Group Assignment

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1- ACKNOWLEGEMENT

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We would also like to extend our gratitude to Asia Pacific University (APU), for providing the information required in completing the project and also the opportunity for us to understand Software Development course better.

2- ABSTRACT

This project is “Dyscalculia Games” which is an online math learning platform that provides various math games for users suffering from dyscalculia to aid their treatment.

The website is developed using programming language PHP in both front end and back end aspect. Dyscalculia which is a learning disability that hinders an individual’s ability to solve or make sense of mathematics, this negatively affects the ability to count numbers, perform basic addition, subtraction, memorizing tables, and others. Like others learning disability, dyscalculia is not treated by medication but rather by effective learning strategies to help children suffering from dyscalculia in approaching math confidently. One of the best learning strategies to treat dyscalculia is by playing math games, it involves a fun and relaxing environment of kids to practice their math skills which keeps them engaged to learn (Frye, 2018).

The users the website intend to target is children aged 5-6 who are suffering from dyscalculia. The website contains various math games covering basic operations (addition, subtraction, etc.), it will store user’s score as well for score tracking purpose and a high score system.

TABLE OF CONTENTS

1- ACKNOWLEGEMENT 2
2- ABSTRACT 3
3- INTRODUCTION 7
3.1- Project Background 7
3.2- Problem Context 8
3.3- Proposed Solution 10
3.4- Project Scope 10
3.5- Project Objectives 10
4- PROJECT PLAN 11
4.1- System Development Methodology 11
4.2- Project Gantt Chart 14
5- SYSTEM HIERARCHY CHART 15
5.1- Home Page 15
5.2 – Admin Login 16
5.3 – User Login 17
5.4 – Registration 18
5.5 – Dashboard 19
6- CONTEXT DIAGRAMS AND DATA FLOW DIAGRAMS 20
6.1- Context Diagram 20
6.2- Data Flow Diagrams 21
7- DATA DICTIONARY 22
7.1 – Admin Database 22
7.2 – User Database 23
7.3 – Quiz Database 24
7.4 – Question Database 25
7.5 – Option Database 26
7.6 – Answer Database 27
7.7 – History Database 28
7.8 – Rank Database 29
7.9 – Feedback Database 30
7.10 – External Entity 31

7.11 – Feedback Database 32
7.12 – Feedback Database 33
8- ENTITY RELATIONSHIP DIAGRAM 34
9- FLOWCHARTS / RICH DIAGRAM 35
10- SCREEN DESIGN & USER MANUAL 36
10.1 – Main Page 36
10.2 – Registration 37
10.3 – Login 38
10.4 – Admin Dashboard 39
10.5 – User Information 40
10.6 – Ranking 41
10.7 – Feedback 42
10.8 – Quiz 43
10.9 – Add Quiz Details 44
10.10 – Add Question Details 45
10.11 – Remove Quiz 46
10.12 – User Dashboard 47
10.13 – Quiz Game 48
10.14 – Result 49
11- USER TESTING 50
11.1 – Requirement 51
11.2 – Question 1 52
11.3 – Question 2 53
11.4 – Question 3 54
11.5 – Question 4 55
11.6 – Question 5 56
12- SIGNIFICANT SOURCE CODES 57
12.1 – Connect to our SQL Database Server 57
12.2 – Login 58
12.3 – Feedback 59
12.4 – Logout 60
12.5 – Registration 61

12.6 – Google Form 62
12.7 – Remove Quiz 63
13- CONCLUSION 64
13.1 – Assumptions 65
13.2 – Limitations 66
13.3 – Future Enhancements 67
14– References 68
15 – APPENDIX 69
15.1- WORKLOAD MATRIX 69
15.2- APPROVED PROPOSAL 70

3- INTRODUCTION

3.1- Project Background

Dyscalculia is a learning disability related to math, kids suffering from dyscalculia shares common symptoms such as: difficulty in understanding number-related concepts, struggles to identify math symbols, struggles to recognize patterns, and others (Team, 2018). One of the most effective treatment of dyscalculia is a specialized instruction in school which directly helps kids suffering from dyscalculia in math area. This involves multiple techniques, but all requires extensive participation of students and teachers in the learning process, our project aims to realize this participation in form of math games implemented in a fully functional website (Morin, 2018).

In the effort of studying how dyscalculia affects children's ability to perform math tasks and other basic tasks, an investigation is performed by comparing tests results of children suffering from dyscalculia and normal children. These tests consist of standardized tests, arithmetic tests, and various basic number processing tests.

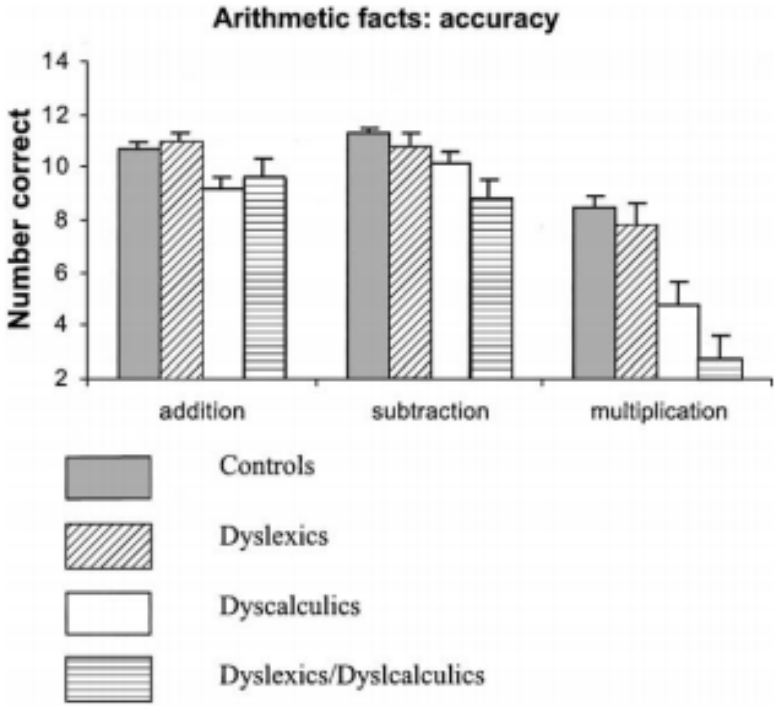


Figure 1: Results of Arithmetic tests (Landerl, et al., 2004)

Figure 1 shows the results of the arithmetic tests done on these children and as can be observed, children suffering from dyscalculia/dyscalculics has the least accuracy and number of questions answered correctly in the 3 main operations of arithmetic (addition, subtraction, multiplication). This shows that dyscalculia is a result of specific disabilities in basic numerical processing, rather than the consequence of deficits in cognitive abilities (Landerl, et al., 2004).

Our website, Dyscalculia Games aims to improve this basic numerical processing through the implementation of math games that cover these basic numeric area (addition, subtraction, multiplication). Children will be having fun whilst improving at the same time playing these math games, and they can also focus on the specific math area they are lacking the skill on.

3.2- Problem Context

Dyscalculia Games has similar functionalities with a few websites, notably Khan Academy and Math Play. Below are the comparisons:

Comparisons with Khan Academy:

Features	Dyscalculia Games	Khan Academy
Does not contain advertisement	✓	
Keep user learning progress	✓	✓
Simple Design	✓	
Interactive website	✓	✓
Gamification	✓	
Login/Registration	✓	✓
High Score	✓	

Khan Academy is a learning website which offers different courses from different fields of study (mathematics, science, etc.). Khan Academy and Dyscalculia Games has several similarities and differences, the most notable difference is in the implementation of gamification in Dyscalculia Games in the teaching process with different math games. Dyscalculia Games also has a simple design which cater towards kids for ease of use, whereas Khan Academy has a slightly more complex design. Both websites do keep track of user's progress however Dyscalculia Games has an additional feature which Khan Academy doesn't have that let users to view high score of the games played. Login and registration feature are implemented on both websites.

Comparisons with Math Play:

Features	Dyscalculia Games	Math Play
Does not contain advertisement	✓	✓
Keep user learning progress	✓	
Simple Design	✓	✓
Interactive website	✓	✓
Gamification	✓	✓
Login/Registration	✓	
High Score	✓	

Dyscalculia Games also has similar functionalities with Math Play which is a website for students to learn math through different types of math games much alike Dyscalculia Games. Math Play also has a simple and interactive website with easy navigation for users. However, a major difference between both the sites is Math Play doesn't have login/registration function which in return makes it impossible for users to keep track of his learning progress, and thus there's no high score function and a user database present.

3.3- Proposed Solution

Dyscalculia Games has combined both the features and functionalities found in Khan Academy and Math Play to enhance user's learning experience. Dyscalculia Games not only implements gamification in its learning process with simple yet interactive design, but also includes an extra feature which is high score that will motivate students to do better. To add on that, a fully functional user database is implemented as well to save user's score and use it as an indication if they are improving.

3.4- Project Scope

This website focuses on math learning course tailored specially for kids suffering from dyscalculia, the course itself has several types of games (addition, subtraction, division, etc.). The website also can store and track user's progress through the implementation of databases tied to user's account, this allows users to view past scores and see if they have improved. Furthermore, high score system is also implemented in the website meaning user's highest score recorded will be stored and displayed for other users to see in a ranking system, with the intent to motivate them and to reward users with sense of pride and accomplishment for completing games.

3.5- Project Objectives

The main objective of this website is to help users suffering from dyscalculia in their treatment through math practice in the form of online games, which is much more fun and rewarding than traditional math practice in schools. This website also acts as a platform for teachers to teach their students in an interactive manner with system which keeps track of students' progress creating a boost in motivation and inspiration to learn math.

4- PROJECT PLAN

4.1- System Development Methodology

Prototype

The prototyping model is applied when detailed information related to input and output requirements of the system is not available. In this model, it is assumed that all the requirements may not be known at the start of the development of the system. It is usually used when a system does not exist or in case of a large and complex system where there is no manual process to determine the requirements. This model allows the users to interact and experiment with a working model of the system known as prototype. The prototype gives the user an actual feel of the system. At any stage, if the user is not satisfied with the prototype, it can be discarded and an entirely new system can be developed (Thakur, 2018).

This prototype is developed based on the currently known requirements. Development of the prototype obviously undergoes design, coding, and testing, but each of these phases is not done very formally or thoroughly. By using this prototype, the client can get an actual feel of the system, because the interactions with the prototype can enable the client to better understand the requirements of the desired system (Thakur, 2018).

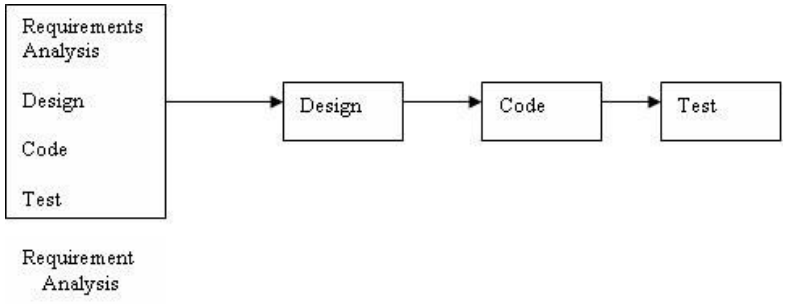
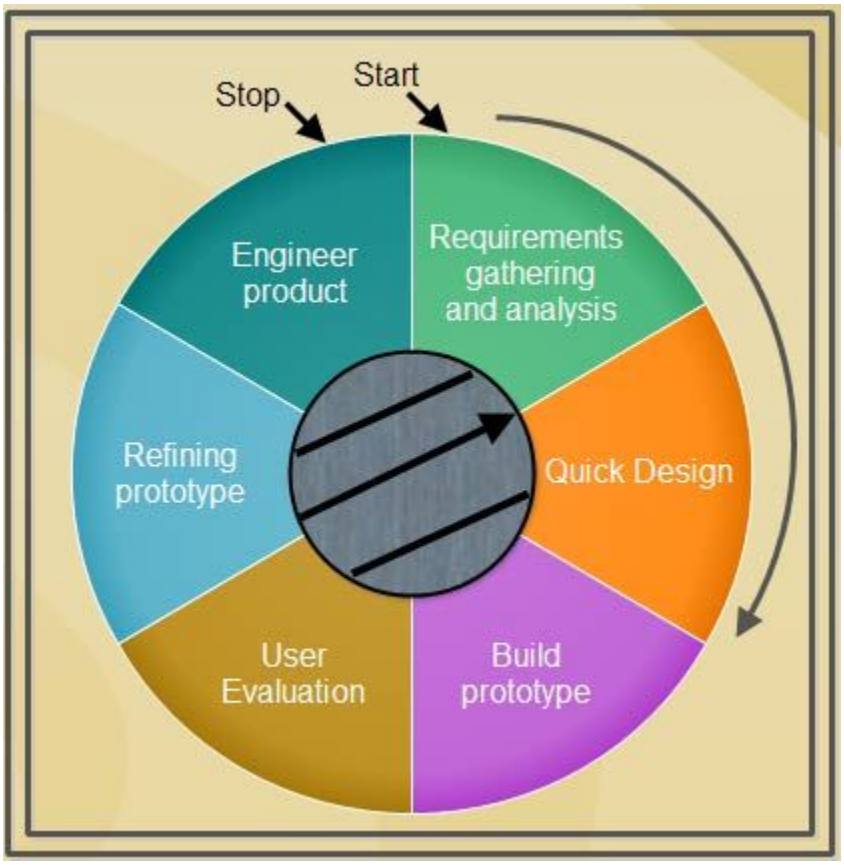


Figure: Phases of Prototype (Thakur, 2018).

Prototyping is an attractive idea for complicated and large systems for which there is no manual process or existing system to help determine the requirements. Risks associated with the projects are being reduced through the use of prototyping. The development of the prototype typically starts when the preliminary version of the requirements specification document has been developed (Thakur, 2018).

At this stage, there is a reasonable understanding of the system and its needs are unclear or likely to change. After the prototype has been developed, the end users and clients are given an opportunity to use the prototype. They provide feedback to the developers regarding the prototype: what is correct, what needs to be modified, what is missing, what is not needed, etc. Based on the feedback, the prototype is modified to incorporate some of the suggested changes that can be done easily, and then the users and the clients are again allowed to use the system. This cycle repeats until, in the judgment of the prototypes and analyst. Based on the feedback, the initial requirements are modified to produce that final requirements specification, which is then used to develop the production quality system (Thakur, 2018).

Figure: Illustrates the steps carried out in the prototyping model. These steps are listed below (Thakur, 2018).



1. Requirements gathering and analysis: A prototyping model begins with requirements analysis and the requirements of the system are defined in detail. The user is interviewed in order to know the requirements of the system (Thakur, 2018).

2. Quick design: When requirements are known, a preliminary design or quick design for the system is created. It is not a detailed design and includes only the important aspects of the system, which gives an idea of the system to the user. A quick design helps in developing the prototype (Thakur, 2018).

3. Build prototype: Information gathered from quick design is modified to form the first prototype, which represents the working model of the required system (Thakur, 2018).

