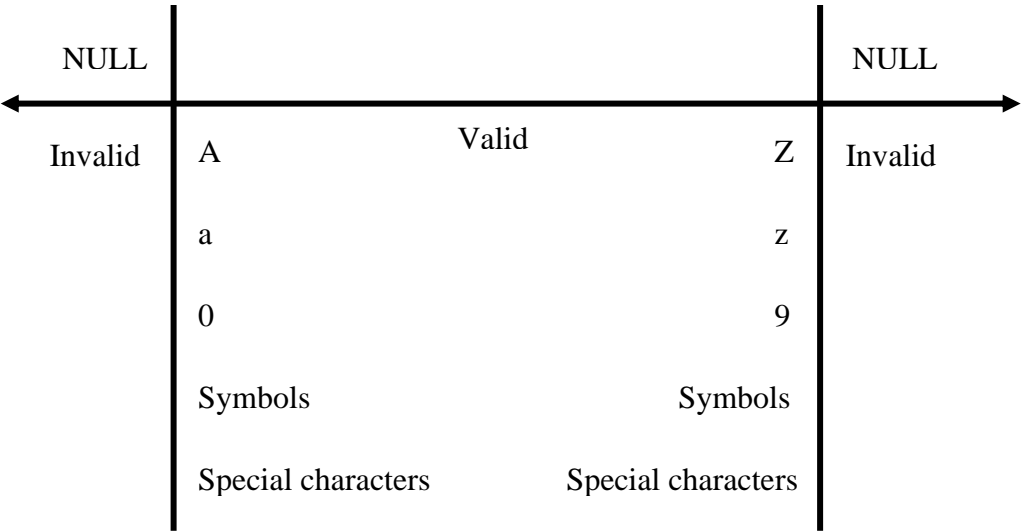
User:



Condition	Valid Partition	Invalid Partition	Valid Boundaries	Invalid Boundaries
If (username! = null)	A-Z, a-z, 0-9	Symbols and Special characters	A-Z, a-z, 0-9	Symbols and Special characters

table 5.2. 2 Profile user validation

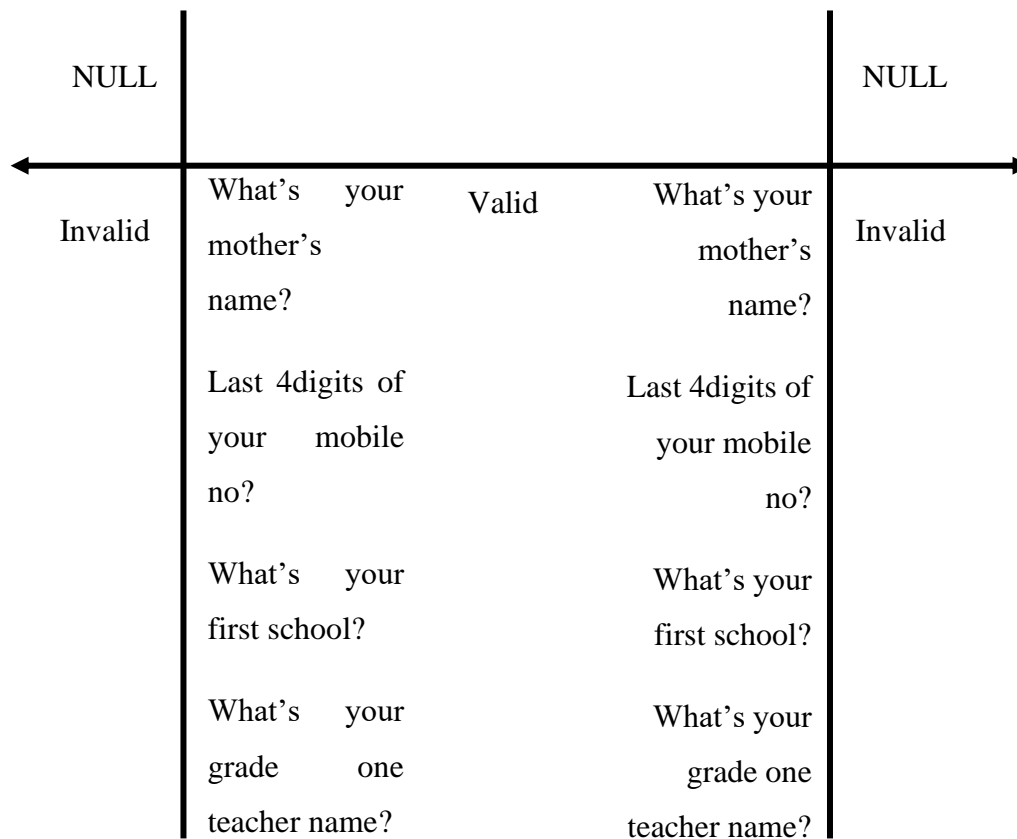
Password and Confirm password:



Condition	Valid Partition	Invalid Partition	Valid Boundaries	Invalid Boundaries
If (password! = null)	A-Z, a-z, 0-9, symbols and special characters		A-Z, a-z, 0-9	A-Z, a-z, 0-9, symbols and special characters

table 5.2. 3 Password & confirmation validation

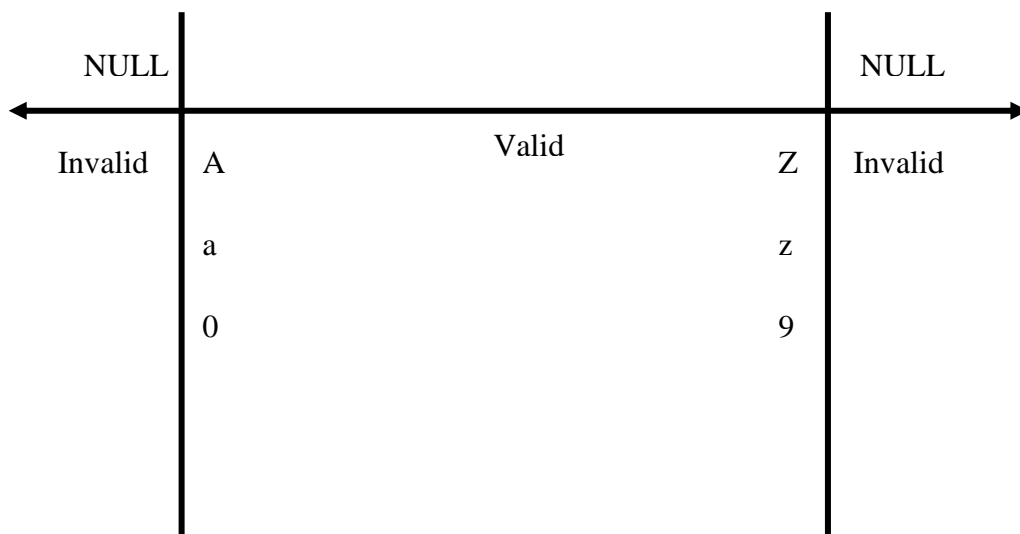
Security Question:



Condition	Valid Partition	Invalid Partition	Valid Boundaries	Invalid Boundaries
If (securityQuestion! = null)	What is your mother's name? What are the last four numbers of your mobile no.? What is your first school? what is your grade one teacher's name?		What is your mother's name? What are the last four numbers of your mobile no.? What is your first school? what is your grade one teacher's name?	

table 5.2. 4 Security question validation

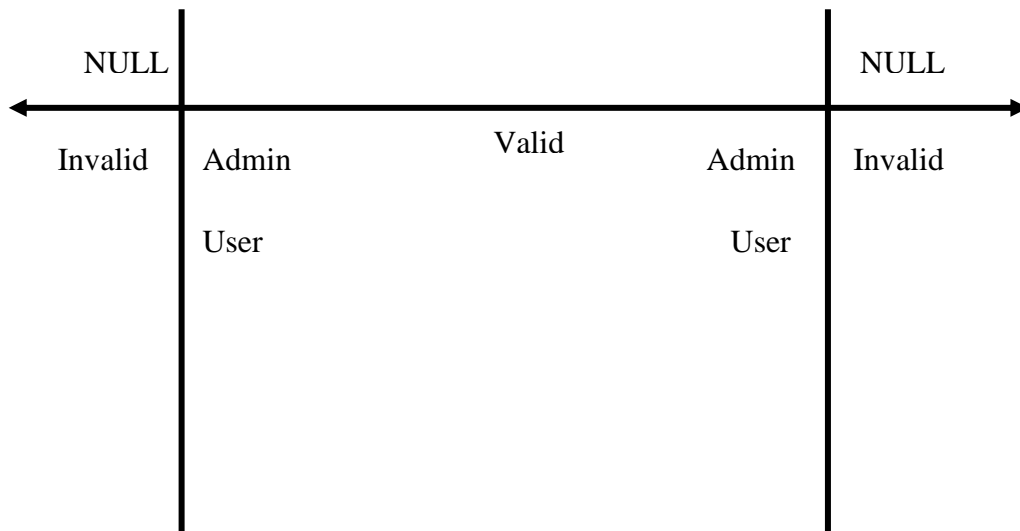
Answer:



Condition	Valid Partition	Invalid Partition	Valid Boundaries	Invalid Boundaries
If (answer! = null)	A-Z, a-z, 0-9, space	Symbols and Special Characters except space	A-Z, a-z, 0-9, space	Symbols and Special Characters, except space

table 5.2. 5 Answer validation

Type:



Condition	Valid Partition	Invalid Partition	Valid Boundaries	Invalid Boundaries
If (type != null)	Admin User		Admin User	

table 5.2. 6 User type validation

Test Case ID	Test Scenario	Test Steps	Test Data	Expected Results	Actual Results	Pass/Fail
01	Check create profile with valid inputs	1. Go to create profile 2. Enter name 3. Enter user name 4. Enter password 5. Enter confirm password 6. Select security question 7. Enter answer 8. Select type.	Name: Anonymous User name: Admin001 Password: Admin@001 Confirm Password: Admin@001 Select security question: What are the last four numbers of your mobile no.? Answer: 0000 Type: User	Prompt message “New User Added”	As expected,	Pass

