

# **MAMA LEARNING PLATFORM**

## **Software Requirements Specifications Document**

**Group: BSSE 21 – 24**

### **TEAM MEMBERS**

| <b>NAME</b>                | <b>REGISTRATION<br/>NUMBER</b> | <b>STUDENT<br/>NUMBER</b> |
|----------------------------|--------------------------------|---------------------------|
| TUSIIME ALLAN<br>MUHANGUZI | 17/U/10630/EVE                 | 217011136                 |
| NDAGGA JUDE                | 17/U/8985/PS                   | 217006310                 |
| WEPUKHULU<br>BRUNO         | 17/U/10891/PS                  | 217012574                 |
| AHEBWA ANTONY<br>SANDE     | 17/U/19541/EVE                 | 217022318                 |

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# 1. Introduction

## 1.1 Purpose

This Software Requirements Specifications Document has been written to explain the individual technical compositions of the Learning Platform we intend to build for the Pre-Primary Pupils and also explain how the Project will work.

## 1.2 Scope

The project to be developed is known as Mama Learning Platform. It will be developed to teach Nursery Children guided by the National Curriculum of Uganda.

### 1.2.1 Objectives

#### 1.2.1.1 Main Objective

To develop a system that will be able to teach Nursery children that is as good as the children going to school.

#### 1.2.1.2 Other Objectives

1. To teach the younger Generation about Modern Etiquette that is not taught in Pre-Primary.
2. To teach the younger Generation about their Native Culture and Norms.
3. To provide a solution for Distance Learning for Pre-Primary during the COVID Period.

## 1.3 Abbreviations.

There have been a number of Abbreviations that will be used in this Document including;

| Abbreviation | In Full                         |
|--------------|---------------------------------|
| DB           | Database                        |
| APP          | Mobile Platform                 |
| API          | Platform Programming Interface  |
| OS           | Operating System                |
| UNEB         | Uganda National Education Board |
| COVID        | Corona Virus                    |

## 1.4 References

- [1] ISO 10646 (Unicode UTF-8) and ISO 10646-1 (Unicode UTF-16) standards for character set encoding.

- [www.unicode.org](http://www.unicode.org)
- [ftp.informatik.uni-erlangen.de/pub/doc/ISO/charsets/ISO-10646-UTF-8.html](http://ftp.informatik.uni-erlangen.de/pub/doc/ISO/charsets/ISO-10646-UTF-8.html)
- [ftp.informatik.uni-erlangen.de/pub/doc/ISO/charsets/ISO-10646-UTF-16.html](http://ftp.informatik.uni-erlangen.de/pub/doc/ISO/charsets/ISO-10646-UTF-16.html)

[2] ISO 4217, codes for the representation of currencies.

- [www.xe.net/gen/iso4217.htm](http://www.xe.net/gen/iso4217.htm)

[3] ISO 31, codes for units of measure.

- [www.unece.org/trade/rec/rec20en.htm](http://www.unece.org/trade/rec/rec20en.htm)

[4] ISO639-1 Languages, codes for the representation of languages.

- [http://sunsite.berkeley.edu/amher/iso\\_639.html](http://sunsite.berkeley.edu/amher/iso_639.html)

[5] ISO 3166-1, codes for the representation of names of countries.

- [www.din.de/gremien/nas/nabd/iso3166ma/codlstp1/index.html](http://www.din.de/gremien/nas/nabd/iso3166ma/codlstp1/index.html)

[6] ISO 8601, representation of dates and times.

- [www.state.ak.us/local/akpages/ADMIN/info/iso8601.htm](http://www.state.ak.us/local/akpages/ADMIN/info/iso8601.htm)

## 1.5 Overview

This Document has been constructed to guide and explain the System in detail to the Developers, and any other Stake Holders of this project.

**Section 1** is intended for the General Audience that intends to gain an insight on what should be in the Document and briefly what the Platform is about.

**Section 2** is intended for the Customers/potential users care.

**Section 3** is explained and intended for the Developers and the different kind of Engineers that would like to gain technical knowledge about the Platform's Design.

**Section 4** and **Section 5** is intended for the Project Management team to know to approach different scenarios.

## 2. The Overall Description

### 2.1. Product Perspective

#### 2.1.1. Hardware Interfaces

- Personal Computers (Desktops and Laptops) these come with keyboard and mouse as main input devices and the monitor as the output device. Children shall be able to interface with these to complete their assignments.