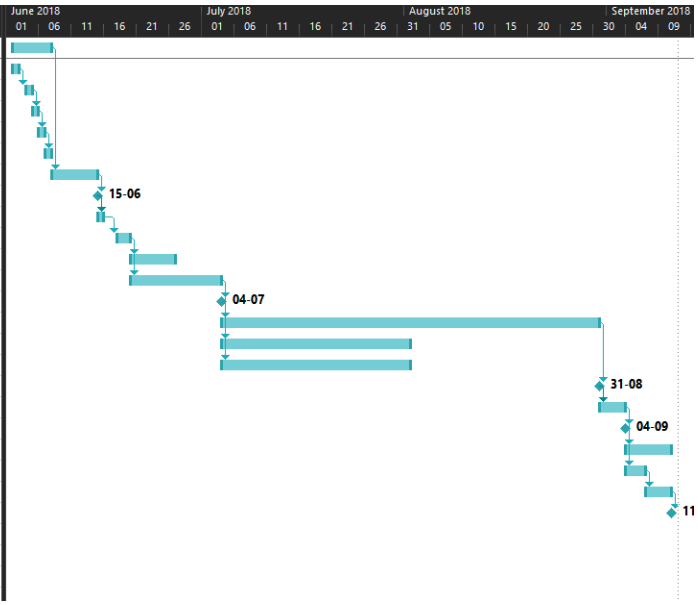
4. User evaluation: Next, the proposed system is presented to the user for thorough evaluation of the prototype to recognize its strengths and weaknesses such as what is to be added or removed. Comments and suggestions are collected from the users and provided to the developer (Thakur, 2018).

5. Refining prototype: Once the user evaluates the prototype and if he is not satisfied, the current prototype is refined according to the requirements. That is, a new prototype is developed with the additional information provided by the user. The new prototype is evaluated just like the previous prototype. This process continues until all the requirements specified by the user are met. Once the user is satisfied with the developed prototype, a final system is developed on the basis of the final prototype (Thakur, 2018).

6. Engineer product: Once the requirements are completely met, the user accepts the final prototype. The final system is evaluated thoroughly followed by the routine maintenance on regular basis for preventing large-scale failures and minimizing downtime (Thakur, 2018).

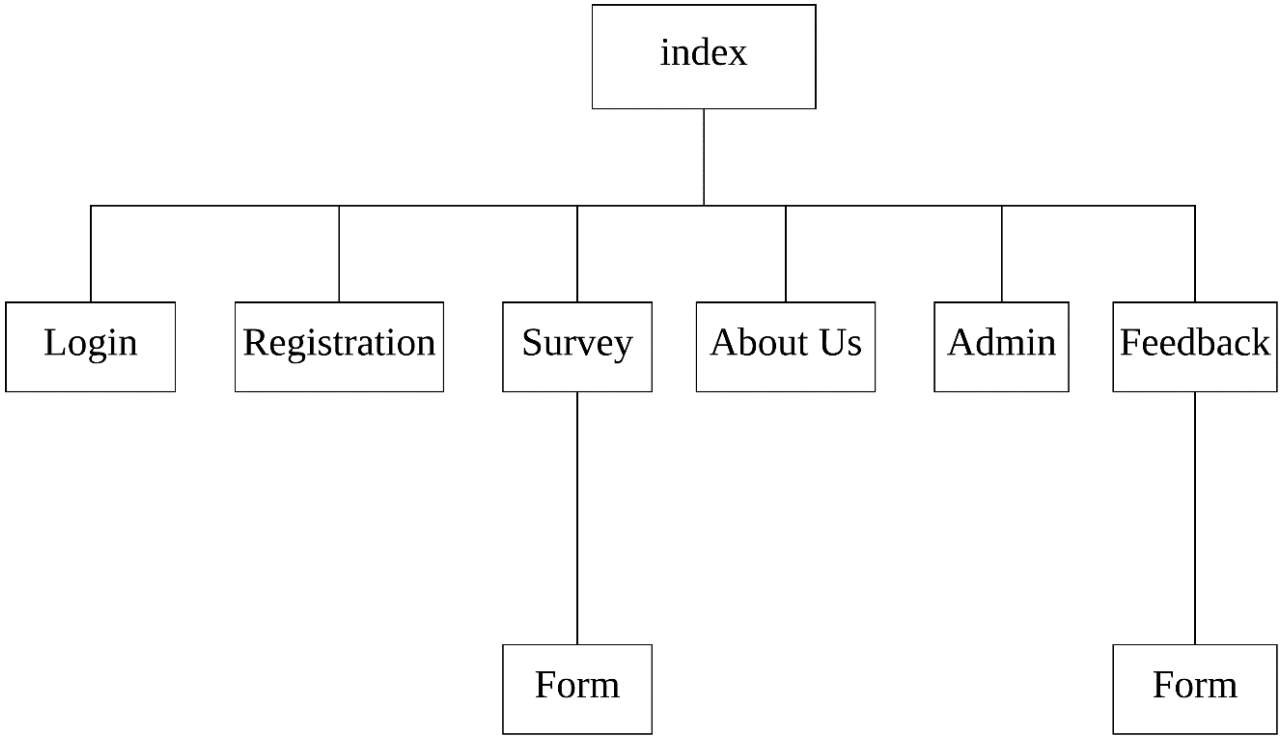
4.2- Project Gantt Chart

	Task Name	Duratio	Start	Finish
1	*Prepare Proposal*	5 days	Sat 02-06-18	Thu 07-06-18
2	*Identify Target User and Learning Outcome*	1 day	Sat 02-06-18	Sat 02-06-18
3	*Formulate Course Structure*	1 day	Mon 04-06-18	Mon 04-06-18
4	*Establish Project Objectives*	1 day	Tue 05-06-18	Tue 05-06-18
5	*Determine Limiting Factors*	1 day	Wed 06-06-18	Wed 06-06-18
6	*Identify System Requirements*	1 day	Thu 07-06-18	Thu 07-06-18
7	*Construct Logical Model*	5 days	Fri 08-06-18	Thu 14-06-18
8	*Analysis Stage Completed*	0 days	Fri 15-06-18	Fri 15-06-18
9	*Decide Mode of Delivery*	1 day	Fri 15-06-18	Fri 15-06-18
10	*Formulate Suitable Assessment*	2 days	Mon 18-06-18	Tue 19-06-18
11	*Blueprint Project*	5 days	Wed 20-06-18	Tue 26-06-18
12	*Design Prototype*	10 days	Wed 20-06-18	Tue 03-07-18
13	*Design Stage Completed*	0 days	Wed 04-07-18	Wed 04-07-18
14	*Generate Code and Build Website*	42 days	Wed 04-07-18	Thu 30-08-18
15	*Formulate System Documentation*	21 days	Wed 04-07-18	Wed 01-08-18
16	*Create Course Content*	21 days	Wed 04-07-18	Wed 01-08-18
17	*Development Stage Completed*	0 days	Fri 31-08-18	Fri 31-08-18
18	*Test the System*	2 days	Fri 31-08-18	Mon 03-09-18
19	*Implementation Stage Completed*	0 days	Tue 04-09-18	Tue 04-09-18
20	*Review and Report Project Performance*	5 days	Tue 04-09-18	Mon 10-09-18
21	*Conduct Online Survey*	3 days	Tue 04-09-18	Thu 06-09-18
22	*Make Improvement*	2 days	Fri 07-09-18	Mon 10-09-18
23	*Evaluation Stage Completed*	0 days	Tue 11-09-18	Tue 11-09-18