02	Check create profile with invalid name	1. Go to create profile 2. Enter name 3. Enter user name 4. Enter password 5. Enter confirm password 6. Select security question 7. Enter answer 8. Select type.	Name: Anonymous 01 User name: Admin001 Password: Admin@001 Confirm Password: Admin@001 Select security question: What are the last four numbers of your mobile no.? Answer: 0000 Type: User	Prompt message “Invalid Name”	As expected,	Pass
03	Check create profile with	1. Go to create profile 2. Enter name	Name: Anonymous User name: Admin@001	Prompt error message “User	As expected,	Pass

	invalid username	3. Enter user name 4. Enter password 5. Enter confirm password 6. Select security question 7. Enter answer 8. Select type.	Password: Admin@001 Confirm Password: Admin@001 Select security question: What are the last four numbers of your mobile no.? Answer: 0000 Type: User	name not valid”		
04	Check create profile with unmatching password and confirm password	1. Go to create profile 2. Enter name 3. Enter user name 4. Enter password	Name: Anonymous User name: Admin@001 Password: Admin@001 Confirm Password: Admin001	Prompt error message “Check password again”	As expected,	Pass

		5. Enter confirm password 6. Select security question 7. Enter answer 8. Select type.	Select security question: What are the last four numbers of your mobile no.? Answer: 0000 Type: User			
05	Check create profile with invalid answer	1. Go to create profile 2. Enter name 3. Enter user name 4. Enter password 5. Enter confirm password 6. Select security question 7. Enter answer	Name: Anonymous User name: Admin@001 Password: Admin@001 Confirm Password: Admin001 Select security question: What are the last four numbers of	Prompt error message “Invalid answer”	As expected,	Pass

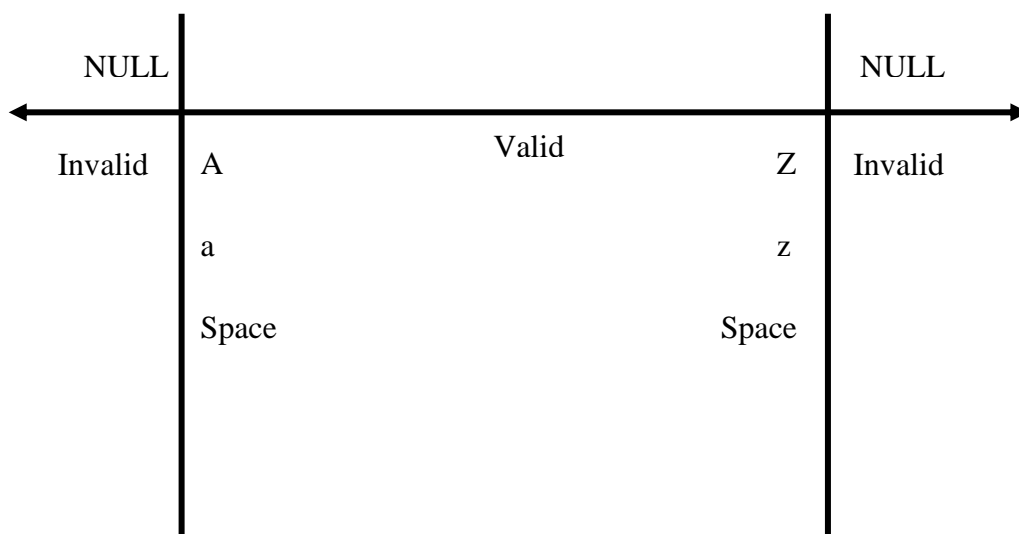
		8. Select type.	your mobile no.? Answer: 0000@# Type: User			
--	--	-----------------	---	--	--	--

table 5.2. 7 Test case for profile

5.3 Student Register

- Test ID : 03
- Tester Name : H.G.L.S. Nawarathna
- Test Type :
 - Character validations
 - Range Validations
 - Null Validation

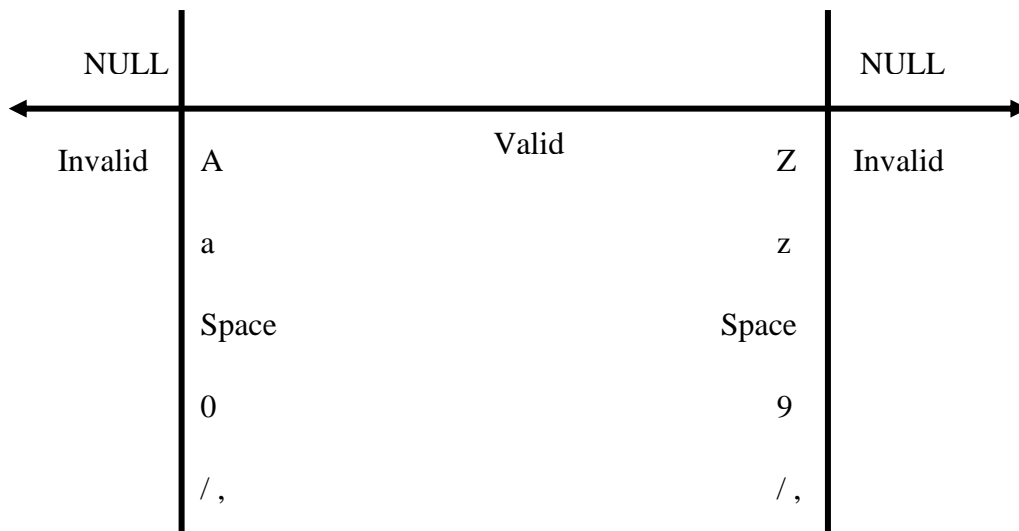
Name:



Condition	Valid Partition	Invalid Partition	Valid Boundaries	Invalid Boundaries
If (name! = null)	A-Z, a-z, Space	Symbols and Special Characters except space	A-Z, a-z	Symbols and special characters except space

table 5.3. 1 Student name validation

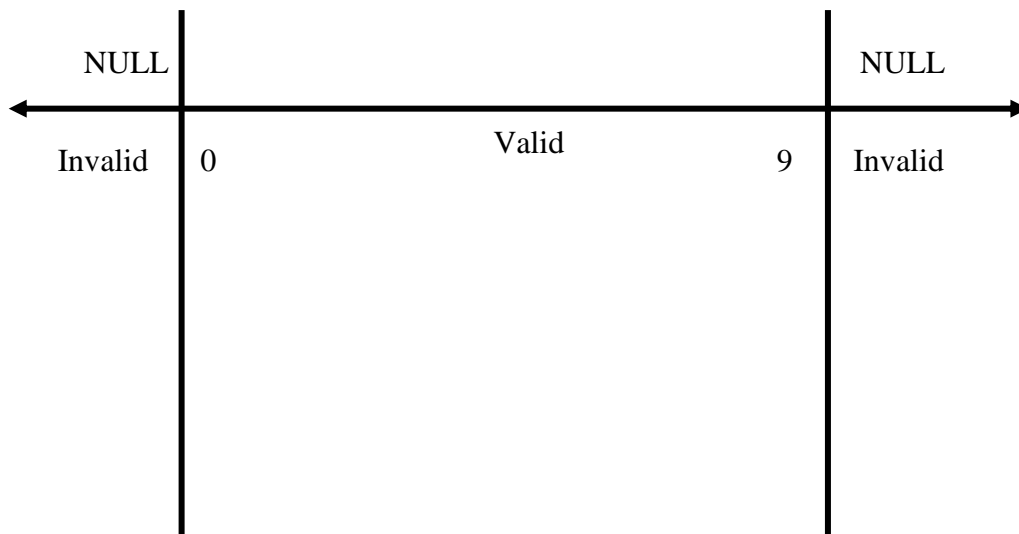
Address:



Condition	Valid Partition	Invalid Partition	Valid Boundaries	Invalid Boundaries
If (address! = null)	A-Z, a-z, 0-9, / , , Space	Symbols and Special Characters except space, / and ,	A-Z, a-z, 0-9, / , , Space	Symbols and Special Characters except space, / and ,

table 5.3. 2 Student address validation

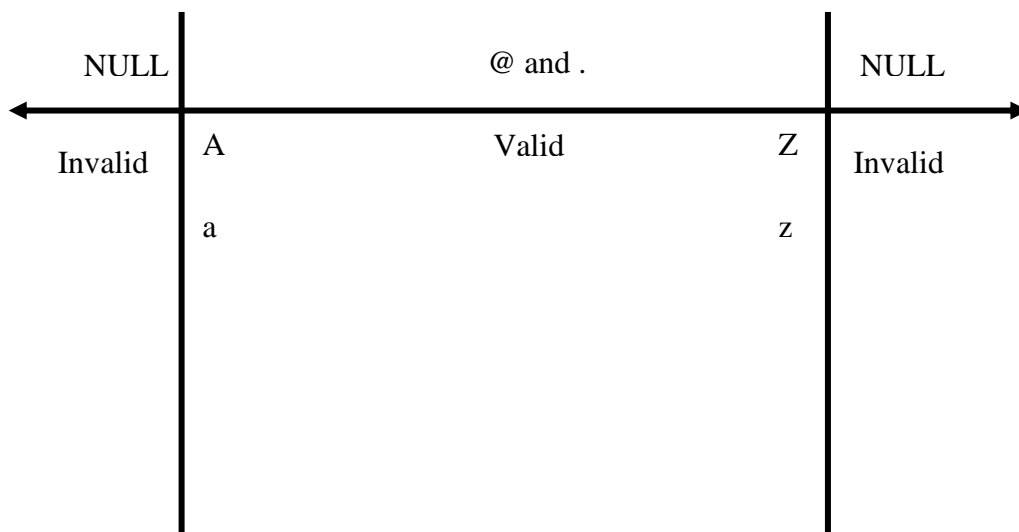
Contact Number:



Condition	Valid Partition	Invalid Partition	Valid Boundaries	Invalid Boundaries
If (contactNumber! = null)	0-9	Letters, Symbols and Special Characters	0-9	Letters, Symbols and Special Characters

table 5.3. 3 Student contact number validation

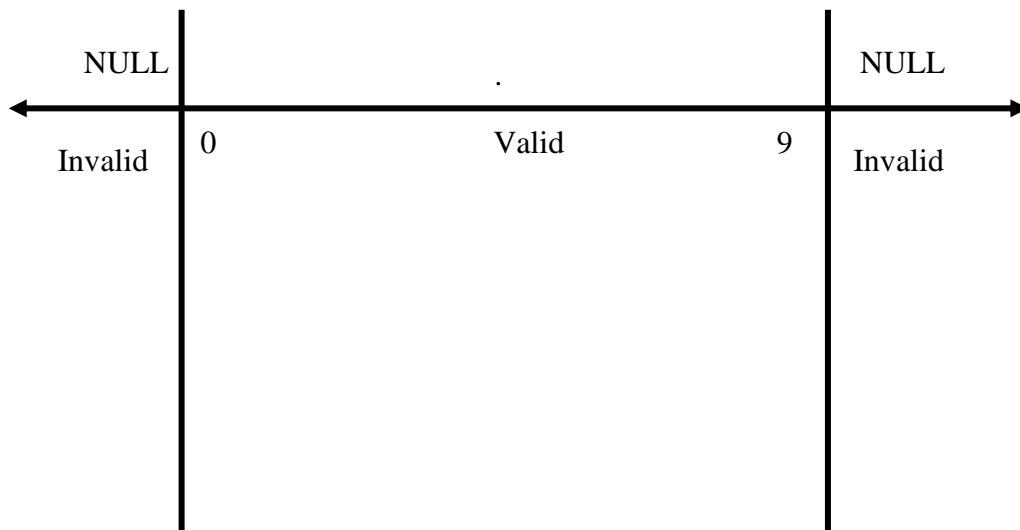
Email:



Condition	Valid Partition	Invalid Partition	Valid Boundaries	Invalid Boundaries
If (email! = null)	0-9,A-Z,a-z, @ , .	Other symbols	0-9,A-Z,a-z, @ , .	Other symbols

table 5.3. 4 Student email validation

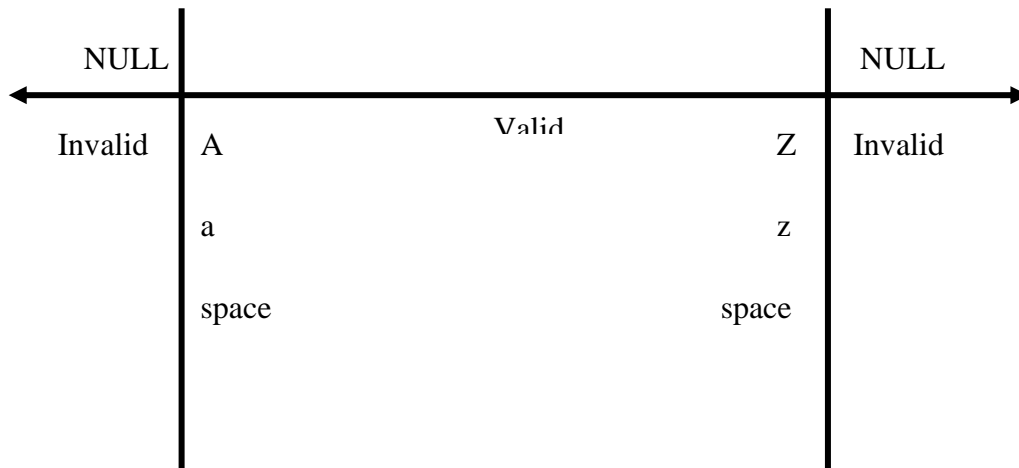
Birthday:



Condition	Valid Partition	Invalid Partition	Valid Boundaries	Invalid Boundaries
If (birthday! = null)	0-9, .	Other symbols, Letters	0-9, .	Other symbols, Letters

table 5.3. 5 Student birthday validation

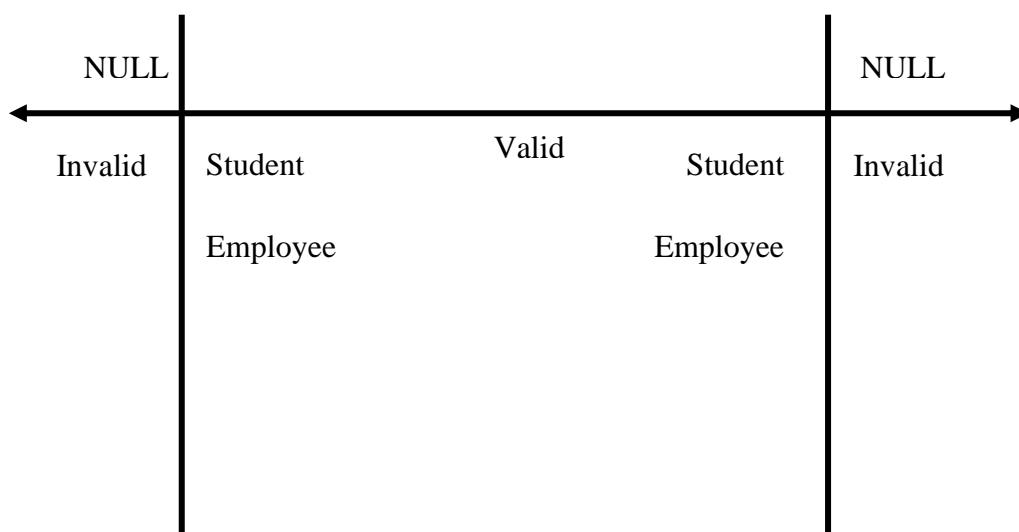
Guardian:



Condition	Valid Partition	Invalid Partition	Valid Boundaries	Invalid Boundaries
If (guardian! = null)	A-Z, a-z, Space	Symbols and Special Characters except space	A-Z, a-z	Symbols and special characters except space

table 5.3. 6 Student guardian validation

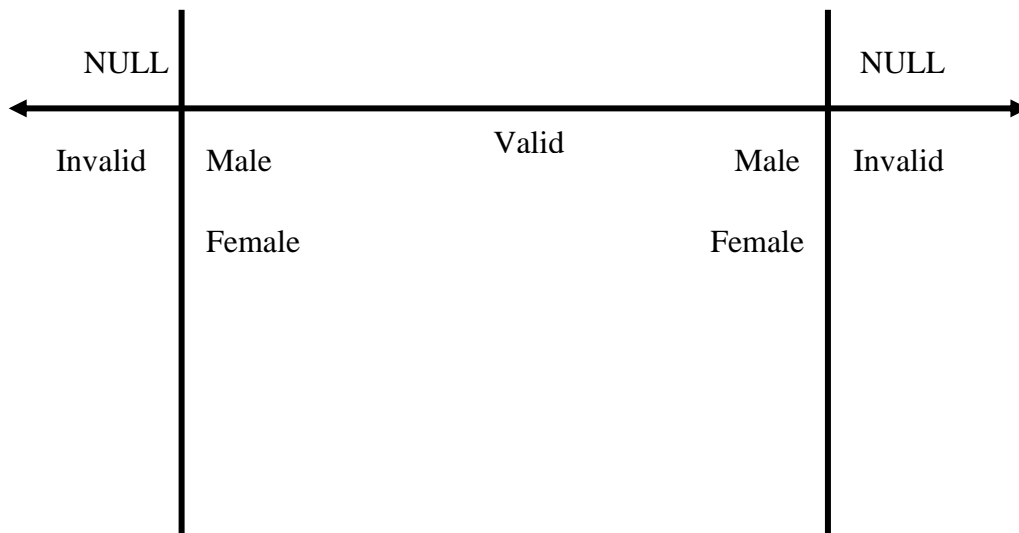
Occupation:



Condition	Valid Partition	Invalid Partition	Valid Boundaries	Invalid Boundaries
If (occupation! = null)	Student Employee	-	Student Employee	-

table 5.3. 7 Student occupation validation

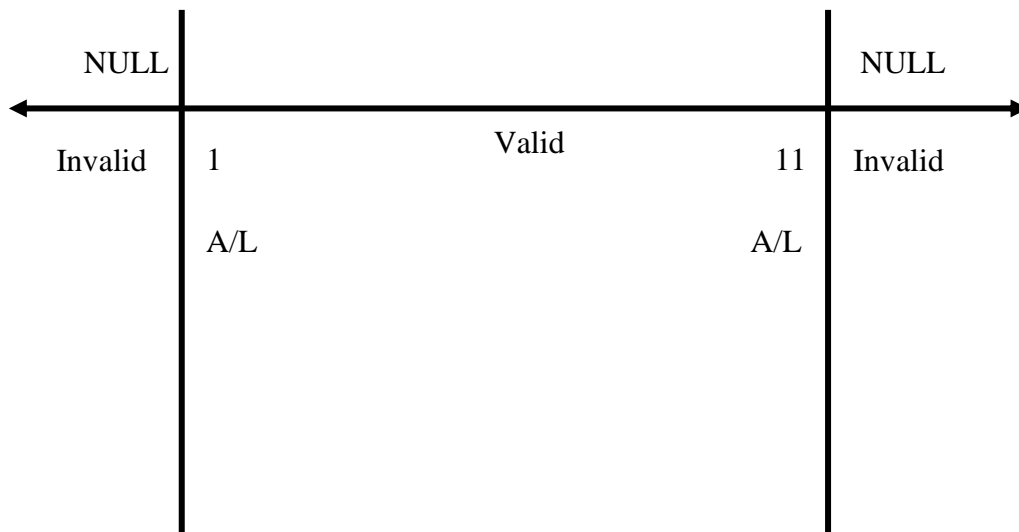
Gender:



Condition	Valid Partition	Invalid Partition	Valid Boundaries	Invalid Boundaries
If (gender! = null)	Male Female	-	Male Female	-

table 5.3. 8 Student gender validation

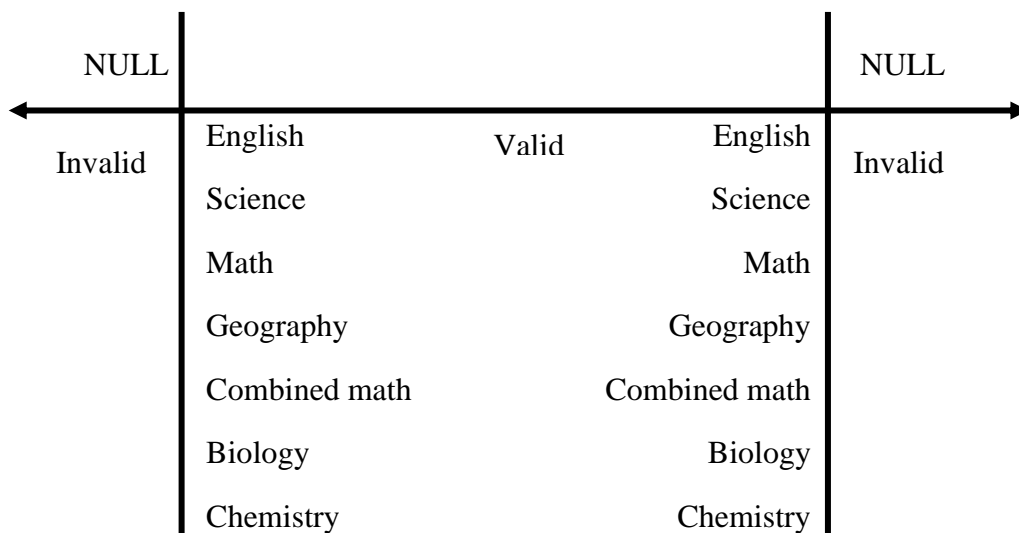
Grade:



