GameBall project

Version 1.0

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1. Introduction to IncLudo GameBall

1.1 Purpose

The purpose of this document is to provide the software requirement specification report, for the development of a Game Ball under the IncLudo Project being supported by European Union.

1.2 Intended Audience and Reading Suggestions

This project is an intellectual property of ZMQ Technologies and CRI. This project aims to see the inclusion and diversity in an organization.

1.3 Project Scope

The purpose of this module is to create awareness and also check how diversified are the people in an organization. What are the services provided by the company? Responsibilities of the company towards their Employee. The system is based on interaction of module with the server. To establish a secure connection and fetch questions. We will be creating a database defining the inclusions and diversity for various organisation. Above all, we hope to provide a comfortable user experience and an easy to use module

Defining Requirement

Basic hardware requirements.
- Shape of the game box is sphere.
- Size of the game box is approximately 10cm in radius
- Estimated weight of the ball is 300gm
- Material used in making of the ball- Plastic, cotton
- Keypad – To input the user's Id no. which will be their login id?
- Speaker -- for the output of the question.
- Microcontroller –MediaTek LinkIt ONE 2502A
- LED – Depicting the Playing time. Whether the Game box is ready to play or not.
- LED- For showing the level of Inclusion and Diversion in an organization.
- Input data from id to microcontroller. Microcontroller – to – server -- microcontroller-speaker.
- Answer is input from the keypad- input – microcontroller- server- response- microcontroller-LED (RED/GREEN).

Cost Benefit Analysis
Every hardware having the Wi-Fi module will have a unique Mac address and IMEI which will also define from which organization the data is being collected.

Cost of various modules in the market.

MediaTek LinkIt ONE 2502A – Rs 4000 (Approx.)
Jumper Wire (41gm) - Rs 130
10 Female to Female
10 male to Female
10 Male to Male

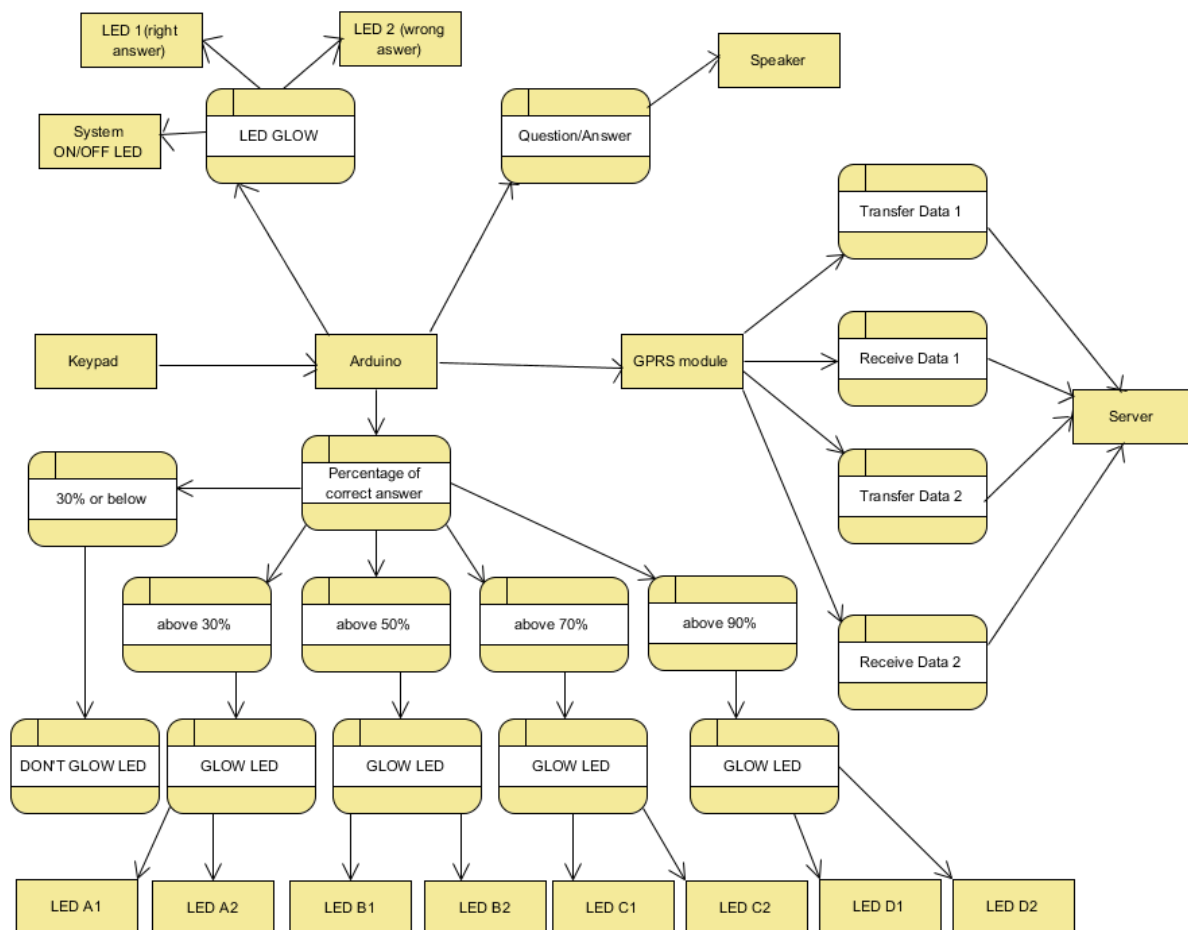Cost of the material, development of the case and its fabrication (100 gm). = Rs 300