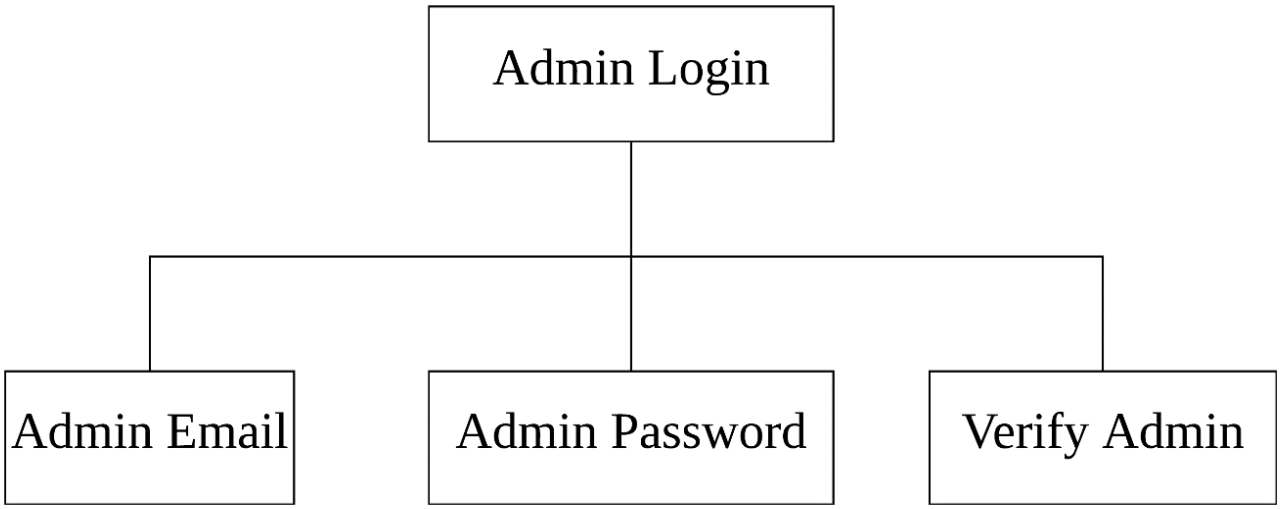


5- SYSTEM HIERARCHY CHART

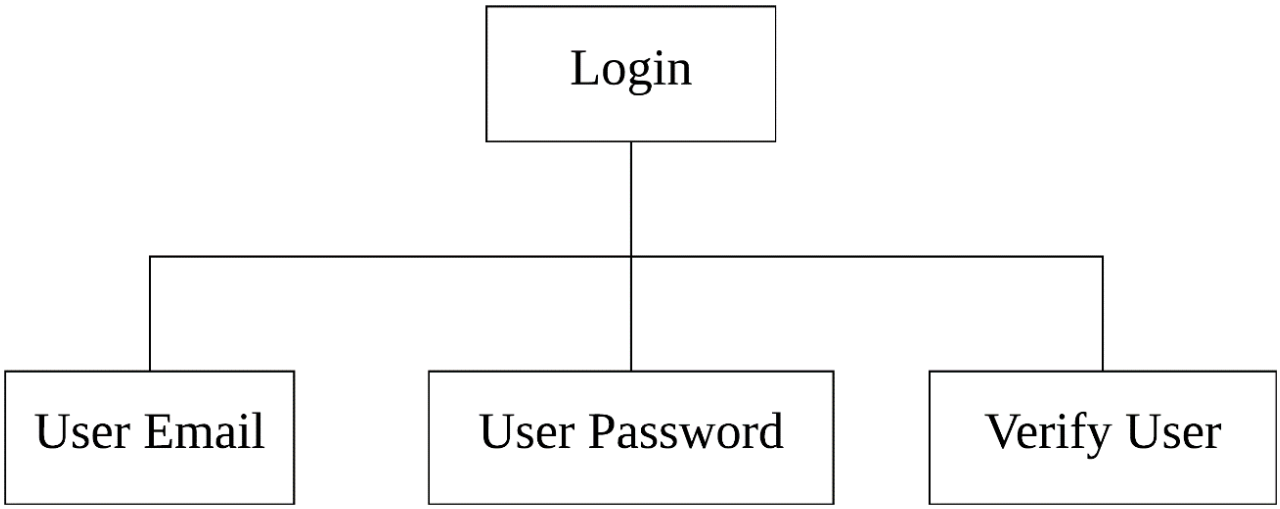
5.1- Home Page



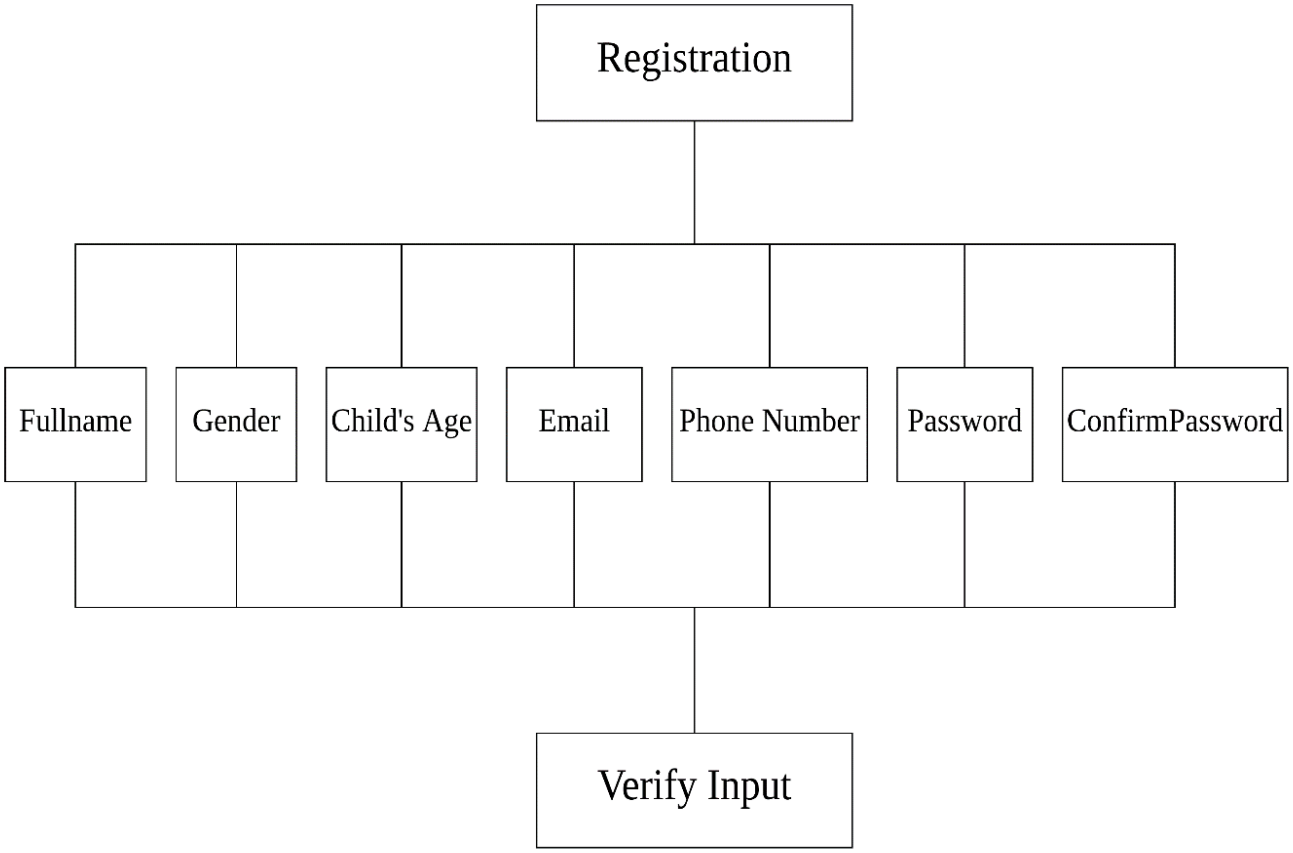
5.2 – Admin Login



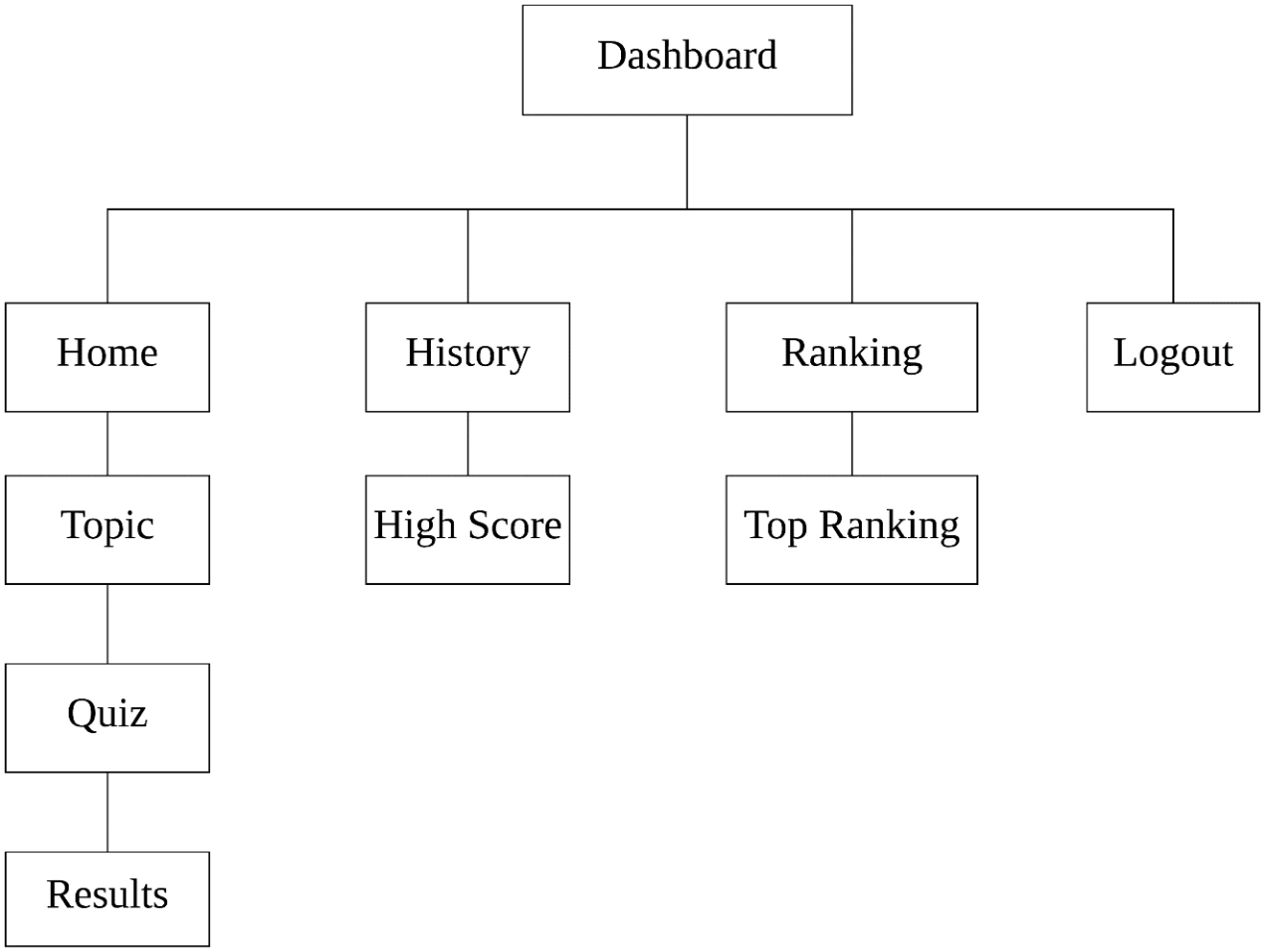
5.3 – User Login



5.4 – Registration



5.5 – Dashboard



6- CONTEXT DIAGRAMS AND DATA FLOW DIAGRAMS

6.1- Context Diagram

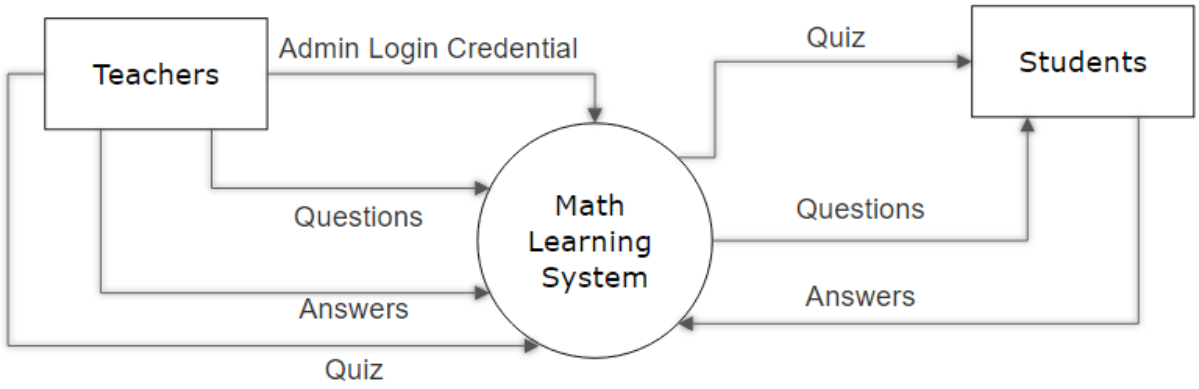


Figure: Context Diagram

6.2- Data Flow Diagrams

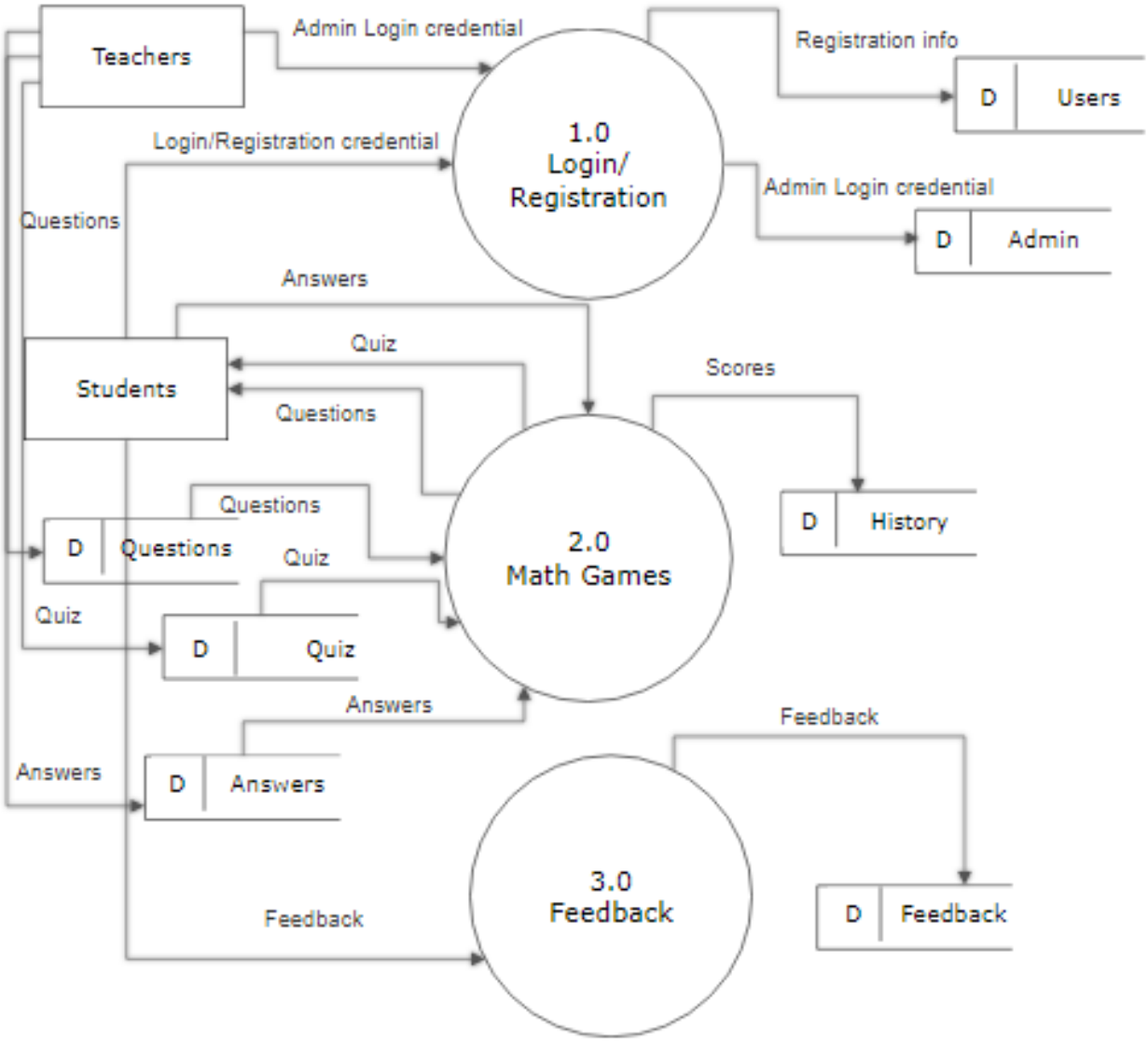


Figure: DFD Level 0 Diagram

7- DATA DICTIONARY

Data Dictionary for Database

7.1 – Admin Database

admin

Column	Type	Null	Default	Comments
admin_id *(Primary)*	int(11)	No		
email	varchar(50)	No		
password	varchar(500)	No		

Indexes

Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
PRIMARY	BTREE	Yes	No	admin_id	0	A	No	

Admin database stores the teacher's information such as admin email address and password. When the lectures try to login to the system, the input information will be connected to this database, check for validation whether the email and password provided are similar or not.

7.2 – User Database

user

Column	Type	Null	Default	Comments
name	varchar(50)	No		
gender	varchar(5)	No		
college	varchar(100)	No		
email *(Primary)*	varchar(50)	No		
mob	bigint(20)	No		
password	varchar(50)	No		

Indexes

Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
PRIMARY	BTREE	Yes	No	email	3	A	No	

The user database stores all the information new users use during their registration process, such as the name, gender, age, email, phone number and password. When the user tries to login to the system, the input information will be connected to this database and check for validation whether the email and password provided are similar or not.

7.3 – Quiz Database

quiz

Column	Type	Null	Default	Comments
eid	text	No		
title	varchar(100)	No		
sahi	int(11)	No		
wrong	int(11)	No		
total	int(11)	No		
time	bigint(20)	No		
intro	text	No		
tag	varchar(100)	No		
date	timestamp	No	CURRENT_TIMESTAMP	

Quiz database stores all the quiz game information, such as the title, number of questions, the number of answers, game duration, user play history and date. When the admin creates a new quiz, it stores in this database and when a user tries to play a game. All the game information will be retrieved from this database.

7.4 – Question Database

questions

Column	Type	Null	Default	Comments
eid	text	No		
qid	text	No		
qns	text	No		
choice	int(10)	No		
sn	int(11)	No		

All the question is stored in this database, which includes the question, the quiz id which is stored in the Quiz database, the question multiple choice id which is stored in the Option database and the questions answer id which is stored in the Answer Database.

7.5 – Option Database

options

Column	Type	Null	Default	Comments
qid	varchar(50)	No		
option	varchar(5000)	No		
optionid	text	No		

This database stores all the question multiple choice option, the answer id which is stored in the Answer Database to retrieve the answers when needed. When a user plays the game, the options are retrieved from the database and when the admin creates multiple choice options, it is stored in the database.

7.6 – Answer Database

answer

Column	Type	Null	Default	Comments
qid	text	No		
ansid	text	No		

Answer database stores all the answers of a question in this database, when the admin creates a new quiz the answers are stored here and when a user plays the game all the answers are retrieved form this database.

7.7 – History Database

history

Column	Type	Null	Default	Comments
email	varchar(50)	No		
eid	text	No		
score	int(11)	No		
level	int(11)	No		
sahi	int(11)	No		
wrong	int(11)	No		
date	timestamp	No	CURRENT_TIMESTAMP	

This database stores all the user game history when they play any of the offered game, such as the high score, the quiz type, date played, number of questions answered and number of questions they got wrong.

7.8 – Rank Database

rank

Column	Type	Null	Default	Comments
email	varchar(50)	No		
score	int(11)	No		
time	timestamp	No	CURRENT_TIMESTAMP	

Rank Database stores all the ranking of all users that played an offered game, such as the scores and time completed. When a user clicks to view the ranking, all the database will be retrieved from this database.

7.9 – Feedback Database

feedback

Column	Type	Null	Default	Comments
id	text	No		
name	varchar(50)	No		
email	varchar(50)	No		
subject	varchar(500)	No		
feedback	varchar(500)	No		
date	date	No		
time	varchar(50)	No		

The feedback database stores all feedback that users sends to the admin such as their email, name, subject, date and time. Any time the admin tries to view a feedback it is retrieved from this database.

Data Dictionary for Data Flow Diagram

7.10 – External Entity

Name: ***Teacher***

Description: The teacher/admin is responsible for creating new games in the website, which includes inputting the questions, giving the multiple choices answers and defining the correct answers.

Input Data Flow: quiz relevant details, question details, option choice details, answer details.

Output Data Flow: Quiz.

Name: ***Student***

Description: Students are required to play the quiz game, they can also review their high score, check their current ranking between different users and send any feedback they wish to share with the teachers.

Input Data Flow: Login/Registration credential, feedback message, question answers.

Output Data Flow: user details.

7.11 – Feedback Database

Name: ***1.0 Login/Registration***

Description: This process is responsible for sending all the user registration information to the registration database and validation and retrieving user/admin login credentials

Input Data Flow: registration details, user/admin login credentials.

Process Description: when user or admin tries to login to the system, input data used in the login form will be sent and compared to the existing saved database. when a new when to use the system, they will have to register to become members, by inputting all the required registration information in the register form, which is then saved to the user database.

Name: ***2.0 Math Games***

Description: this process is responsible for displaying the required content material to the user and handle the admin functionality such as adding new quiz.

Input Data Flow: quiz question, quiz answer, relevant quiz information.

Process Description: the game uses the user login information to display relevant material to the user such as the quiz questions, after the plays any of the provided games it then provides the result and stores all that information in a database**.** it also handles collection all the new quiz relevant information from the admin.

Name: ***3.0 Feedback***

Description: it handles storing and sending user feedback to the admin.

Input Data Flow: feedback message, sender information.

Process Description: the feedback process collects the feedback message and the sender's information and stores it into the feedback database. this information is then later retrieved form the feedback database to be reviewed by the admin and admin also has the ability to delete the message after reading.

7.12 – Feedback Database

Name: ***Admin/Users***

Description: stores all the user details during the registration process and the credential can be retrieved when user and admin are trying to login.

Input Data Flow: user details

Output Data Flow: user and admin details

Data Structure: Student Full Name, Gender, Age, Email, Mobile number and Password.

Name: ***History***

Description: the history saves the user high score and other game information such as the game type, amount of wrong and correct the user had.

Input Data Flow: Answers details, Questions details, Quiz information

Output Data Flow: Scores

Data Structure: User ID, Email, Score, Level, Correct, Wrong and Date.

Name: ***Feedback***

Description: it handles storing and sending user feedback to the admin.

Input Data Flow: Feedback message, sender information

Output Data Flow: feedback

Data Structure: ID, Name, Email, Subject, Feedback, Date and time.