#### 2.1.2. Software Interfaces

- Windows application with a home page sections for the children to attempt
- A web page which has download instructions and register section for teachers to set up the system for their pupils

- An admin page which has all child information and their progress reports.

#### **2.1.3. Communications Interfaces**

- The system will use basically email for communication and this will be handled automatically using the email API implemented in C#.

#### **2.1.4. Operations**

- Teacher registers children in his/her class
- Teacher uploads topics for that week and assignments
- Teachers download the software on the children's computers and fully set it up
- The children are able to access this work from their computers and participate in all the programs the teachers have set up for them.
- Progress reports are automatically generated by the software and emailed to the teachers.
- The teachers generate a general report which they submit to the parents of the children.

### **2.2. Product Functions**

- The MAMA Learning platform is a teaching tool/ learning tool. Lessons are formulated by teachers into games with interesting animations and sounds to keep the children interested as they go on to accomplish tasks. In the process of playing and having fun, the child is learning and doing their homework.
- The platform therefore will facilitate game play, collect scores, make reports of accomplished assignments in form of levels, allow teachers to add work based on the provided syllabus and regularly send emails to parents about the general progress of their children.

### **2.3. User Characteristics**

- The target users are children in kindergarten and nursery in Uganda, their parents, the schools of these children and their teachers.
- Users of the system are expected to be familiar with computers.
- Parents are expected to supervise their children do these assignments while at home and teachers while at school.
- Teachers should undergo training on how to manage the student work on the system and after they should be able to do everything on their own.

### **2.4. Design and Implementation Constraints**

- User interface especially for the children should be very friendly, very simple and interesting.
- Use of children colors and favourite characters, food, dolls and nursery rhymes
- The system should have a separate platform for teachers to interface with which should also be very easy to learn within a day.
- The system should be able to work with or without internet.
- The system should be able to run on Windows Operating System
- Database: MySQL Database

- Platform: C# for backend

## **2.5. Assumptions and Dependencies**

- The MAMA Learning platform will be deployed on a Windows System
- Some components will be available on internet connection such as updating content by teachers whereas most components will be readily available offline such as game play for the children.

## **3. Specific Requirements**

### **3.1 External Interfaces**

- None

### **3.2 Functions**

The Platform can be looked at in a number of Modules that communicate with one another and can be viewed as independent Modules namely:

- i. Lessons Module
- ii. Games Module
- iii. Songs Module

The individual Modules have requirements and ways they are expected to behave with other modules or alone as follows;

#### **The Lessons Module:**

FR-LM-001) The Platform shall only allow a player watch a lesson after unlocking the previous lessons.

FR-LM-002) The Platform shall only show the progress of an individual player.

FR-LM-003) The Platform shall display all the lessons that the child will be learning in that child's class.

FR-LM-004) The Platform shall provide different lessons for different classes.

FR-LM-005) The Platform shall allow the child to rewatch a lesson even after they have already watched the lesson.

FR-LM-006) The Platform shall reward the child with Game Points every after a lesson is complete.

FR-LM-007) The Platform shall allow the player to Pause the lesson and resume at any time they wish.

FR-LM-008) The Platform shall keep track of the Child's progress and always begin from where the child ended the previous time they last studied.

#### **The Games Module:**

FR-GM-001) The Platform shall provide a number of Different Games the child can unlock and play.

FR-GM-002) The Platform shall only allow the child to play a Game only after unlocking the previous lesson meant to be learnt.

FR-GM-003) The Games' difficulty should increase as the child's class.

FR-GM-004) The Platform shall allow the child to play an Unlocked Game as many times even if other Games haven't been unlocked.

FR-GM-005) The Games played in the Platform should be related to the content learned in the Lessons Taught in the platform.

FR-GM-006) The Platform shall allow the child to unlock Games and Bonus Levels in the Games once they have accumulated Game Points.

FR-GM-007) The Platform shall reward the child Game Points for completing a Level in the Game.

### **The Songs Module:**

FR-SM-001) The Platform shall display the names and Pictures of the Songs that the child can watch and listen to.

FR-SM-002) The Platform shall allow the child to unlock a Song by completing a simple task.

FR-SM-003) The Platform shall allow the child to pause and resume a song at anytime they wish.

FR-SM-004) The Platform shall provide different songs for different classes.

FR-SM-005) The Platform shall allow the child to replay a song for as many time as they want.

## **3.3 Performance Requirements**

NFR-PR-001) The Platform should take a maximum of 2seconds to load a lesson.

NFR-PR-002) The Platform should operate 100% Offline.