Other Cost and weight (120gm) = Rs 245

Estimated total cost of the development = 4675+ other costs = Rs 5000

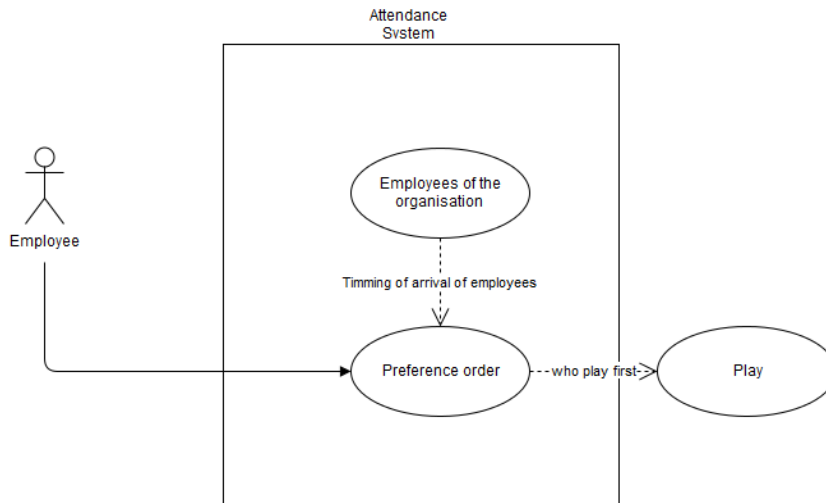Estimated Weight of the Product = 500 gm

Designing the product architecture
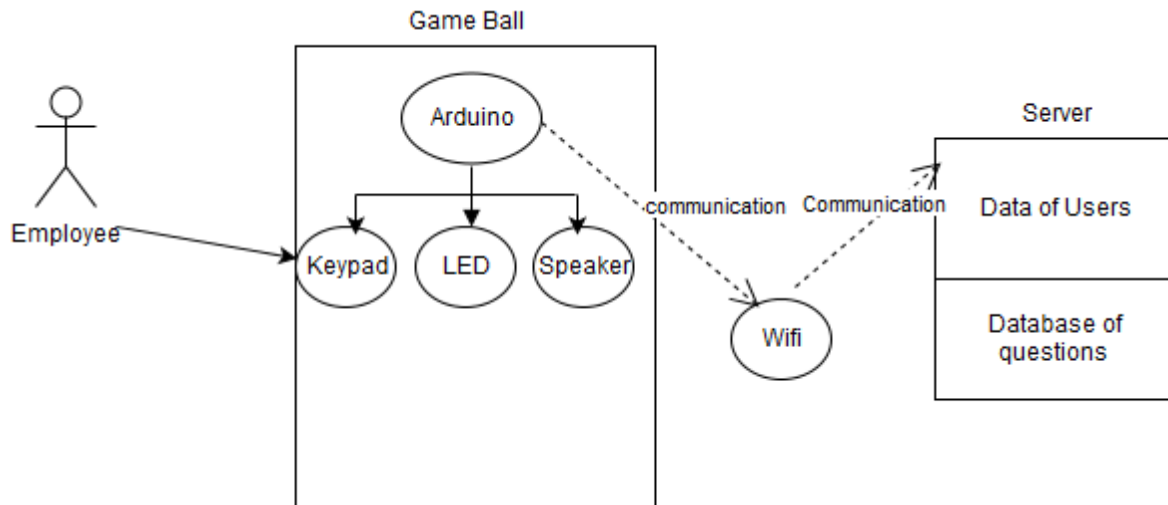
Data Flow Diagram
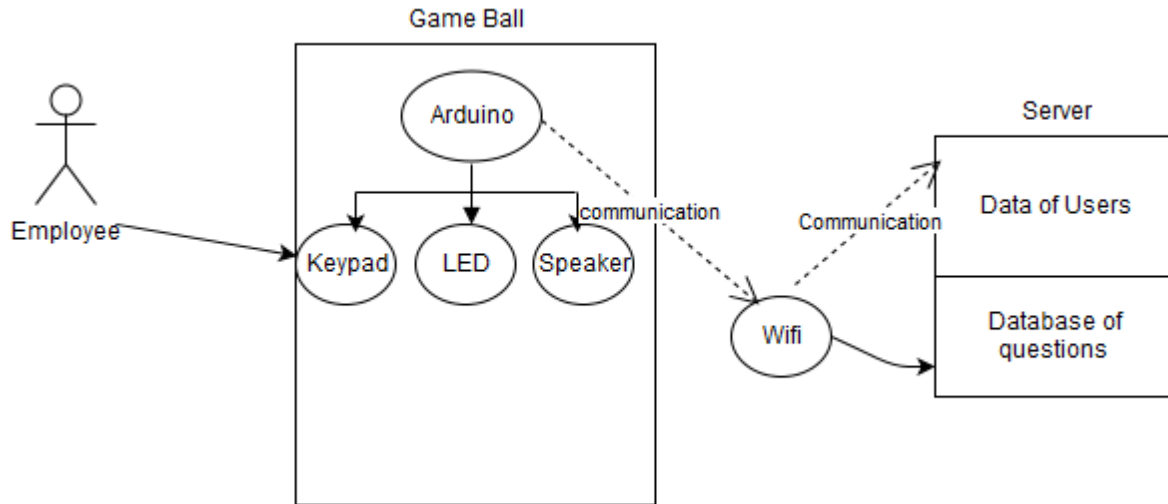
Developing the Product.

Use cases -1

Use Case-1	ZMQ-CIC(1)
Description	Once the Playing time starts, who will play the game first and what will be their order.
Actors	The employees ,the Game Ball
External Actors	The Server, The Attendance system of the organization.
Assumptions	There is a well maintained attendance system in the organization, which can tell us about the timings of the arrivals of the employees.
Steps of the proposed solution	1) The Light depicting the playing time glows on the ball. 2) The employees then look at the timings at which they have arrived. 3) The person to come early will play first.
Variations	There can be many more solutions like Deciding the order of playing on the basis of alphabetical ordering. OR Preference decided on the basis of employee's Exp.

Use Case-2

Use Case - 2	ZMQ-CIC(2)
Description	The employee will enter his/her ID on the keypad which will go to Arduino and then to server where it will be authenticated.
Actors	Employees, Game Ball
External Actors	Server
Assumption	If the ID does not match then we assume that there is a typing error and ask user to re-enter the ID.