8- ENTITY RELATIONSHIP DIAGRAM

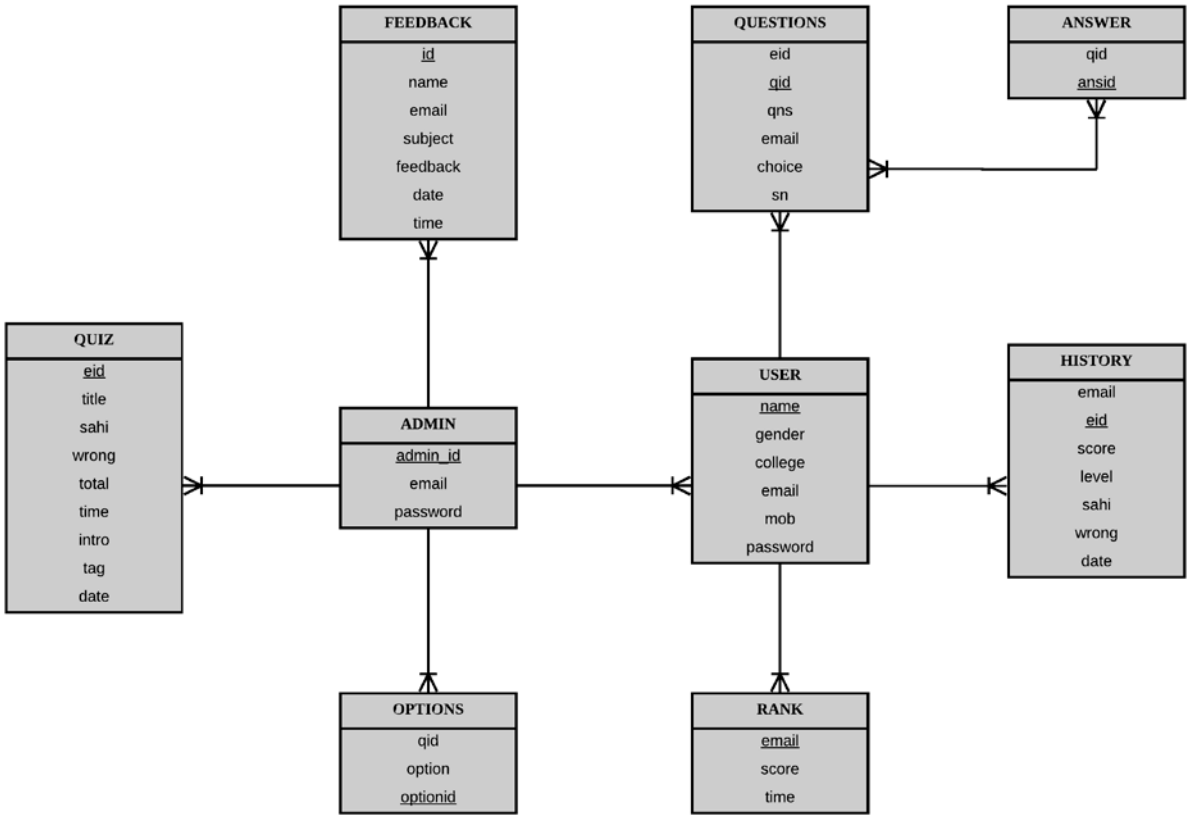


Figure: ERD

9- NAVIGATIONAL FLOWCHARTS

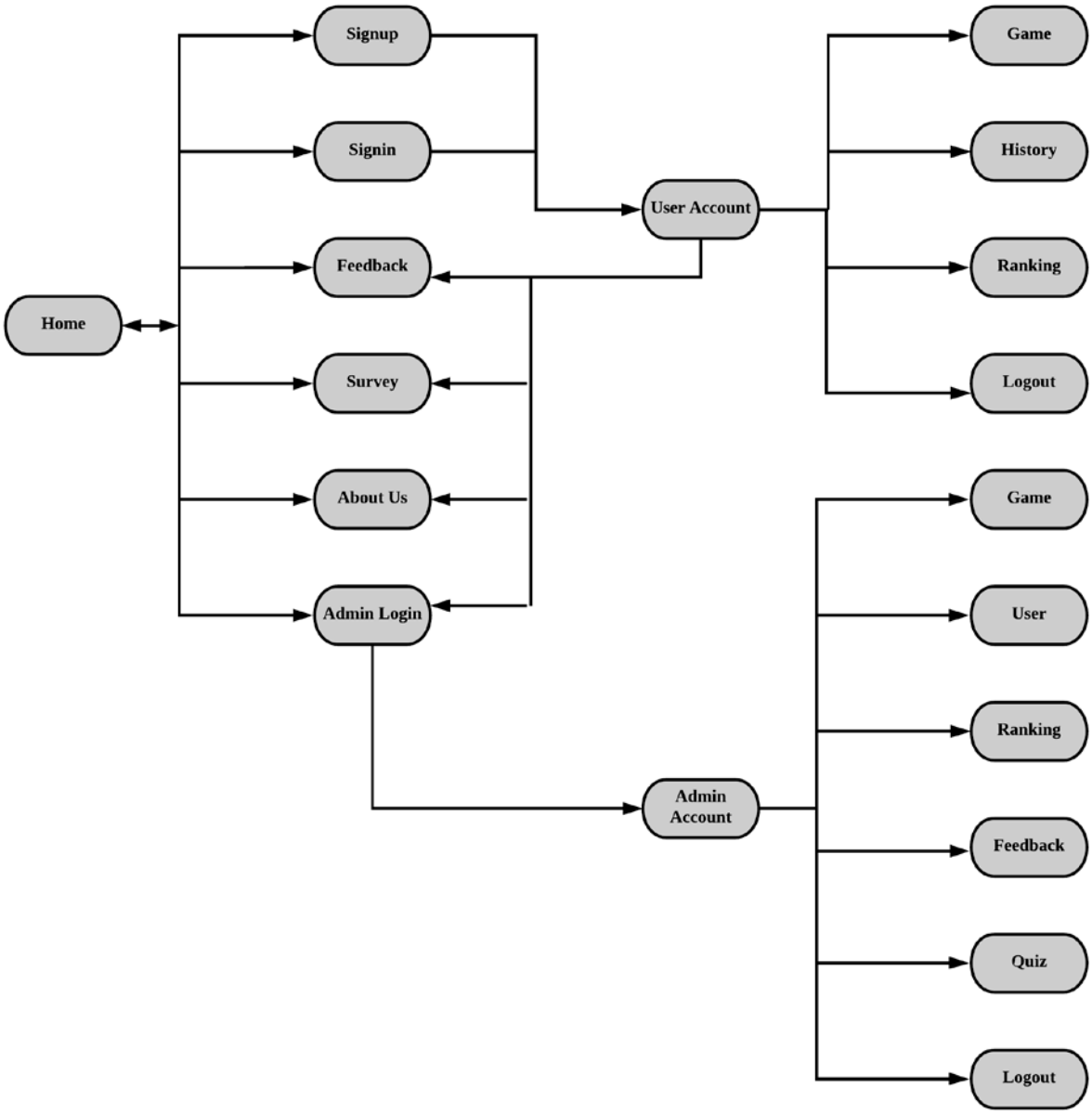
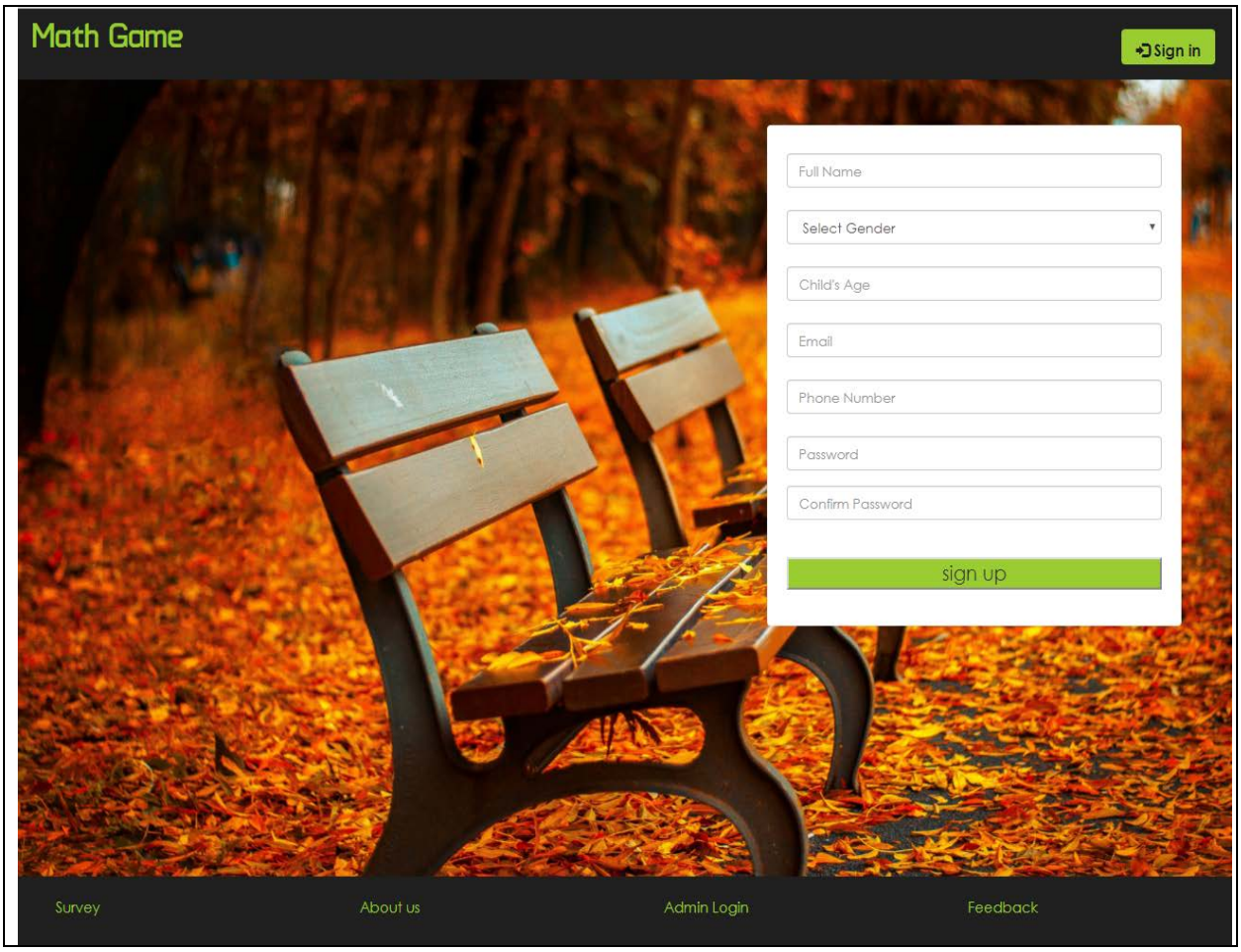


Figure: Navigational Flowchart

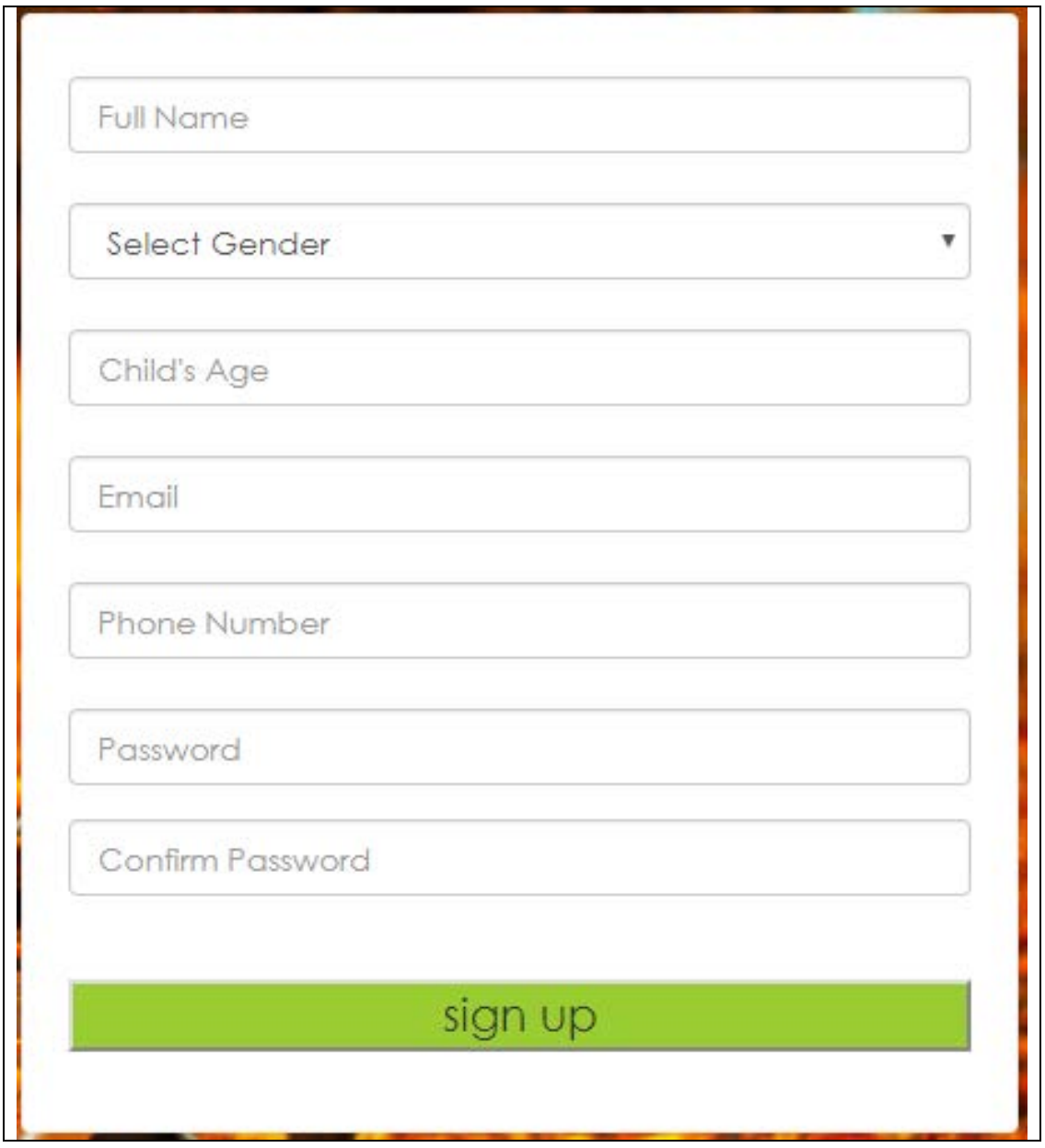
10- SCREEN DESIGN & USER MANUAL

10.1 – Main Page



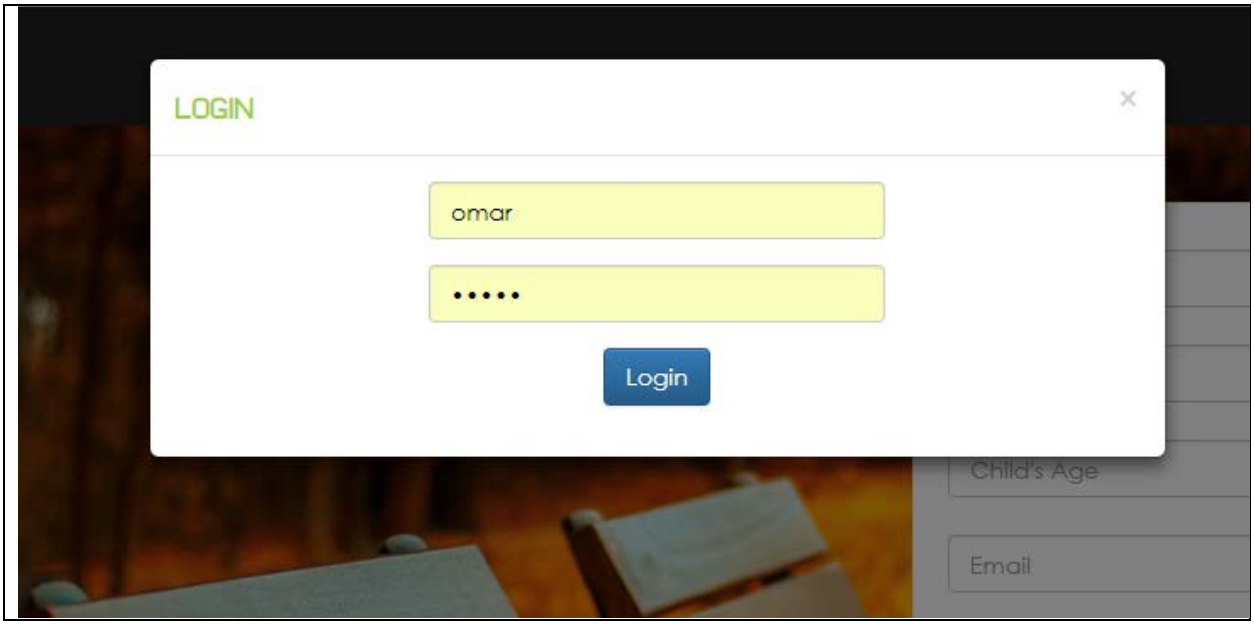
Main page, this is the first page a user sees when they first visit the website. It contains a header, that has a signup button for users, a registration form for new users, a footer which contains the links to the survey page, about page, admin login pops up and the feedback page.