NFR-PR-003) The Platform should allow 1 user at at time to use it.

NFR-PR-004) The Platform should be able to handle any number of users but not at the same time.

## **3.4 Logical Database Requirements**

NFR-LD-001) The Database should be able to store all kinds of Data captured by the Platform.

NFR-LD-002) The Database should retain the data of the user's progress locally until the System is uninstalled.

NFR-LD-003) Sensitive data like Passwords should be stored in Encrypted Format.

## **3.5 Software System Attributes**

### **3.6.1 Reliability**

- NFR-RR-1) The platform shall have 99% Uptime at least.
- NFR-RR-2) The Platform shall perform an Platform data backup operation everyday at 2 AM.
- NFR-RR-3) The Platform shall perform an automatic Platform restore incase there is a data loss situation.

### **3.6.2 Availability**

- NFR-AR-1) The Platform shall allow the user to restart a level incase a part of the platform behaves strangely.
- NFR-AR-2) The Platform shall create checkpoints to reduce the amount of progress that would be lost incase the user restarts or closes the platform.
- NFR-AR-3) The Platform shall notify the user of ways of how to fix any technical problems that the user might run into if any.

### **3.6.3 Security**

- NFR-SSC-1) The Platform shall encrypt the passwords before storing them in the database.
- NFR-SSC-2) The Platform shall use the MD5 encryption algorithm to encrypt the user passwords.
- NFR-SSC-3) The Platform shall keep track of the user sessions by using check points to keep track of state of the user.
- NFR-SSC-4) The Platform shall not be accessible for more than 6 hours in a row for the Childrens' Health safety.

### **3.6.4 Maintainability**

NFR-MR-1) The Platform should be able to fix any available bugs when the user installs a System Update automatically.

### **3.6.5 Portability**

NFR-PR-1) The Platform should be to run smoothly if transferred to another of the same Operating System.

NFR-PR-2) The Platform should be available on Multiple Operating Systems.

#### 4. Change Management Process

After conducting an Platform Acceptance Test and the users intend to suggest some changes to be made to any of the requirements;

- i. The user writes an email to the company's email containing their name if they wish, the enhancement they are suggesting, some brief explanation on what they mean.
- ii. The requirements analyst then gets the information provided by the user and enters it in a table in the Requirements document in the format provided below.
- iii. The Development Team Leaders and the Management schedule a meeting and discuss the details that will be in this table.
- iv. The requirements Analyst then edits the agreed upon requirements and indicates an increment in the Document Version on Page 1 of the Requirements Document.
- v. The Development Team Leaders then set reasonable release date and re-develop the changed requirements.
- vi. When the changes have been reviewed and approved by the chairperson of the meeting, he/she signs in the Document Approval Section of the Requirements Document.

| Date | Enhancement | Requested By | Notes | Priority | Release No / Status |
|------|-------------|--------------|-------|----------|---------------------|
|      |             |              |       |          |                     |
|      |             |              |       |          |                     |
|      |             |              |       |          |                     |
|      |             |              |       |          |                     |

## 5. Document Approvals

This part of the Document contains the details of the individuals that approve every version of the Requirements Document of this Platform:

| <b>Date</b> | <b>Approver<br/>Name</b> | <b>Signature</b> | <b>Version<br/>Approved</b> |
|-------------|--------------------------|------------------|-----------------------------|
|             |                          |                  |                             |
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|             |                          |                  |                             |

## 6. Supporting Information

### 6.1 References

- [1] ISO 10646 (Unicode UTF-8) and ISO 10646-1 (Unicode UTF-16) standards for character set encoding.
  - [www.unicode.org](http://www.unicode.org)
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  - <ftp.informatik.uni-erlangen.de/pub/doc/ISO/charsets/ISO-10646-UTF-16.html>
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- [3] ISO 31, codes for units of measure.
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- [4] ISO639-1 Languages, codes for the representation of languages.
  - [http://sunsite.berkeley.edu/amher/iso\\_639.html](http://sunsite.berkeley.edu/amher/iso_639.html)
- [5] ISO 3166-1, codes for the representation of names of countries.
  - [www.din.de/gremien/nas/nabd/iso3166ma/codlstp1/index.html](http://www.din.de/gremien/nas/nabd/iso3166ma/codlstp1/index.html)
- [6] ISO 8601, representation of dates and times.
  - [www.state.ak.us/local/akpages/ADMIN/info/iso8601.htm](http://www.state.ak.us/local/akpages/ADMIN/info/iso8601.htm)