Steps	1) Light glows on ball to depict playing time. 2) Employee enter his ID. 3) ID verified at server. Server sends a message to Arduino spelled out by speaker"ID is invalid please Re-enter Or sign up by dialing *#*". 4) Employee enters his choice.
Variations	Instead of entering ID we can use Biometric, cell phone number etc.
Issues	What if user forgot his ID? OR An unauthorized person trying to access the Ball.

Use Case- 3

Use Case - 3	ZMQ-CIC(3)
Description	Employee enters the ID and it is accepted by the server.
Actors	Employee, Game Ball
External Actors	Server
Assumption	The ID entered by user is correct
Steps	1) Glowing light depicts playing time. 2) Employee enters ID. 3) ID checked at server and it is verified there. 4) ID got accepted then server asks what question you want to answer. 1) 5) User enters Input Server sends questions.
Variation	Instead of entering ID we can use Biometric, cell phone number etc.
Issues	If a wrong input entered by user than can he/she change it

Use Case- 4

Use Case - 4	ZMQ-CIC(4)
Description	If a new employee come to organization how will he register
Actors	Employee, Organization, Game Ball.
External Actors	Server
Assumptions	The new user trying to register is the employee of the organization
Steps	Either the registration can be online OR 1)The user can dial *#* 2) A unique ID generated by the server is spelled out via speaker.
Variations	The user can himself generate his ID, or employees phone number etc. could be used as his/her ID.
Issues	How to verify if the person entering *#* has joined the organization or an outsider.