10.2 – Registration



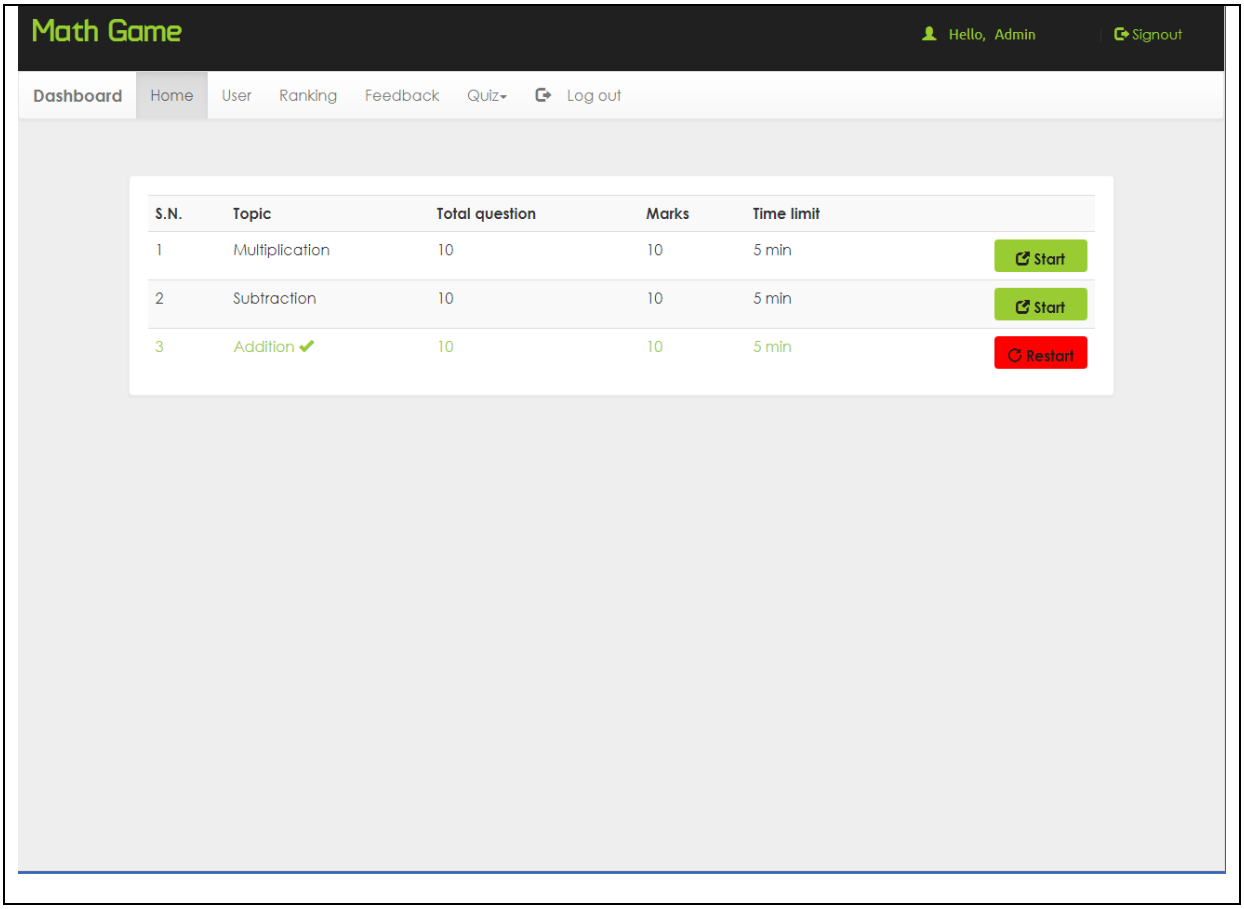
This registration page allows new users to input their information and become members, they are required to fill the entire form which includes full name, Child's Gender, the Child's Age, parents email. Phone number and password.

10.3 – Login



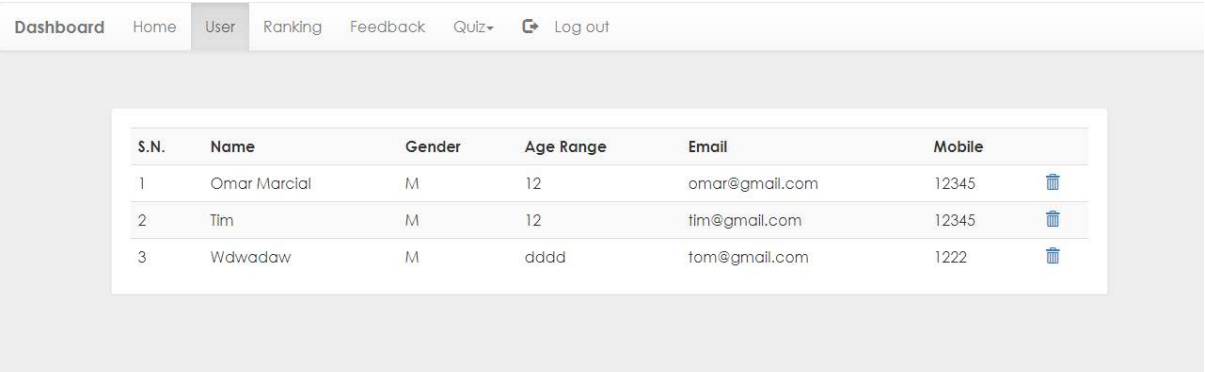
Two different pop ups are available for both users and the admin, as the admin has additional features and users have limited functions.

10.4 – Admin Dashboard



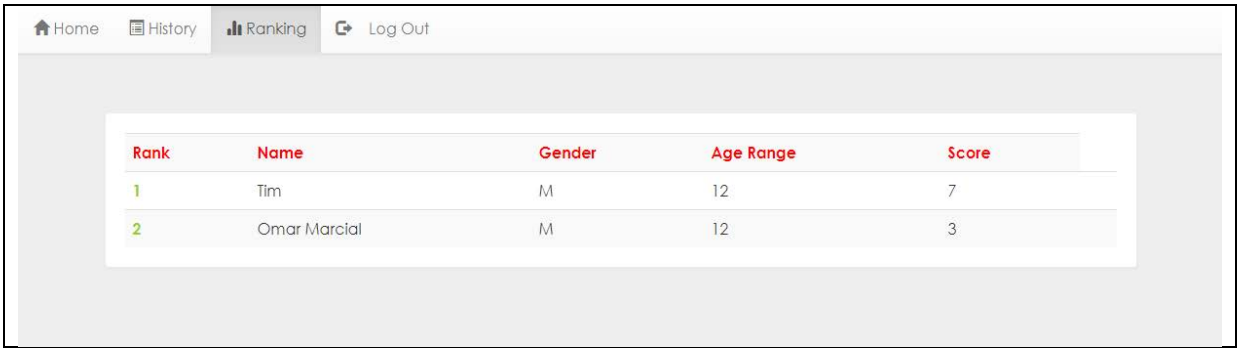
Unlike the user dashboard which contains a footer, the admin dashboard does not contain any. In this page the admin is able to view questions added, user information, ranking of users, check feedback, add and also remove quiz form the system.

10.5 – User Information



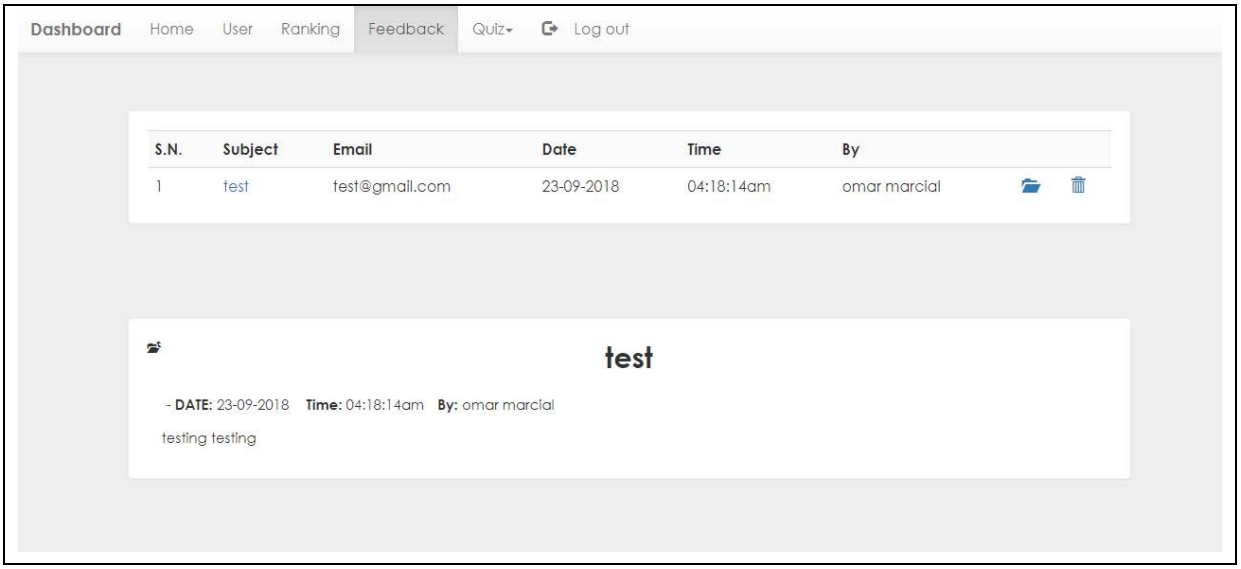
The admin is able to view all the information of users using the system, which includes their account id, name, children gender, their age range, email and phone number. The admin also has the ability to delete any user from the database.

10.6 – Ranking



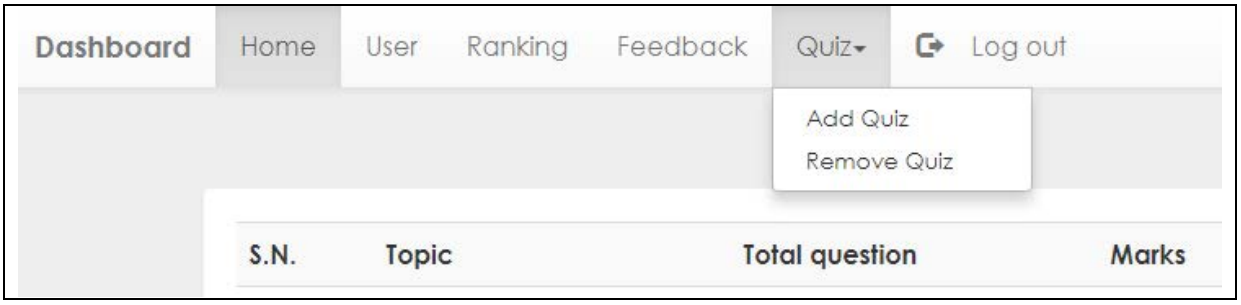
The ranking system displays all the users that have played one or any of the system games, then arrange them from highest score to lowest score.

10.7 – Feedback



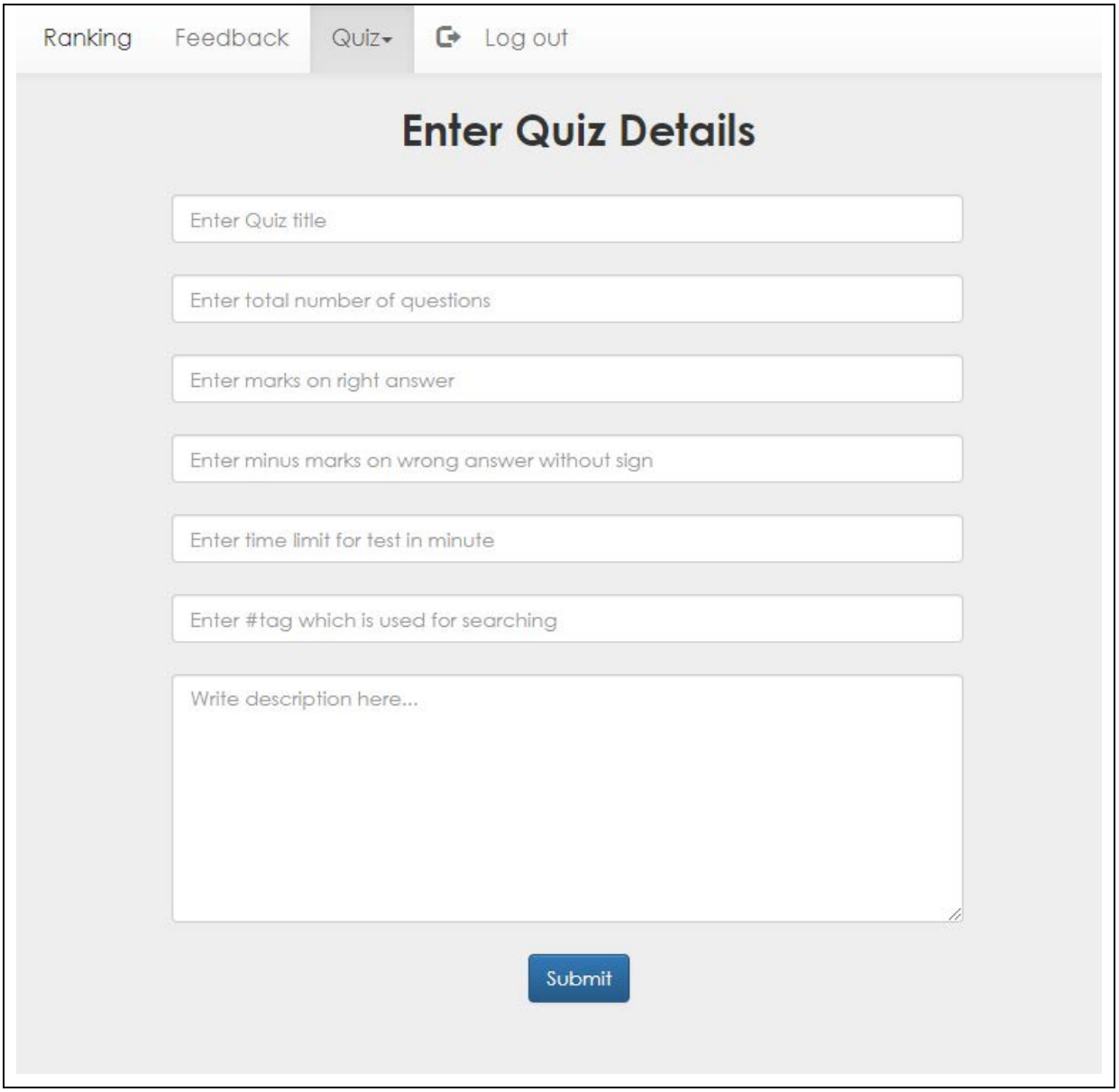
In the feedback area, the administration is able to review all user feedback, which includes their email, date sent, time sent and name of sender. The admin also has the ability to delete any feedback after reading it.