Condition	Valid Partition	Invalid Partition	Valid Boundaries	Invalid Boundaries
If (grade! = null)	1-9, A/L	-	1-9, A-L	-

table 5.3. 9 Student grade validation

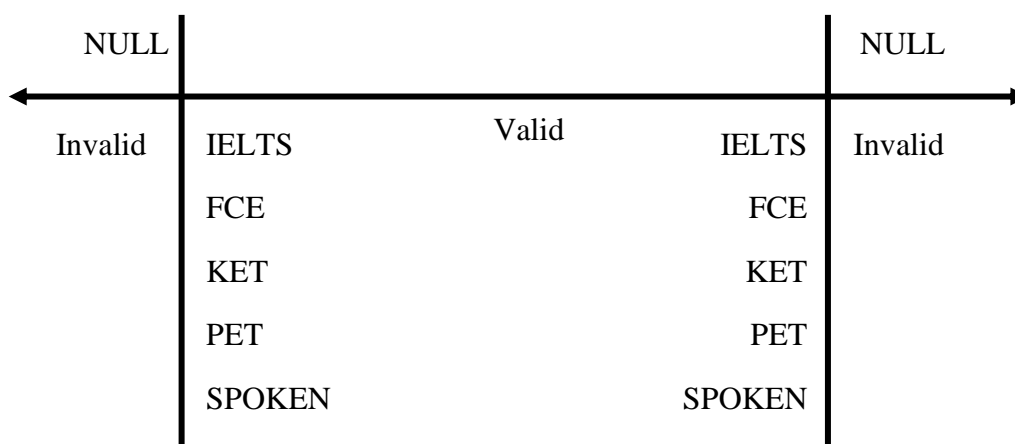
Classes:



Condition	Valid Partition	Invalid Partition	Valid Boundaries	Invalid Boundaries
If (class! = null)	English Science Math Geography Combined math Biology Chemistry	-	English Science Math Geography Combined math Biology Chemistry	-

table 5.3. 10 Student class validation

Courses:



Condition	Valid Partition	Invalid Partition	Valid Boundaries	Invalid Boundaries
If (course! = null)	IELTS FCE KET PET Spoken	-	IELTS FCE KET PET Spoken	-

table 5.3. 11 Student courses validation

Test Case ID	Test Scenario	Test Steps	Test Data	Expected Results	Actual Results	Pass/Fail
01	Student registration with valid inputs	1. Student registration 2. Enter name 3. Enter address 4. Enter contact number 5. Enter email 6. Enter birthday 7. Enter guardian 8. Select occupation 9. Select Gender 10. Select grade 11. Select classes (one or more)	Name: Sahan Anjana Address: No 20/1, 2 nd lane, Kandy Contact number: 0771234567 Email: studnet@gmail.com Birthday: 2001.01.01 Guardian: Mr. Perera Occupation: Student Gender: Male Grade: 11	Prompt message “Student added”	As expected,	Pass

		12. Select courses (one or more)	Classes: Math, English Courses: FCE			
02	Student registration with invalid name	1. Student registration 2. Enter name 3. Enter address 4. Enter contact number 5. Enter email 6. Enter birthday 7. Enter guardian 8. Select occupation 9. Select Gender	Name: Sahan1 Address: No 20/1, 2 nd lane, Kandy Contact number: 0771234567 Email: studnet@gmail.com Birthday: 2001.01.01 Guardian: Mr. Perera Occupation:	Alert “Naming is incorrect”	As expected,	Pass

		10. Select grade 11. Select classes (one or more) 12. Select courses (one or more)	Student Gender: Male Grade: 11 Classes: Math, English Courses: FCE			
03	Student registration with invalid address	1. Student registration 2. Enter name 3. Enter address 4. Enter contact number 5. Enter email 6. Enter birthday 7. Enter guardian 8. Select occupation	Name: Sahan Anjana Address: No 20/1#, Contact number: 0771234567 Email: studnet@gmail.com Birthday: 2001.01.01 Guardian: Mr. Perera	Alert “Invalid address”	As expected,	Pass

		9. Select Gender 10. Select grade 11. Select classes (one or more) 12. Select courses (one or more)	Occupation: Student Gender: Male Grade: 11 Classes: Math, English Courses: FCE			
04	Student registration with invalid contact number	1. Student registration 2. Enter name 3. Enter address 4. Enter contact number 5. Enter email 6. Enter birthday 7. Enter guardian	Name: Sahan Anjana Address: No 20/1, 2 nd lane, Kandy Contact number: 077a Email: studnet@gmail.com Birthday: 2001.01.01 Guardian:	Alert “Incorrect contact number”	As expected,	Pass

		8. Select occupation 9. Select Gender 10. Select grade 11. Select classes (one or more) 12. Select courses (one or more) 5. Enter confirm password 6. Select security question 7. Enter answer 8. Select type.	M. Perera Occupation: Student Gender: Male Grade: 11 Classes: Math, English Courses: FCE			
05	Student registration with invalid email	1. Student registration 2. Enter name 3. Enter address 4. Enter contact number	Name: Sahan Anjana Address: No 20/1, 2 nd lane, Kandy Contact number: 0771234567	Alert “Naming is incorrect”	As expected,	Pass

		5. Enter email 6. Enter birthday 7. Enter guardian 8. Select occupation 9. Select Gender 10. Select grade 11. Select classes (one or more) 12. Select courses (one or more) 5. Enter confirm password 6. Select security question 7. Enter answer 8. Select type.	Email: studnet@#m Birthday: 2001.01.01 Guardian: M. Perera Occupation: Student Gender: Male Grade: 11 Classes: Math, English Courses: FCE			
06	Student registration	1. Student registration	Name: Sahan1	Alert “Incorrect	As expected,	Pass

	with invalid birthday	2. Enter name 3. Enter address 4. Enter contact number 5. Enter email 6. Enter birthday 7. Enter guardian 8. Select occupation 9. Select Gender 10. Select grade 11. Select classes (one or more) 12. Select courses (one or more) 5. Enter confirm password 6. Select security question 7. Enter answer	Address: No 20/1#, Contact number: 077123456 Email: studnet@gmail.co m Birthday: 20013.01.01 Guardian: M. Perera Occupation: Student Gender: Male Grade: 11 Classes: Math, English Courses: FCE	birthday format”		
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		8. Select type.				
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table 5.3. 12 student Test Case

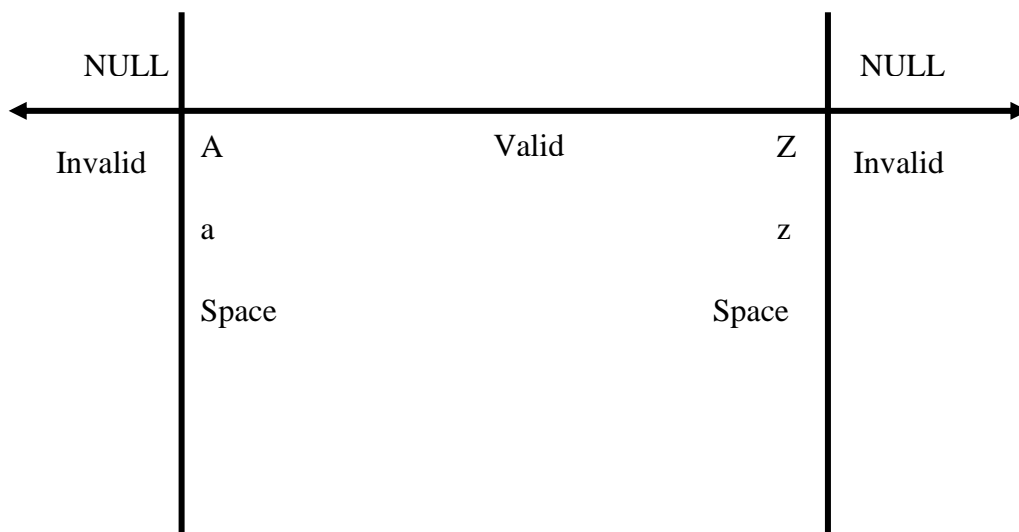
5.4 Add Staff Member

- Test ID: 04
- Tester Name: H A E I Jayawardhana
- Test type:
 - NULL validations
 - Character validations
 - Range validations

StaffID:

- Staff member ID cannot insert manually. It is generated by the Database automatically with auto increment function.

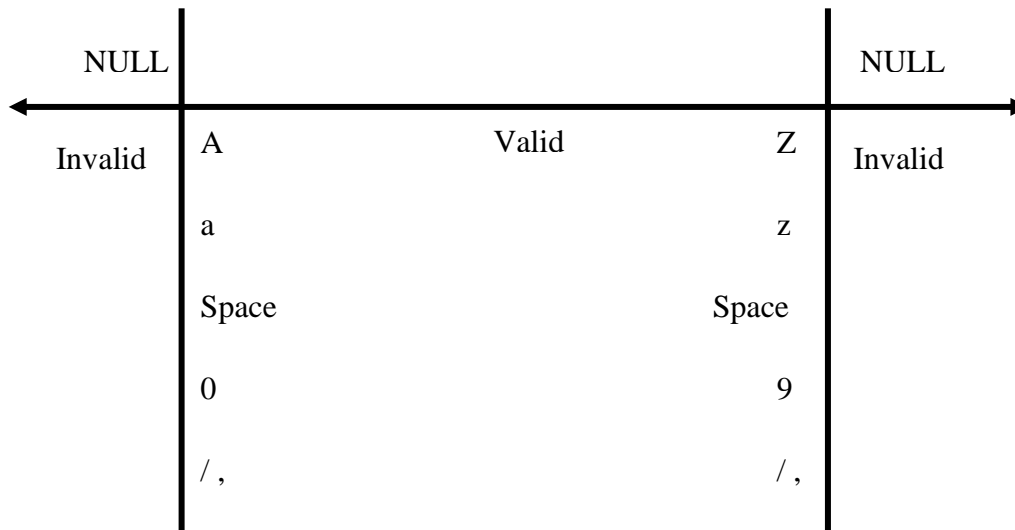
Name:



Condition	Valid partition	Invalid partition	Valid boundaries	Invalid boundaries
If(name != null)	A-Z, a-z	Null, numbers, symbols	A-Z, a-z	Null, numbers, symbols

table 5.4. 1 Staff name validation

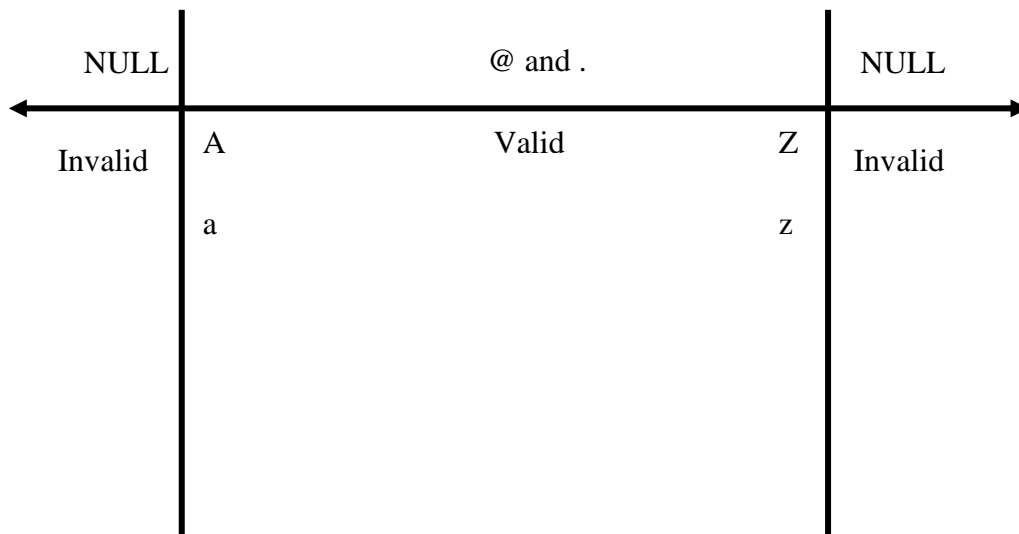
Address:



Condition	Valid partition	Invalid partition	Valid boundaries	Invalid boundaries
If(address!= null)	A-Z, a-z, 0-9, /, space, ,	Symbols and Special Characters except space,/ and ,	A-Z, a-z, 0-9, /, space, ,	Symbols and Special Characters except space,/ and ,

table 5.4. 2 Staff address validation

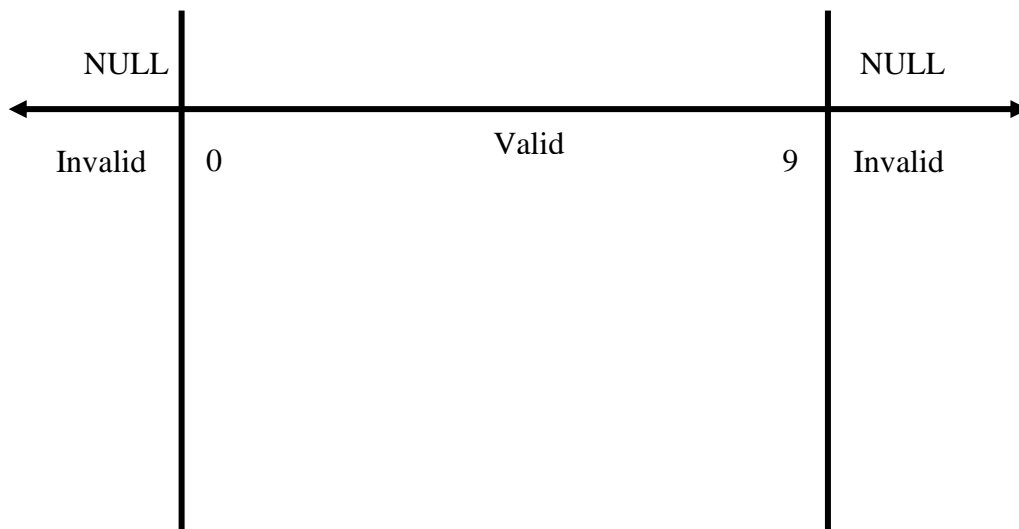
Email:



Condition	Valid Partition	Invalid Partition	Valid Boundaries	Invalid Boundaries
If (email! = null)	0-9,A-Z,a-z, @ , .	Other symbols	0-9,A-Z,a-z, @ , .	Other symbols

table 5.4. 3 Staff email validation

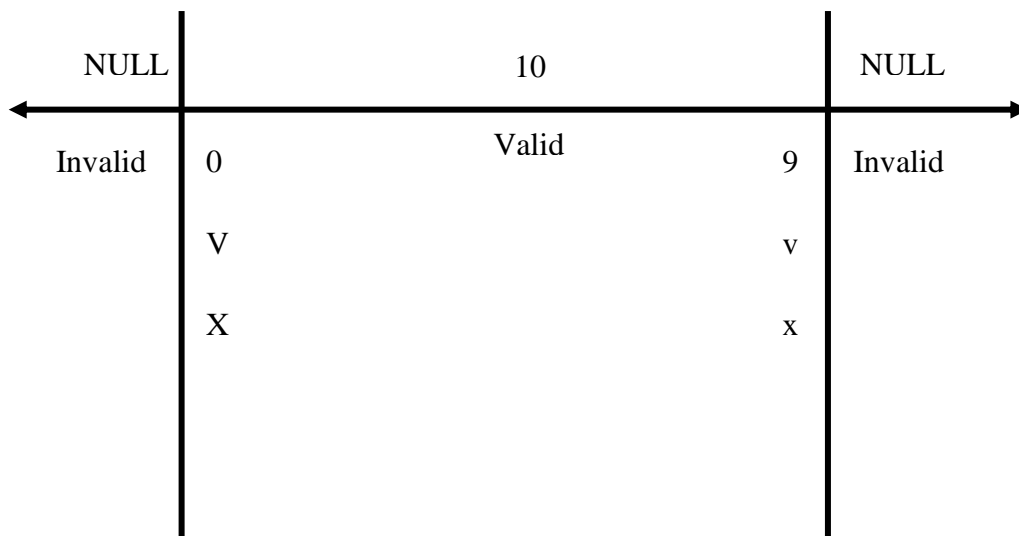
Contact:



Condition	Valid Partition	Invalid Partition	Valid Boundaries	Invalid Boundaries
If (contactNumber! = null)	0-9	Letters, Symbols and Special Characters	0-9	Letters, Symbols and Special Characters

table 5.4. 4 Staff contact validation

NIC:



Condition	Valid partition	Invalid partition	Valid boundaries	Invalid boundaries
If(nic != null)	0-9, V,v, X,x	Null, letters except V & x, symbols	0-9, V,v, X,x	Null, letters except V & x, symbols

table 5.4. 5 Staff NIC validation

Type:

- Need to select the type of the staff member.
- If type is Academic, need to select Grade and Subject.

Grade:

- If the member type is Academic, need to select the grade of the staff member teaches.

Subject:

- If the member type is Academic, need to select the Subject of the staff member.

Test case ID	Test case scenario	Test steps	Test data	Expected results	Actual result	Pass / Fail
01	Add new staff member with Null data fields	1. select staff menu 2.fill some fields and keep some fields empty 3. select add button	Name not filled Address not filled Email not filled Contact number not filled NIC not filled	Display Error message "Please Fill the remaining details"	As Expected	Pass

02	Add new Staff member with invalid data	1. select staff menu 2. fill fields with some invalid data 3. select save button	Name not filled Address not filled Email: sample#.com contact: 0711234567q NIC: A14658647V	Display Error message “Please Fill the remaining details” “Please Fill the remaining details” "Invalid email Address!! Please enter a valid email address." "Invalid Phone number!! Please enter a valid Phone Number." "Invalid NIC number!! Please enter a valid NIC."	As Expected	Pass
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03	Add new Staff member with valid data	1. select staff menu 2. fill fields with valid data 3.select save button	Name: Mr.Kapila Ransinghe Address: F60,Government flats, Colombo 03 Email: kapila89@gmail.com Contact: 0711234567 NIC: 891458864V Type: Academic Grade: A/L Subject: Math	Add user to the System "Staff member added!"	As Expected	Pass
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table 5.4. 6 Staff test case

5.5 Add Class

- Test ID: 05
- Tester Name: Y M L D K Yapa.
- Test Type:
 - Null Validation.

Class No & Class Id:

- These fields are auto generated by the database

Subject name:

- Subjects should select by the admin or the receptionist when adding new Class to the system.

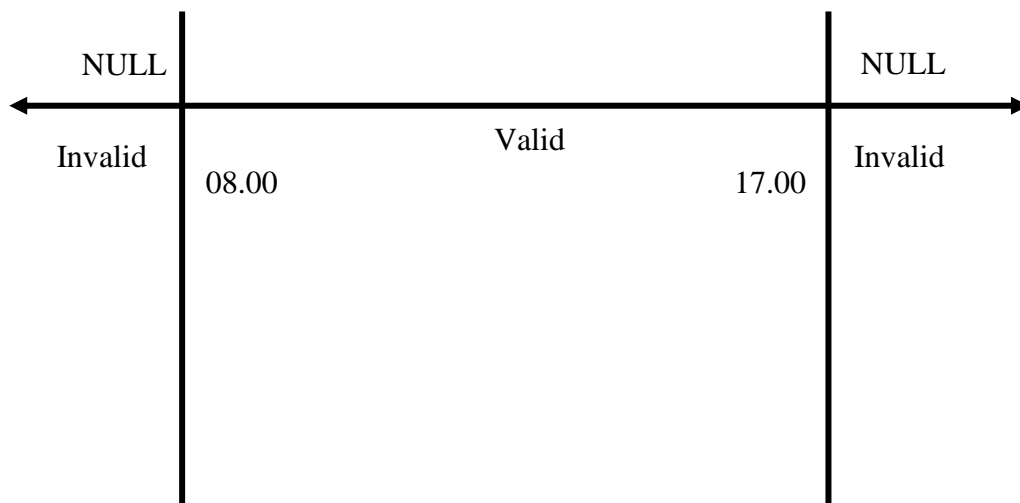
Grade:

- Grade also should be selected when adding a new Class.

Hall:

- Class hall should be selected when adding new class

Time:



Condition	Valid partition	Invalid partition	Valid boundaries	Invalid boundaries
If(time != null)	08.00-17.00	Null, letters, symbols	08.00-17.00	Null, letters, symbols

table 5.5. 1 Class time validation

Day:

- Day should be selected when adding the class

Teacher:

- Teacher should be selected when adding the class

Test Case ID	Test Scenario	Test Steps	Test Data	Expected Results	Actual Results	Pass/Fail
01	Add Class with correct data	1. Go to Class Tab. 2. Now enter the correct Data in the related swing controls.	Subject= Math Grade = 11 Hall = Hall 03 Time = 13.00-16.00 Day = Sunday	Class details added successfully	As expected,	Pass

		3. After entering data click the add button.	Teacher= Miss. Nimali			
02	Add the Class with null fields	1. Go to Class Tab. 2. Now enter the correct Data in the related swing controls. 3. After entering data click the add button.	ClassId(cannot type, its auto generated) Subject = null Grade = 11 Hall = Hall 03 Time = null Day = Sunday Teacher = Mr. Saman Kumara	Display error message	As expected	Pass

table 5.5. 2 Class test case

5.6 New Course

- Test ID: 06
- Tester Name: Y M L D K Yapa.
- Test Type:
 - Null Validation.
 - Check is selected

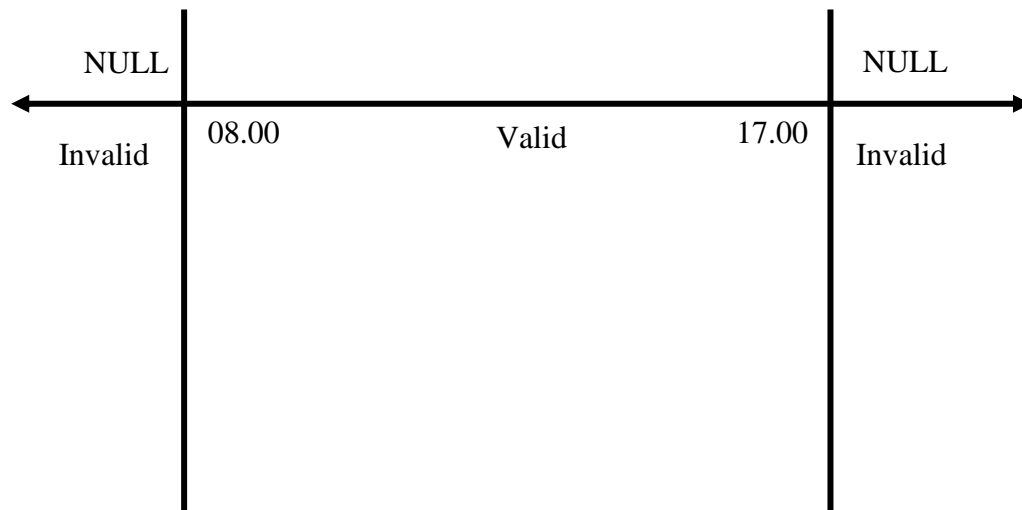
Course No & Course Id:

- These values are generated automatically. Cannot add manually.

Hall:

- Class hall should be selected when adding new class

Time:



Condition	Valid partition	Invalid partition	Valid boundaries	Invalid boundaries
If(time != null)	08.00-17.00	Null, letters, symbols	08.00-17.00	Null, letters, symbols

table 5.6. 1 New course time validation

Day:

- Day should be selected when adding the class

Teacher:

- Teacher should be selected when adding the class

Courses:

- Courses should select when adding the course.

Test Case ID	Test Scenario	Test Steps	Test Data	Expected Results	Actual Results	Pass/Fail
01	Add Course with correct data	1. Go to Class Tab. 2. Now enter the correct Data in the related swing controls. 3. After entering data click the add button.	ClassId(cannot type, its auto generated) Hall = Hall 02 Time = 13.00-15.00 Day = Wednesday Teacher = Mr. Saman Bandara Course = IELTS	Course added successfully	As expected	Pass

02	Add the Course with null fields	1. Go to Class Tab. 2. Now enter the correct Data in the related swing controls. 3. After entering data click the add button	ClassId(cannot type, its auto generated) Hall = Hall 02 Time = 13.00 – 15.00 Day = Wednesday Teacher = Mr. Kumara Course = IELTS	Display error message	As expected,	Pass

table 5.6. 2 Course test case

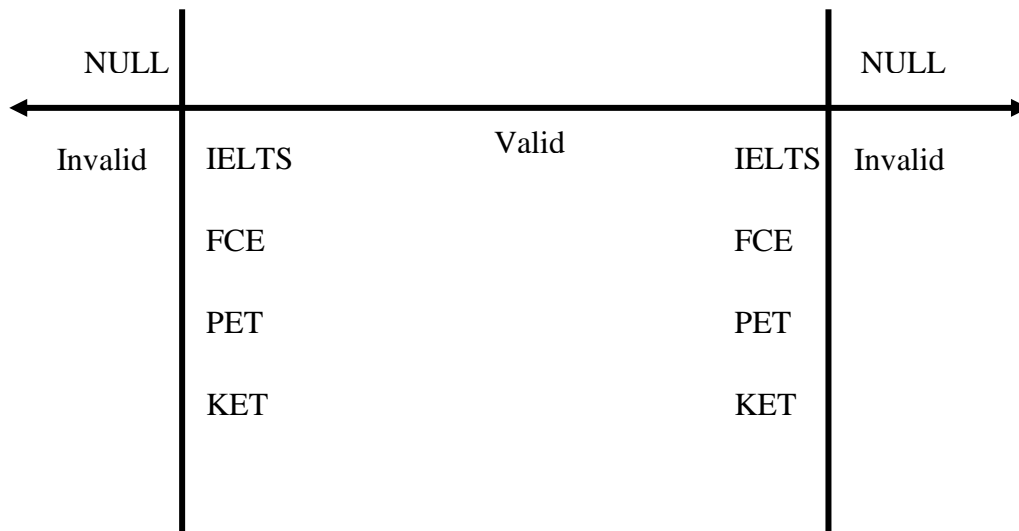
5.7 Add an Exam

- Test ID: 07
- Tester Name: N.M.V.S.Nawarathana
- Test Types:
 - Null Validation

Exam ID:

- Exam ID is Auto incrementable.

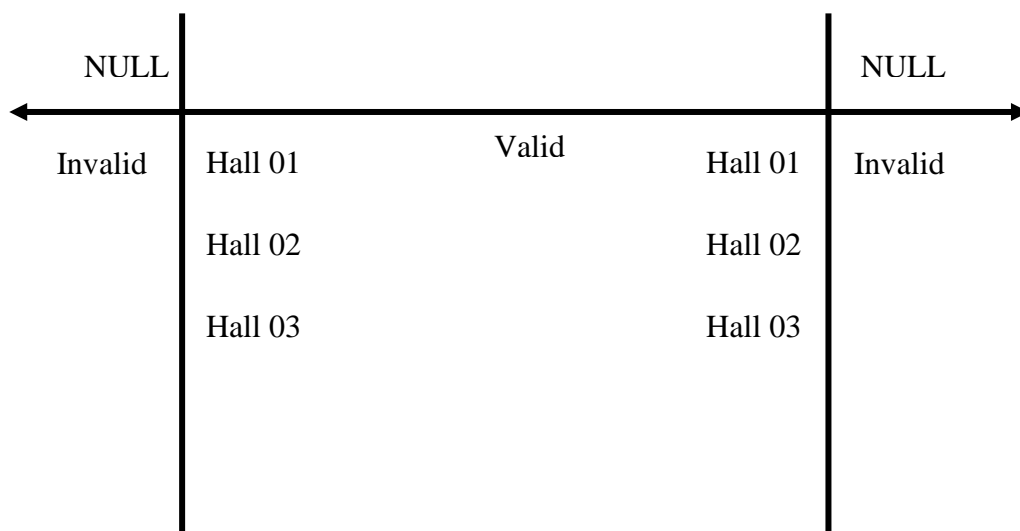
Exam type:



Condition	Valid Partition	Invalid Partition	Valid Boundaries	Invalid Boundaries
If(Type!=null)	IELTS FCE PET KET	Null	IELTS FCE PET KET	Null

table 5.7 1 Exam type validation

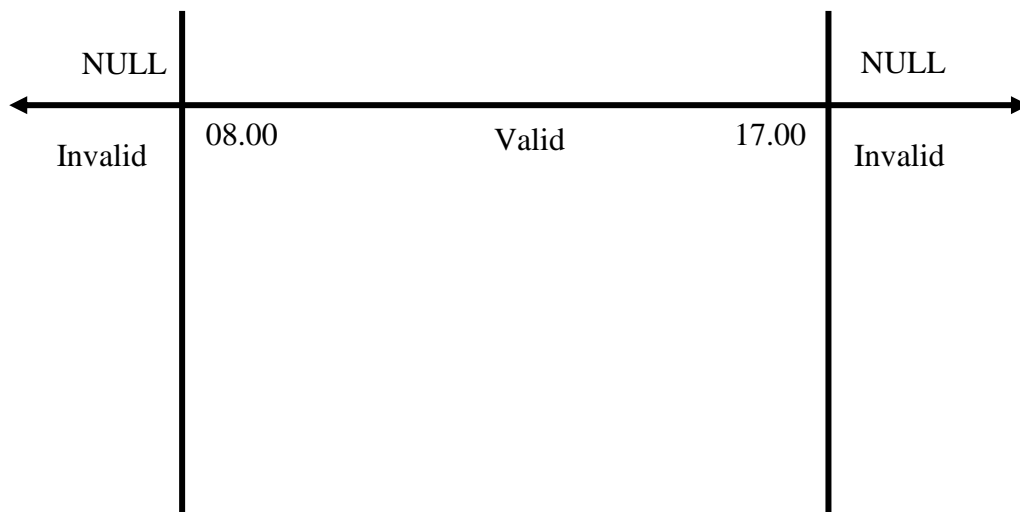
Exam Hall:



Condition	Valid Partition	Invalid Partition	Valid Boundaries	Invalid Boundaries
If(Hall!=null)	Hall 01 Hall 02 Hall 03	Null	Hall 01 Hall 02 Hall 03	Null

table 5.7 2 Exam hall validation

Time:



Condition	Valid partition	Invalid partition	Valid boundaries	Invalid boundaries
If(time != null)	08.00-17.00	Null, letters, symbols	08.00-17.00	Null, letters, symbols

table 5.7 3 Exam time validation

Test Case ID	Test Scenario	Test Steps	Test Data	Expected Results	Actual Results	Pass/Fail
01	Add Correct Exam Data	1. Go to Exam Tab. 2. Select the Add radio button 3. Now enter the correct Data. 4. After entering data click the add button.	ExamId(cannot type, its auto generated) Type = IELTS Hall = Hall 01 Time = 10.30 A.M Date = 2020-11-21	Exam Added Successfully	As expected,	Pass
02	Add the Exam with null fields	1. Go to Exam Tab. 2. Select the Add radio button 3. Now enter the correct Data. 4. After entering data	ExamId(cannot type, its auto generated) Type = null Hall = null Time = 10.30 A.M Date = 2020-11-21	Please Select Correct Value	As expected,	Pass