10.8 – Quiz



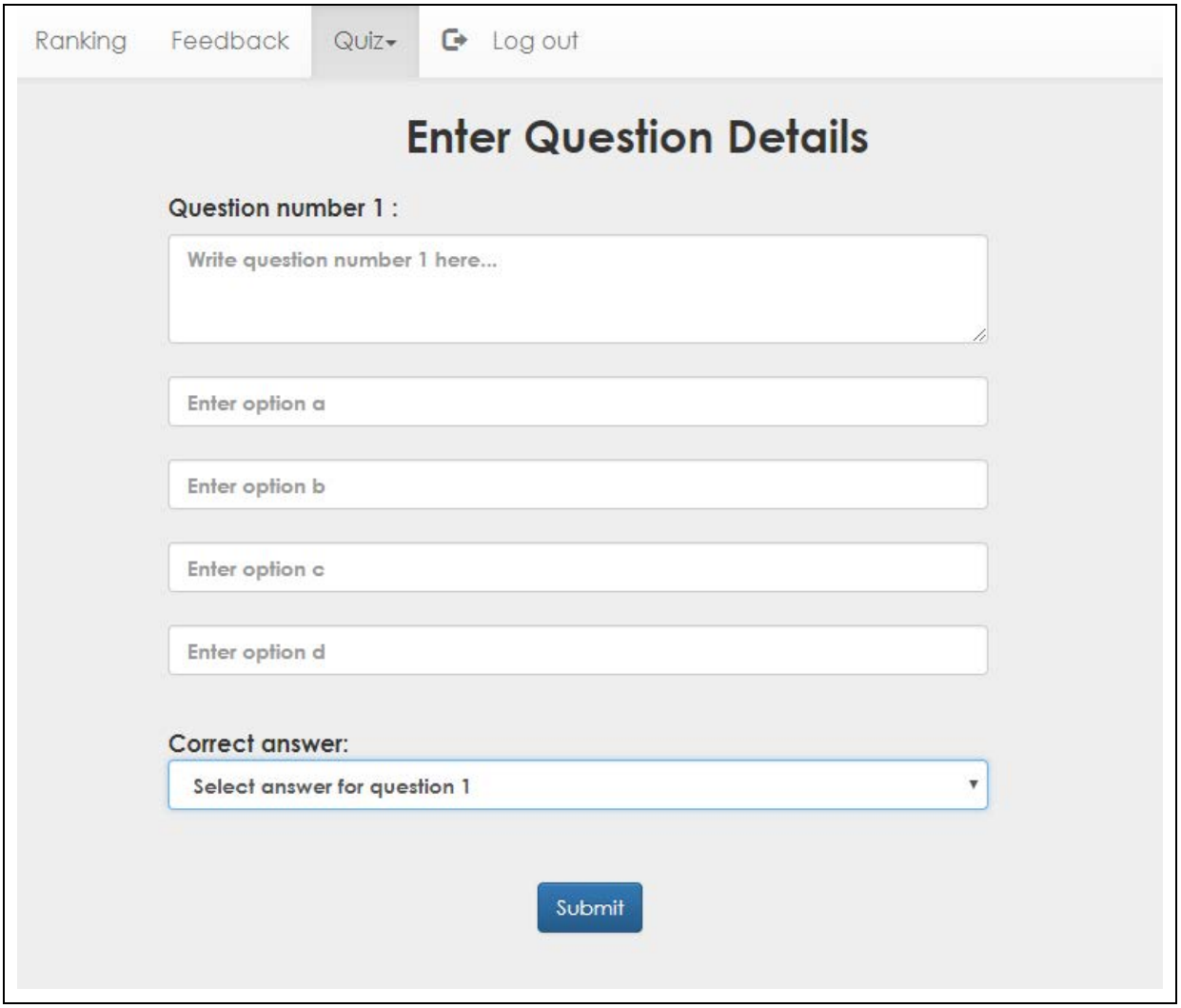
The Quiz section give the anime options on adding a new quiz of deleting a current quiz.

10.9 – Add Quiz Details



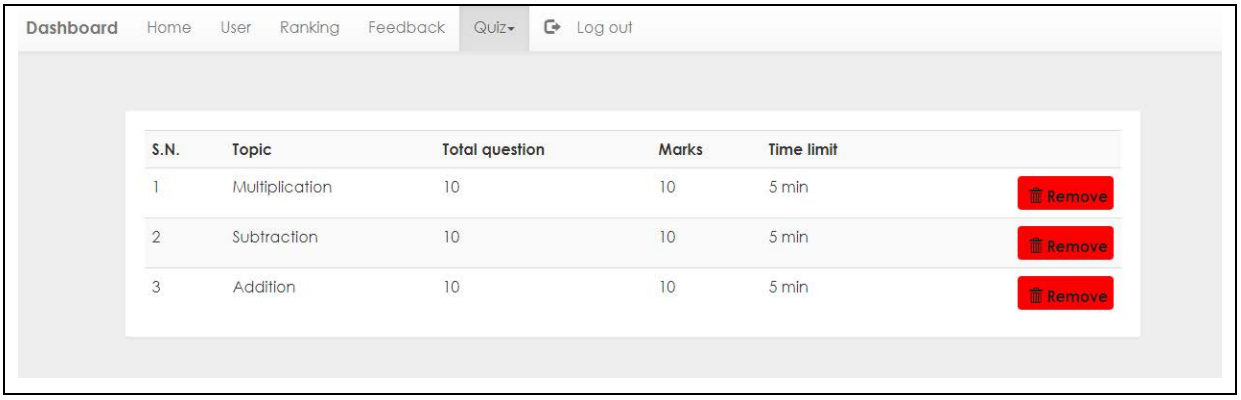
In the Add quiz the admin, is given a full input system to create a new quiz, the form includes Quiz title, Total number of questions, marks for a right answer, marks for wrong answer, maximum duration of the quiz, the quiz tag and also discretion of the quiz.

10.10 – Add Question Details



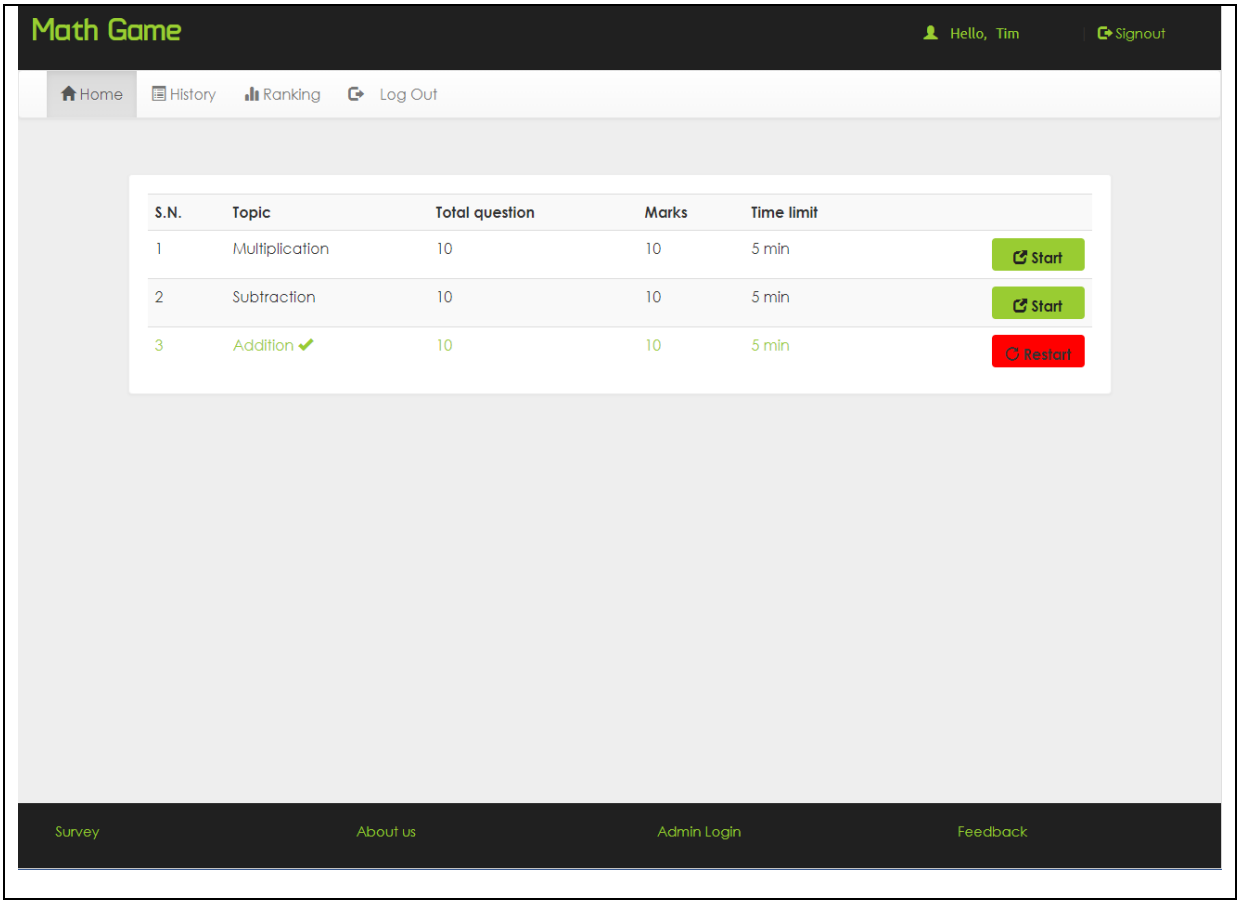
After inputting the brief function and detail of the new quiz, the admin can then proceed to adding the quiz questions, multiple choice answers and selling the correct answer.

10.11 – Remove Quiz



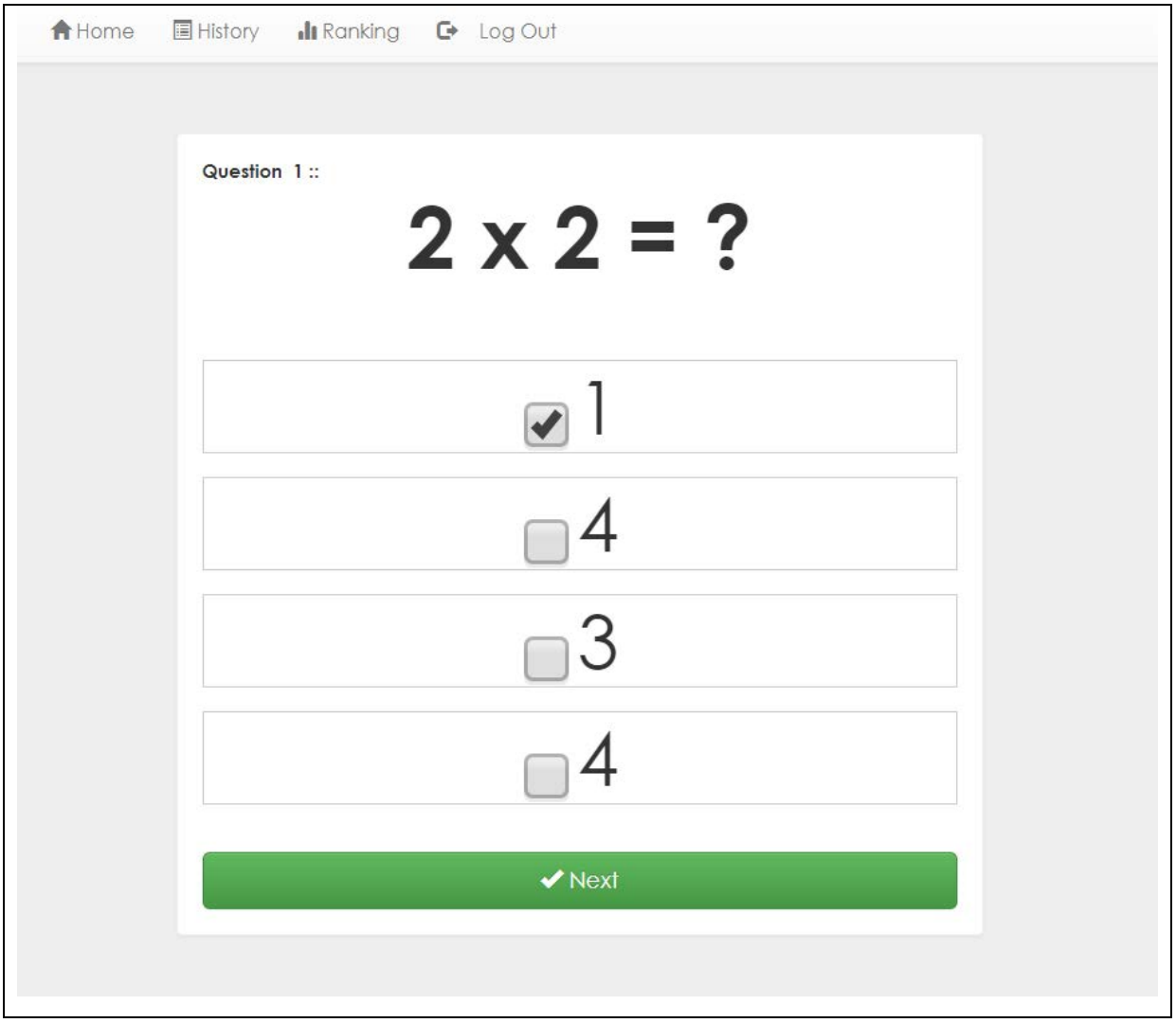
The admin has the ability to delete any current quiz in the website.

10.12 – User Dashboard



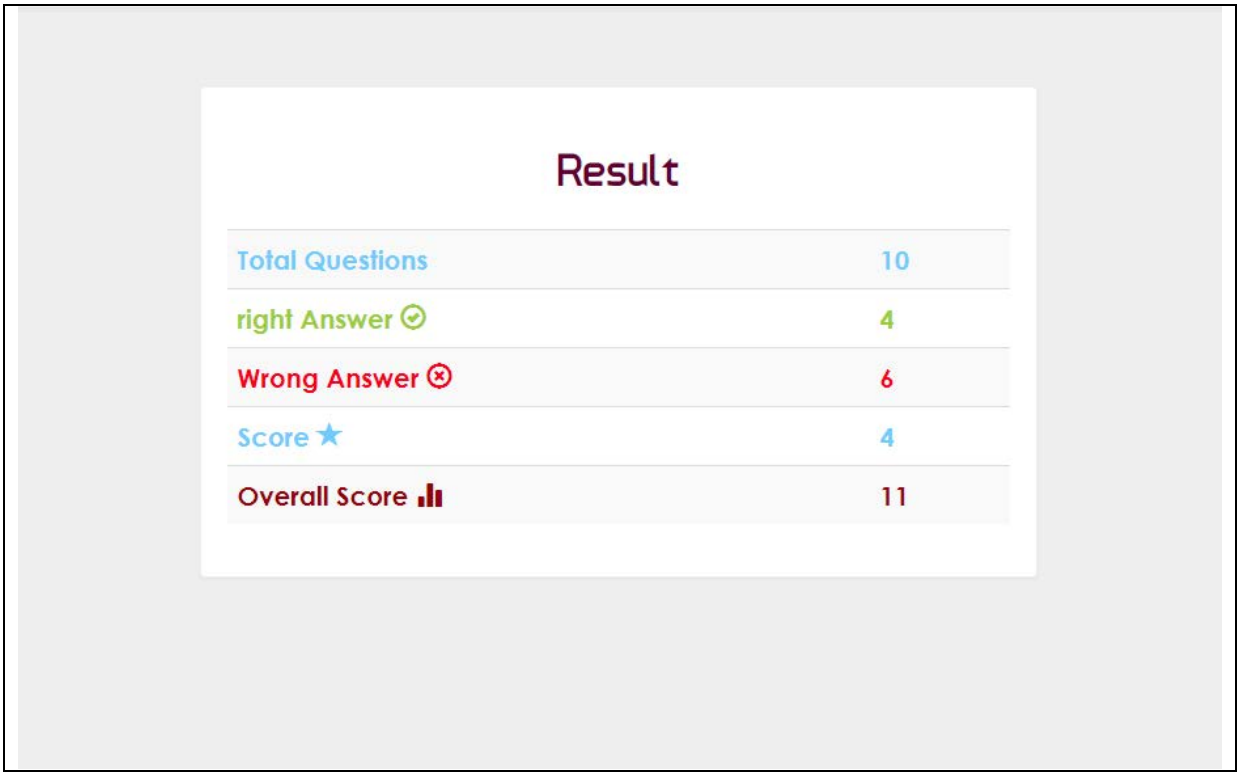
Unlike the admin dashboard, the user dashboard has limited functions. The user dashboard consists of their name shown in the header, they can view their history and also see their ranking compared to other users.

10.13 – Quiz Game



When the user clicks the start button, the game starts. The questions are displayed, and the user has to select one of the answers then click next to move on to the next question.

10.14 – Result

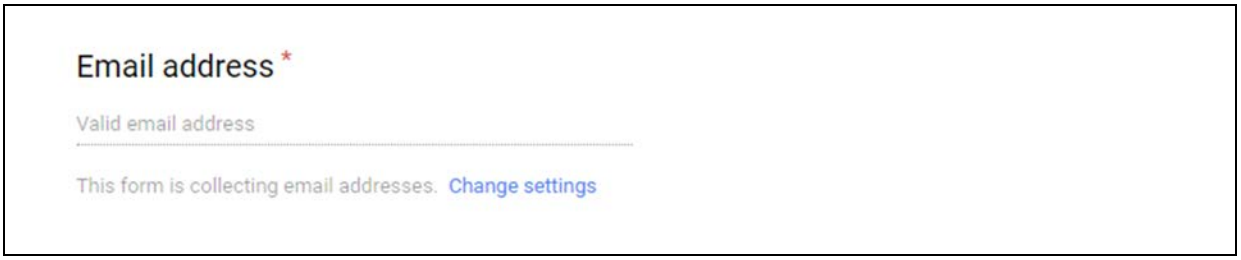


The results are showed after completion of each game, it displays the Total amount question, the right answer, the wrong answer, the score and the overall score.

11- USER TESTING

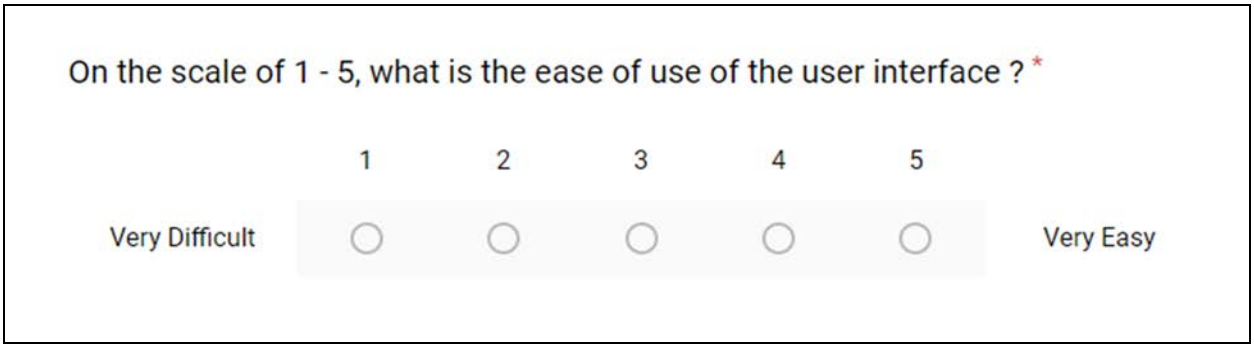
The test plan is a method the helps to determine how good a system works and the reviews the users have about the system. A google form is used to create the questionnaire needed for this survey to collect user feedback and responses after using the website and its features. The survey contains 5 questions that users are required to answer, the targeted users are the parents as they are the ones monitoring their kid's usage, progression and improvement. The form is embedded in one of the websites pages, making it easier and more convenient for users to navigate to and fill the form at their own desired time.

11.1 – Requirement



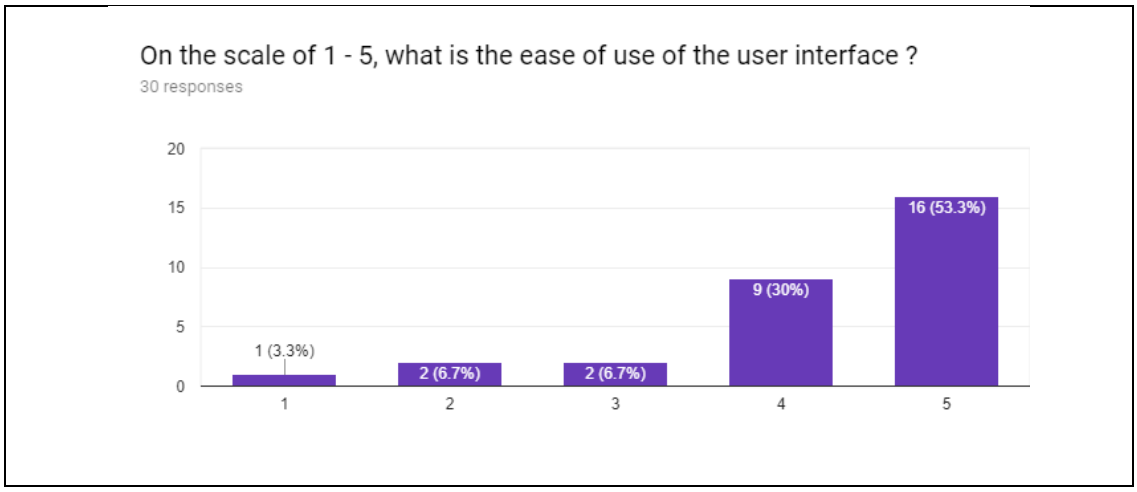
In this question, the respondents are required to enter their Email Address, to validate the questionnaire results.

11.2 – Question 1



This question allows the interviewee to select a scale number on how easy or hard is the user interface ease.

Response

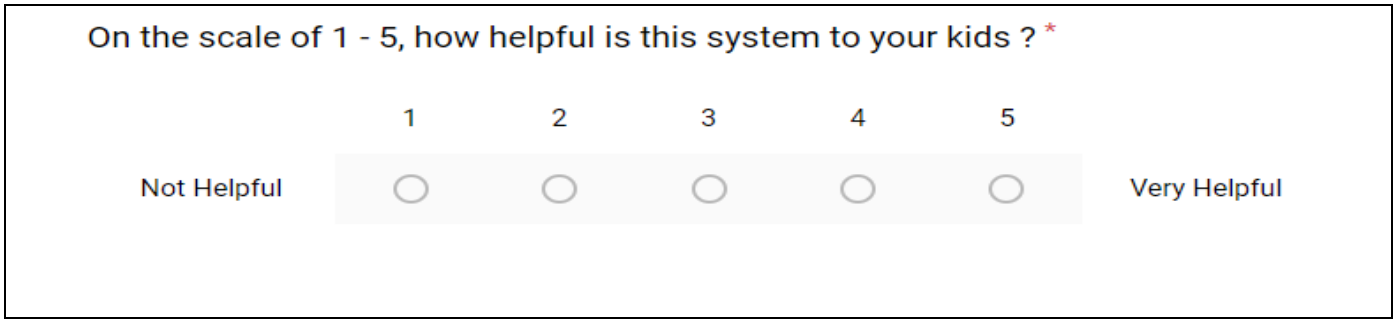


According to the data, it shows that (53.3%) consider the ease of the user interface to be very easy which is most users, followed by (30%) on the scale of 4, the Scale 2 & 3 are each (6.7%) and only (3.3%) consider it to be very hard.

Discussion

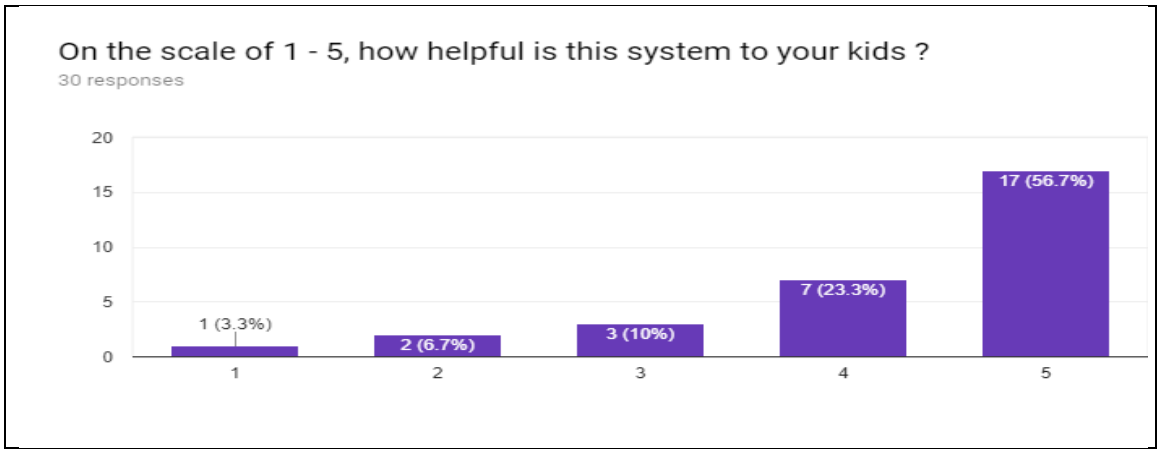
Overall the majority of the users think that the user interface is very easy to use, followed by another high majority. Inconclusion the user interface is perfect and does not require much additional improvement.

11.3 – Question 2



This Question lets the respondents to scale how helpful the system is to their kid's, this is required to help us determine if the system is accomplishing its intended purpose or if it still requires additional improvements.

Response

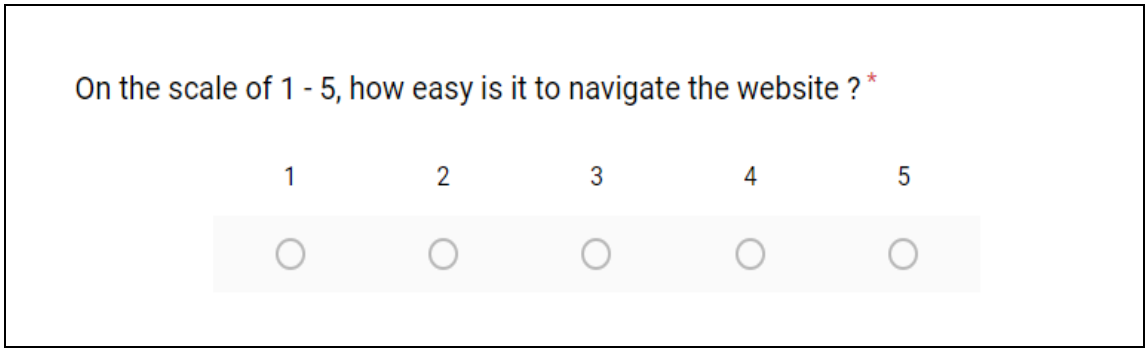


According to the data, major of the users (56.7%) agree that the system is very helpful to their kids, followed by (23.3%) the second highest, (10%) scaled it on a 3, followed by a (6.7%) on a 2 and only (3.3) think the system is not helpful.

Discussion

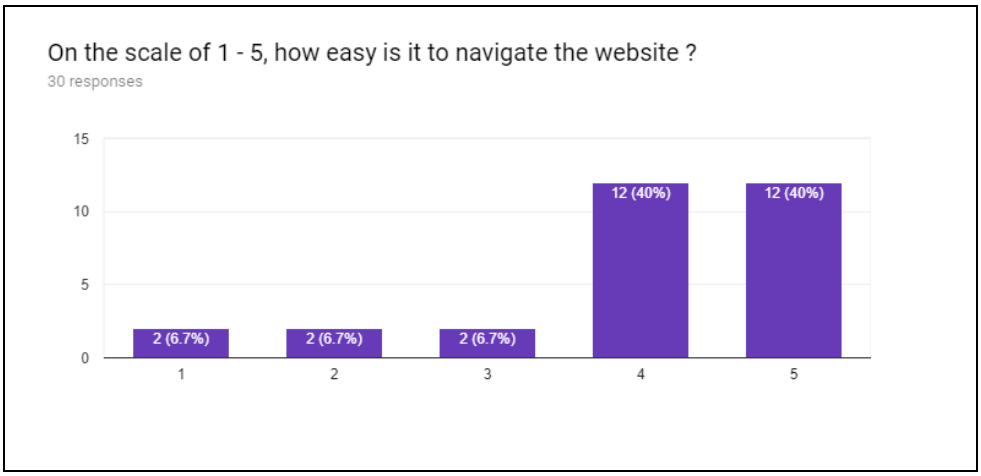
From the results shown above, only one user does not think the system is any helpful to their kids, but the majority agrees that the system is very helpful. Meaning that the system is accomplishing its task and we may increase some few improvements in the future.