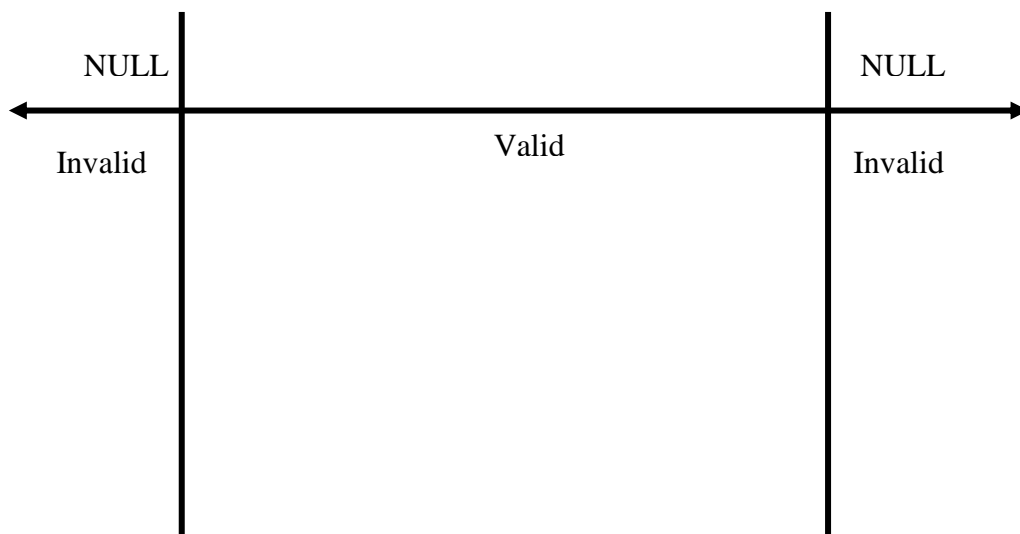
		click the add button.				
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table 5.7 4 Exam test case

5.8 Document

- Test ID: 08
- Tester Name: N.M.V.S.Nawarathana
- Test Types:
 - Null Validation

File Location:



Condition	Valid Partition	Invalid Partition	Valid Boundaries	Invalid Boundaries
If(path.isEmpty())	Valid Path	Null	Valid Path	Null

table 5.8. 1 Document file location validation

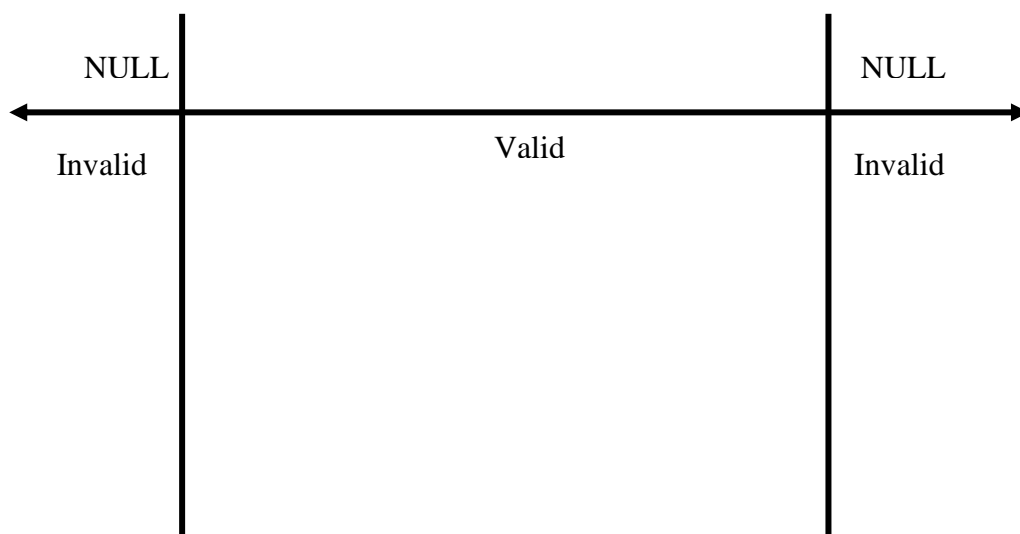
Test Case ID	Test Scenario	Test Steps	Test Data	Expected Results	Actual Results	Pass/Fail
01	Add Correct Document.	1. Go to Document Tab. 2. Select the Select radio button 3. Now select correct document. 4. After Selecting correct document click the Save button.	Exam.pdf	Path Added	As expected,	Pass
02	Add the Document with null fields.	1. Go to Document Tab. 2. Select the Select radio button 3. Now select correct document.	null	Please Select Correct path.	As expected,	Pass

		4. After Selecting correct document click the Save button.				
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table 5.8. 2 Document test case

Open Document

- Test ID: 09
- Tester Name: N.M.V.S.Nawarathana
- Test Types:
 - Null Validation



Condition	Valid Partition	Invalid Partition	Valid Boundaries	Invalid Boundaries
If(path.isEmpty())	Valid Path	Null	Valid Path	Null

table 5.8. 3 Document open validation

Test Case ID	Test Scenario	Test Steps	Test Data	Expected Results	Actual Results	Pass/Fail
01	Open Added Document.	. 1. Go to Document Tab. . 2. Go to Document table and select the related row. . 2. Select the Open radio button	Exam.pdf	Exam.pdf opened.	As expected,	Pass
02	Open null fields.	. 1. Go to Document Tab. . 2. Go to Document table and select the	null	File is not Exit.	As expected ,	Pass

		related row. 2. Select the Open radio button				
--	--	---	--	--	--	--

table 5.8. 4 Document open test case

5.9 Transaction

- Test ID: 10
- Tester Name: Y M L D K Yapa.
- Test Type:
 - Validate the Insert Data
 - Null Validation

Test Case	Test Scenario	Test Step	Test Data	Expected Result	Actual Result	Pas/ Fail
01	Check Student Profile and generate the receipt with Valid Data.	1.Goto Transaction Tab. 2.Select the Student from Student table	Transaction ID = auto Student ID = when the click student table Receipt Id = auto Student Name = when the click student table Guardian Name = when the click student table	After the click Generate Receipt generate Receipt id and Receipt in txt area.	generated	Pass

		3.Fil Other text field for the generate bill (Receipt Id is auto generated 4. After Click Generate receipt button	Fee Amount = 6000/= Month = December Description = Class Fee Student E-mail = StudnetName12@gmail.c om Student Grade = 8 Student Subject = Maths			
--	--	---	---	--	--	--

table 5.9. 1 Transaction test case

Print receipt:

- Test ID: 11
- Tester Name: Y M L D K Yapa

Test Case	Test Scenario	Test Step	Test Data	Expected Result	Actual Result	Pas/ Fail
01	Print Receipt.	Go to Transac tion Tab. Select the Student	Transaction ID = auto Student ID = when the click student table Receipt Id = auto	Show about printing preview Message	Show massag e	Pass

		from Student table Fil Other text field for the generat e bill (Receip t Id is auto generat ed After Click Generat e receipt button Click Add Button 8click print Button	Student Name = when the click student table Guardian Name = when the click student table Fee Amount = 5000/=			
			Month = null Description = null Student E-mail = StudnetName12@gmail.c om Student Grade = A/L Student Subject = Maths			

table 5.9. 2 Transaction print receipt test case

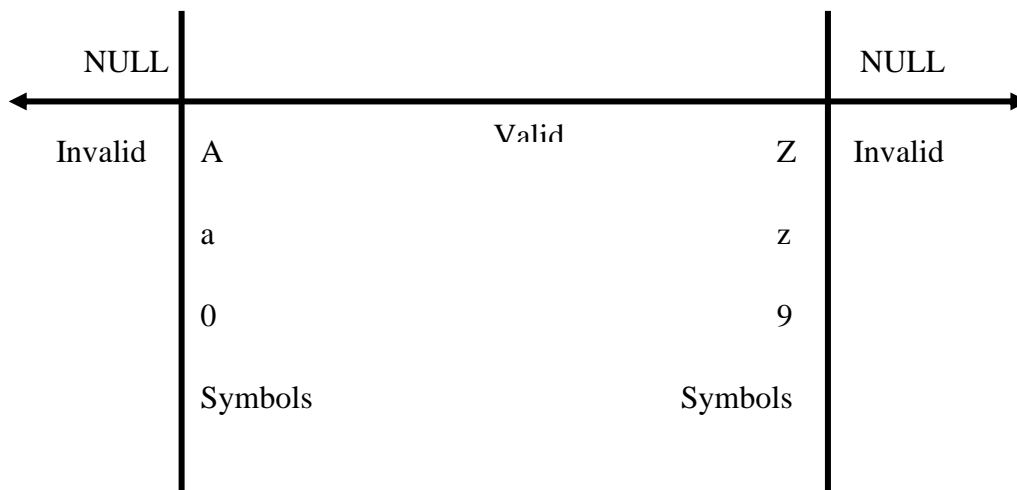
5.10 Send Announcement

- Test ID: 01
- Tester Name: H A E I Jayawardhana
- Test type:
 - Null validations

Receivers:

- Receivers of the mail can be selected by class wise or to all.
- After selecting checkboxes, by clicking ‘Select receivers’ button system will fill the receiver’s area.