11.4 – Question 3



As the website has many functionalities, this question allows us to determine if the user interface is easy to navigate or if more improvement is needed to achieve that purpose. Giving us the ability to understand their experience while using the website.

Response

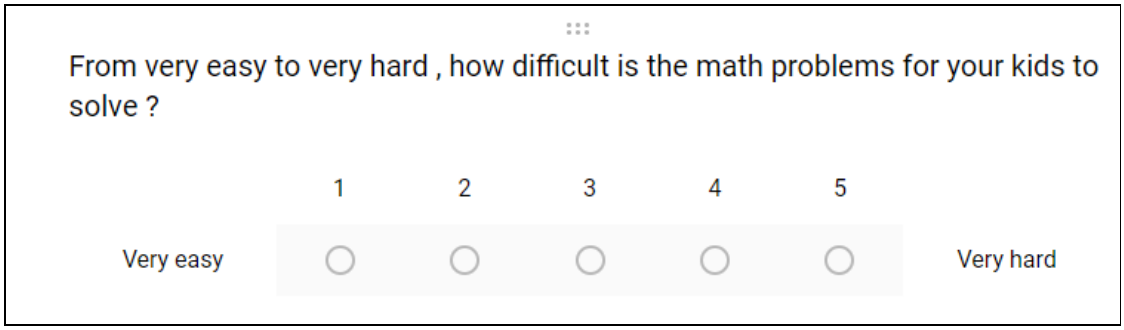


The majority scale 4 and 5 which is (40%) agree that the website is easy to navigate, while the scale of 1, 2 and 3 have the same percentage (40%).

Discussion

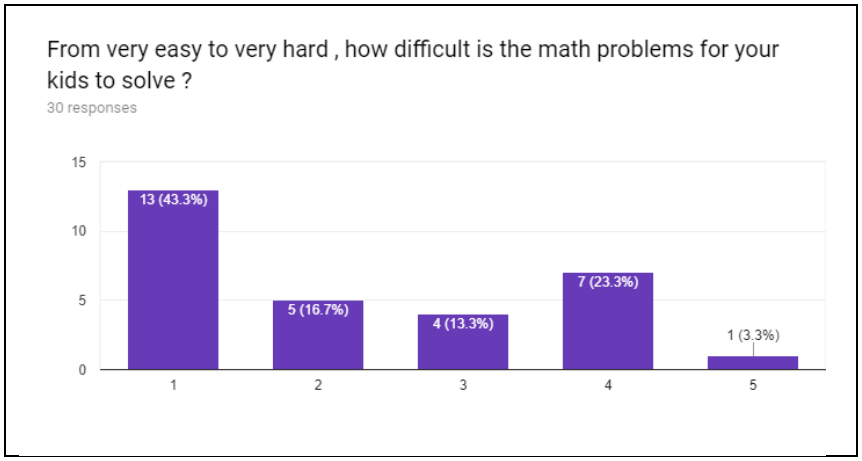
Overall the major of the users thinks the navigation is smooth, given us the conclusion that a high improvement is not needed and a few more improvement is needed to satisfy the desire of the minority users.

11.5 – Question 4



This question enables us to determine the level of difficulty of the questions provided in the games and gives us the ability to include higher difficulty levels or add easier levels for the children.

Response

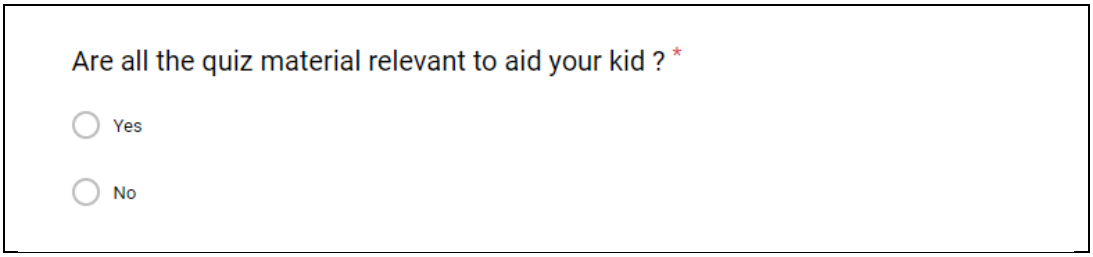


The results displayed shows that major of the interviewee (43.3%) rated “1” for very easy, (16.7%) rated it a “2” which is easy, (13.3%) which is fair, a rate of “4” of (23.3%) giving it a hard and (3.3%) rating it a “5”.

Discussion

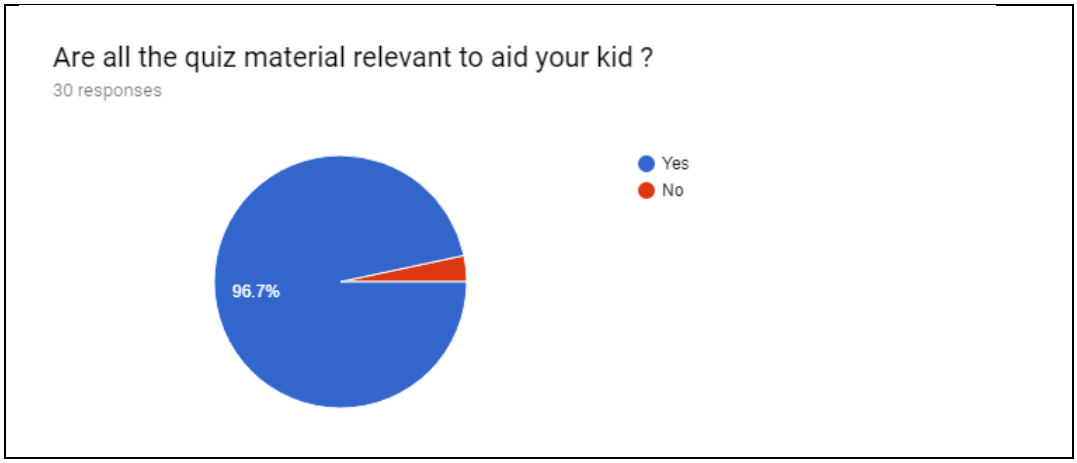
As the result showed above, we have concluded that the questions are very easy to solve, thus giving use the opportunity to add higher difficulty levels for users to see improvements.

11.6 – Question 5



This question allows us to determine if the material content of the website is actually relevant in improving their kids condition, which is the main purpose of creating the system.

Response



The result being displayed in this pie chart shows that majority of the interviewee (96.7%) thinks that the quiz material is relevant and only (3.3%) consider the materials not to be relevant.

Discussion

Overall with the result of the pie chart, the system has content that can help achieve its main purpose, which is to help children with math difficulties. However, the system still has room for improvement.

12- SIGNIFICANT SOURCE CODES

12.1 – Connect to our SQL Database Server

```
<?php
$con= new mysqli('localhost','root','','project')or die("Could not connect to
mysql".mysqli_error($con));
?>
```

This PHP code use above gives us the ability to connect with the database in MySQL, ['localhost '] establishes the connection,['root'] is the MySQL username while [''] empty tells the connection that the location we are trying to connect does not require a password and ['project'] is the name of our database or (die) if connection cannot be establish and show a pop up message to let us know it could not be connected (Diaz, 2018).

12.2 – Login

```
<?php
session_start();
if(isset($_SESSION["email"])){
session_destroy();
}
include_once 'dbConnection.php';
$ref=@$_GET['q'];
$email = $_POST['email'];
$password = $_POST['password'];

$email = stripslashes($email);
$email = addslashes($email);
$password = stripslashes($password);
$password = addslashes($password);
$password=md5($password);
$result = mysqli_query($con,"SELECT name FROM user WHERE email = '$email' and
password = '$password'") or die('Error');
$count=mysqli_num_rows($result);
if($count==1){
while($row = mysqli_fetch_array($result)) {
        $name = $row['name'];
}
$_SESSION["name"] = $name;
$_SESSION["email"] = $email;
header("location:account.php?q=1");
}
else
header("location:$ref?w=Wrong Username or Password");


?>
```

This above php script enables users to login to the system, it will first connect to the establish MySQL server connection then when the user inputs their information to login it will go to the database and collect the user email and password from the database then verifies the information. If the information is correct, then it will head to the users account and if the information is wrong then it will pop up the (Wrong user or Password) message (Diaz, 2018).

12.3 – Feedback

```
<?php
include_once 'dbConnection.php';
$ref=@$_GET['q'];
$name = $_POST['name'];
$email = $_POST['email'];
$subject = $_POST['subject'];
$id=uniqid();
$date=date("Y-m-d");
$time=date("h:i:sa");
$feedback = $_POST['feedback'];
$q=mysqli_query($con,"INSERT INTO feedback VALUES  ('$id' , '$name', '$email' , '$subject',
'$feedback' , '$date' , '$time')")or die ("Error");
header("location:$ref?q=Thank you for your valuable feedback");
?>
```

The PHP script above helps to collect user feedback from the feedback form then it will connect to the Database server and store the input information, such as the email, name, subject and message they want to send (Diaz, 2018).

12.4 – Logout

```
<?php
session_start();
if(isset($_SESSION['email'])){
session_destroy();}
$ref= @$_GET['q'];
header("location:$ref");
?>
```

The above script helps to enable the logout function. if a user logged in to their account and which to logout, this script will destroy the current page information and redirect the user to the main website page (Mamalias, 2018).

12.5 – Registration

```
<?php
include_once 'dbConnection.php';
ob_start();
$name = $_POST['name'];
$name= ucwords(strtolower($name));
$gender = $_POST['gender'];
$email = $_POST['email'];
$college = $_POST['college'];
$mob = $_POST['mob'];
$password = $_POST['password'];
$name = stripslashes($name);
$name = addslashes($name);
$name = ucwords(strtolower($name));
$gender = stripslashes($gender);
$gender = addslashes($gender);
$email = stripslashes($email);
$email = addslashes($email);
$college = stripslashes($college);
$college = addslashes($college);
$mob = stripslashes($mob);
$mob = addslashes($mob);

$password = stripslashes($password);
$password = addslashes($password);
$password = md5($password);

$q3=mysqli_query($con,"INSERT INTO user VALUES  ('$name' , '$gender' , '$college','$email'
,'$mob', '$password')");
if($q3)
{
session_start();
$_SESSION["email"] = $email;
$_SESSION["name"] = $name;

header("location:account.php?q=1");
}
else
{
header("location:index.php?q7=Email Already Registered!!!");
}
ob_end_flush();
?>
```

This above PHP code help new users to register, after inputting all the required information in the registration form. All the information will be stored in the user database (Diaz, 2018).

12.6 – Google Form

```
<div class="container">

   <iframe
src="https://docs.google.com/forms/d/e/1FAIpQLSec1R21qaVmF6yh6YQM9Lpe4OGSMslm
mLqWhYXCPm2zZuVpFA/viewform?embedded=true" width="640" height="1195"
frameborder="0" marginheight="0" marginwidth="0">Loading...</iframe>
   <!-- /.container -->
   </div>

   <a href="http://localhost/sdp/index.php" class="btn btn-primary btn-lg btn-block"
role="button" aria-pressed="true">Home</a>    </main>
```

This HTML code embeds the google form to one of our website pages so that users can visit and complete the survey (MONITOR, 2018).

12.7 – Remove Quiz

```
<?php if(@$_GET['q']==5) {

$result = mysqli_query($con,"SELECT * FROM quiz ORDER BY date DESC") or
die('Error');
echo  '<div class="panel"><div class="table-responsive"><table class="table table-striped
title1">
<tr><td><b>S.N.</b></td><td><b>Topic</b></td><td><b>Total
question</b></td><td><b>Marks</b></td><td><b>Time limit</b></td><td></td></tr>';
$c=1;
while($row = mysqli_fetch_array($result)) {
        $title = $row['title'];
        $total = $row['total'];
        $sahi = $row['sahi'];
   $time = $row['time'];
        $eid = $row['eid'];
        echo
'<tr><td>'.$c++.'</td><td>'.$title.'</td><td>'.$total.'</td><td>'.$sahi*$total.'</td><td>'.$time.'
 min</td>
        <td><b><a href="update.php?q=rmquiz&eid='.$eid.'" class="pull-right btn sub1"
style="margin:0px;background:red"><span class="glyphicon glyphicon-trash" aria-
hidden="true"></span> <span
class="title1"><b>Remove</b></span></a></b></td></tr>';
}
$c=0;
echo '</table></div></div>';

}
?>
```

This code enables the admin to delete any quiz they added in the system (Parys, 2018).

13- CONCLUSION

In conclusion, Dyscalculia Games is a fully functional website with the primary aim to help kids suffering from dyscalculia in their treatment, through the implementation of online math quizzes which are designed to be fun and interactive for them to complete. Users database are also included to make login/registration function fully executable, and this allows user's score to be stored by the website to allow them to view their score history and their ranking amongst other users. Quizzes can be added/removed by teachers with different questions and their respective answers along with a time limit required to finish the quiz.

13.1 – Assumptions

1. Students are only allowed to access the index page, quiz page, score history page, ranking page, feedback page, login page and sign up page.
2. Teachers can add or remove quiz.
3. Username or password can't be changed after user registers.
4. Users can submit feedback to the website.
5. Students can view their score history.
6. Users can view the high score for specific quiz.
7. Teachers should understand how the system works without guidance from developers.
8. Users understand basic page navigation and where certain sections in the website will be redirected to.

13.2 – Limitations

1. User who forgets their password cannot reset their password or change it once they register.
2. User only obtains the total score of the quiz after they have completed it, no correct answers are provided by the system.
3. No options for users to view or edit their user profile.
4. No new teachers can be added through the website, they must be added from the database.
5. No time counter is present, albeit time limit exists for the quiz.

13.3 – Future Enhancements

1. An option to reset password called ‘Forget Password’ will be added to allow users to access their account when they forgot their login credential.
2. After user completed a quiz, a detailed analysis will appear detailing the questions users made mistake in answering and the correct answer to that question.
3. User profile will be added that allows users to change their personal details like name, profile picture, age, and others.
4. A registration page for teachers, instead of having to go to database and add the record manually.
5. Addition of time counter in each quiz page informing users how much time is left till quiz time limit.
6. An online forum that further bridges students and teacher’s communication and help them in asking specific questions.

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15 – APPENDIX

15.1- WORKLOAD MATRIX

TASK ID	TASK NAME	NAMES OF MEMBER(S)
1	ACKNOWLEDGEMENT	ALL MEMBERS
2	ABSTRACT	ALL MEMBERS
3	TABLE OF CONTENTS	ALL MEMBERS
4	INTRODUCTION	ALL MEMBERS
5	PROJECT PLAN	ALL MEMBERS
6	SYSTEM HIERARCHY CHART	ALL MEMBERS
7	CONTEXT DIAGRAMS & DATA FLOW DIAGRAMS	ALL MEMBERS
8	DATA DICTIONARY	ALL MEMBERS
9	ENTITY RELATIONSHIP DIAGRAM	ALL MEMBERS
10	FLOWCHART	ALL MEMBERS
11	USER TESTING	ALL MEMBERS
12	SIGNIFICANT SOURCE CODES	ALL MEMBERS
10	CONCLUSION	ALL MEMBERS
11	REFERENCES	ALL MEMBERS
12	APPENDIX	ALL MEMBERS

15.2- APPROVED PROPOSAL