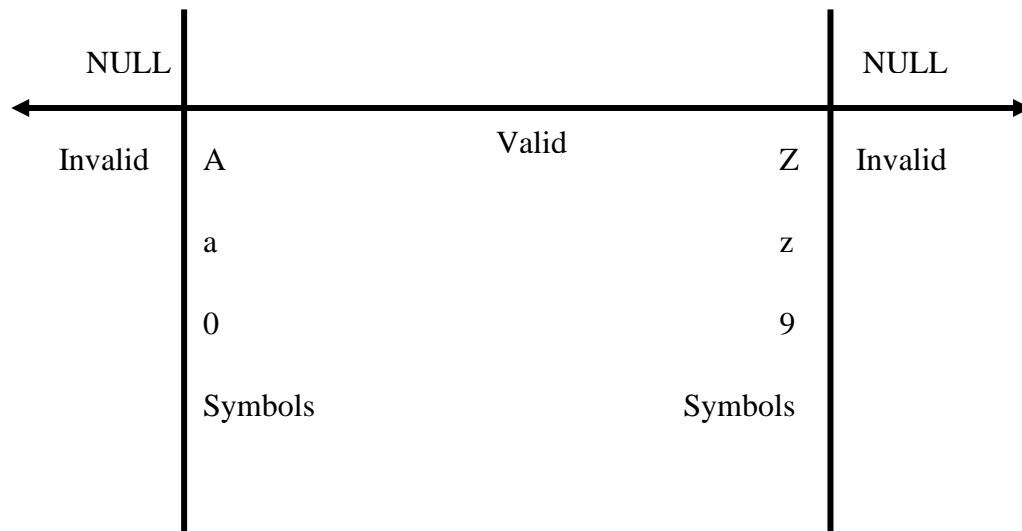
Subject:



Condition	Valid partition	Invalid partition	Valid boundaries	Invalid boundaries
If(subject!=null)	A-Z,a-z,0-9,symbols	Null	A-Z, a-z, 0-9 ,symbols	Null

table 5.10. 1 Announcement subject validation

Message:



Condition	Valid partition	Invalid partition	Valid boundaries	Invalid boundaries
If(subject!=null)	A-Z,a-z,0-9,symbols	Null	A-Z, a-z, 0-9 ,symbols	Null

table 5.10. 2 Announcement message validation

Test case ID	Test case scenario	Test steps	Test data	Expected results	Actual result	Pass / Fail
01	Send Email with null values	1.go to announcement menu		Display an error message	As expect	Pass

		2.click 'send' button	Receivers not added Subject not filled Message is empty	"Please select receivers" "Please enter the Subject" "Mail body is Empty!"		
02	Send email with Valid values	1.go to announcement menu 2.select receivers 3.enter a subject 4.enter message body 5.click 'send' button	Receivers: test@test.com subject: test message: test mail	Email sends with Gmail "Email sent successfully"	As expect	Pass

table 5.10. 3 Announcement test case

6 Future Enhancement

Marking attendance manually is a time-consuming process using the provided interface in the system. As a solution for that, we are planning to add function like taking attendance with fingerprints or barcode reader. There is no access for student to this system. In future we have planned to allow the students to access the documents section and it should be implemented as a web-based platform for convenient use. Also, in future versions, more secure structure for the system will be provided because this contains personal and financial data.

7 Summary and Discussion

Our main goal of this project was to build a computer-based management system which requested from our client Cambridge English Language School. This is a solution for problems in their current manual paper-based system.

We submitted our proposal on 27th July 2020. After got approve for the project we started implementing of the system. We held several meetings with Ms. Lakna Gammedda who was appointed by our lecturer in charge Mr. Roshan Jayawardana to get better idea about this project. After holding several meetings with our client, we could get better idea about their requirements. First of all, we tried to build completed prototype and it also succeeded.

After 12 weeks of working, we could finish our system as we proposed. This will be the fully completed solution for the problem of the client and this system consists all the requirements of the client.

8 References

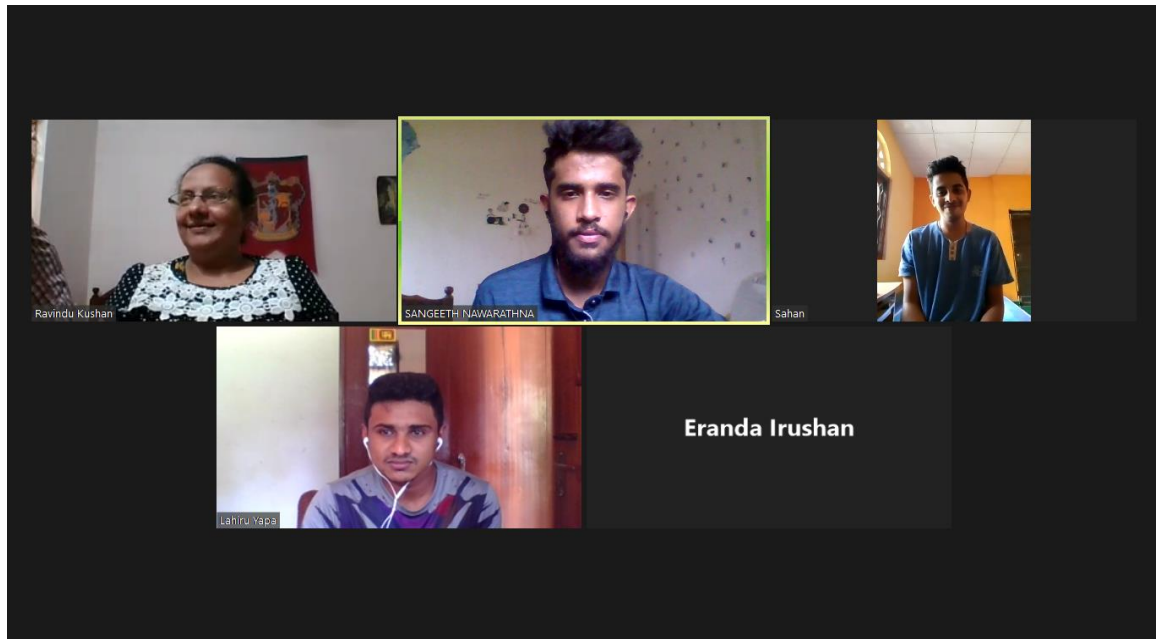
[1 B. H. W. R. M. R. Alan Dennis, System Analysis and Design, Wiley, 2014.

]

[2 "w3schools," [Online]. Available: <https://www.w3schools.in/dbms/database->

] environment/#:~:text=A%20database%20environment%20is%20a,database%2C%20and
%20the%20data%20also..

Appendix A



appendix A 1

Appendix B



Cambridge English Language School

561/64

1'st Pola lane
New bus stand
Anuradhapura

July 27, 2020

Sangeeth Nawarathna,
Galwala road
Mailagas junction
Anuradhapura

Dear Mr.Sangeeth Nawarathna,

The requirements that institute expect from the system

Our institute is using Manuel system at the moment but the team noticed so many issues in our current manual system. We are really satisfied with their request for establishing a new computer based system which will help us to overcome the current issues as well as the future probable circumstances.

At the moment, there are around 500 students , 10 lectures and 3 staff members and a principal.We conduct classes, which are charged monthly, for English medium from grade 6 to A/L's and English language classes for grade 1 to A/L's students.

Furthermore, we provide University Cambridge assessment examination courses and IELTS for both adults and students. The payments are carried out course fees for them.

In addition, we are an authorized exam registration and training centre for Cambridge assessment examination and also IELTS exam registration centre for British council so we do exam registrations of outsiders as well.

The salaries for the staff and lecturers are calculate and paid by the finance section. Salaries are being paid monthly.

For more information feel free to contact me.

Your sincerely,

A handwritten signature in black ink, appearing to read 'S.C. Dilrukshi', written over a light blue horizontal line.

S.C.Dilrukshi
The principal,
Cambridge English Language School

appendix B 1

Appendix C

Cambridge English Language School 561/6, 1st Pole Lane, New Bus Stand, Anuradhapura.
025-2223729, 077-7892631

FCE/ CAE COURSE DECLARATION

You are offered the FCE / CAE Course in our institute. It is important that you read and accept the Course term and conditions when you register for the course. The terms and conditions contain important information, including details of:

- Course Category
- Duration of the Course
- The Payment Schedule
- Practical Schedule
- Language Class Schedule

When you sign the declaration in the application form you are confirming that you have read and understood the COURSE terms and conditions and agree to abide by them.

- DURATION : 6 MONTHS PERIOD
- COURSE FEE : FCE - RS.20,000/- CAE - RS.30,000/-
- REGISTER FEE : RS.1,000/-
- CLASSES :
 - GRAMMER CLASS ONCE IN A WEEK (2 HOURS)
 - LANGUAGE PRACTICAL SESSIONS UNLIMITED
 - SPEAKING TRAINING FREE
 - FREE CORRECTION AND DISCUSSION OF WRITING
 - FREE LIBRARY FACILITIES
- COURSE FEE CAN BE PAID IN 3 INSTALLMENTS

FCE PAYMENTS	CAE PAYMENTS
1 st PAYMENT - RS.12,000/- WITHIN TWO WEEKS	RS. 10,000/- WITHIN TWO WEEKS
2 nd PAYMENT - RS. 5,000/- WITHIN TWO MONTHS	RS. 10,000/- WITHIN TWO MONTHS
3 rd PAYMENT - RS. 5,000/- WITHIN THREE MONTHS	RS. 10,000/- WITHIN THREE MONTHS

1. NAME : _____

2. ADDRESS : _____

3. CONTACT NO : _____

4. OCCUPATION : _____

COURSE FEE IS NOT REFUNDABLE FOR ANY REASON.

I AM AGREEABLE TO THE ABOVE TERMS AND CONDITIONS.

APPLICANT SIGNATURE _____ DATE _____

Cambridge English Language School 561/6, 1st Pole Lane, New Bus Stand, Anuradhapura.
025-2223729, 077-7892631

IELTS COURSE DECLARATION

You are offered the IELTS Course in our institute. It is important that you read and accept the IELTS Course terms and conditions when you register for the course. You also receive the terms and conditions with this form. The terms and conditions contain important information, including details of:

- IELTS Course Category
- Duration of the Course
- The Payment Schedule
- IELTS Practical Schedule
- Language Class Schedule

When you sign the declaration in the application form you are confirming that you have read and understood the IELTS test terms and conditions and agree to abide by them.

SECOND CATEGORY (IELTS LECTURES ON TEACHER'S APPOINTMENT)

- DURATION : 3 MONTHS
- COURSE FEE : RS.25,000/-
- REGISTER FEE : RS.1,000/-
- CLASSES :
 - GRAMMER CLASS MORE THAN TWO HOURS IN A WEEK
 - LANGUAGE PRACTICAL SESSIONS UNLIMITED
 - IELTS TRAINING 24 HOURS
 - SPEAKING TRAINING FREE
 - FREE CORRECTION AND DISCUSSION OF WRITING
 - FREE LIBRARY FACILITIES
- FULL COURSE FEE SHOULD BE PAID WITH REGISTER FEE
- IF YOU FEEL LIKE TO LEARN ENGLISH LANGUAGE FROM THE BEGINNING YOU ARE SUPPOSED TO PAY RS.10,000/- IN ADDITION TO COURSE FEE.

1. NAME : _____

2. ADDRESS : _____

3. CONTACT NO : _____

4. OCCUPATION : _____

COURSE FEE IS NOT REFUNDABLE FOR ANY REASON.

I AM AGREEABLE TO THE ABOVE TERMS AND CONDITIONS.

APPLICANT SIGNATURE _____ DATE _____

appendix C 1