Content and Questions Bank

There will be a questions bank containing 100 Questions. The questions are divided mainly into two sections – Inclusion and Diversity themes

Inclusion

Key elements of inclusion
1. The basic idea of inclusion is everybody's input. Involving every employee's ideas, prospective, approaches to solve problems.
2. It matters because now inclusion had become a competitive advantage. The customer base is rapidly changing so is their taste and preferences. Connecting organization's goals and objective with the people.
3. Understanding how diversely this has impacted the company
4. Coworkers must take time out to know each other understand their culture, religions and background.
5. Employees in an organization must be treated the way they wish to be.
6. This will help to drive a positive change in the organization
7. Share knowledge and experiences to each other.
8. Each and every employee has their own opinions. Consider maximum number of people's opinion while taking decisions'.

Diversity

Key elements of Diversity

It is important to have diversity in an organization. It has many values and profitable importance.

Some of the key elements of diversity are:

A diverse workforce drives economic growth.
A diverse and inclusive workforce helps businesses avoid employee turnover costs.
Recruiting from a diverse pool of candidates means a more qualified workforce.
A diverse workforce can capture a greater share of the consumer market
Diversity fosters a more creative and innovative workforce
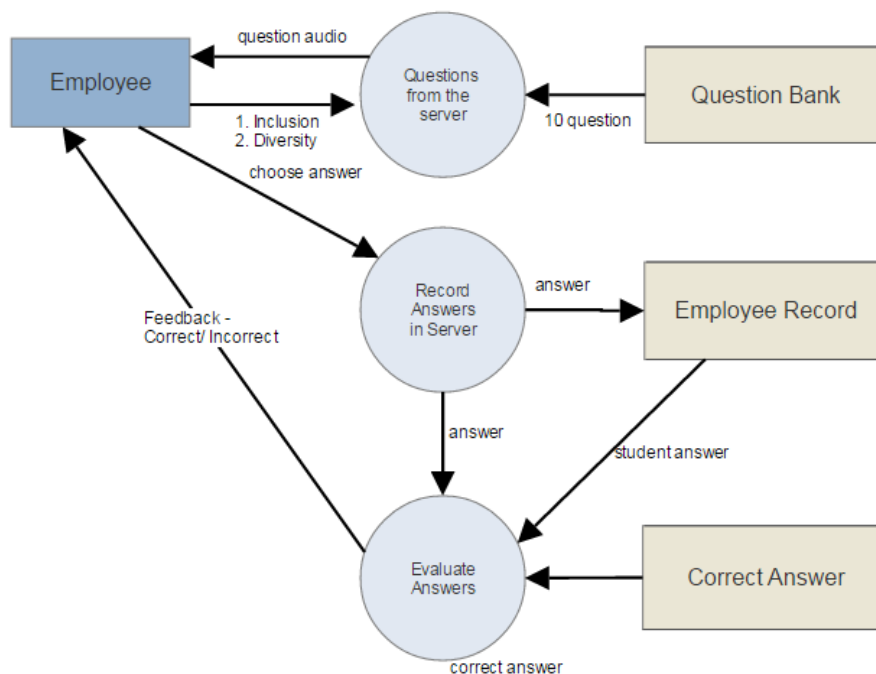Businesses need to adapt to our changing nation to be competitive in the economic market.
Diversity in business ownership, particularly among women of color, is key to moving our economy forward.
Diversity is a key aspect of entrepreneurialism.
Diversity in the boardroom is needed to leverage a company's full potential.
Diversity in business ownership, particularly among women of color, is key to moving our economy forward.

Data Flow Diagram for Questionnaire sessions.

Working of the Module

Every device in an organization has an IMEI number and Mac address which could be used to differentiate between devices.

Whenever the client enters their unique identification number (UID). Authentication takes place. If the user id is incorrect the process will go back to initial stage to enter the ID. If authentication is complete a request to the server is made.

First the user has to select a language in which he is going to play the game. There will be option of English and Hindi. Then there is an audio welcoming the user to the game. All the rules and regulations are output to the user.

To initiate the game the user has to Press '*' .There is an audio defining the time left to give an input. If there is no input from the user the game exits.
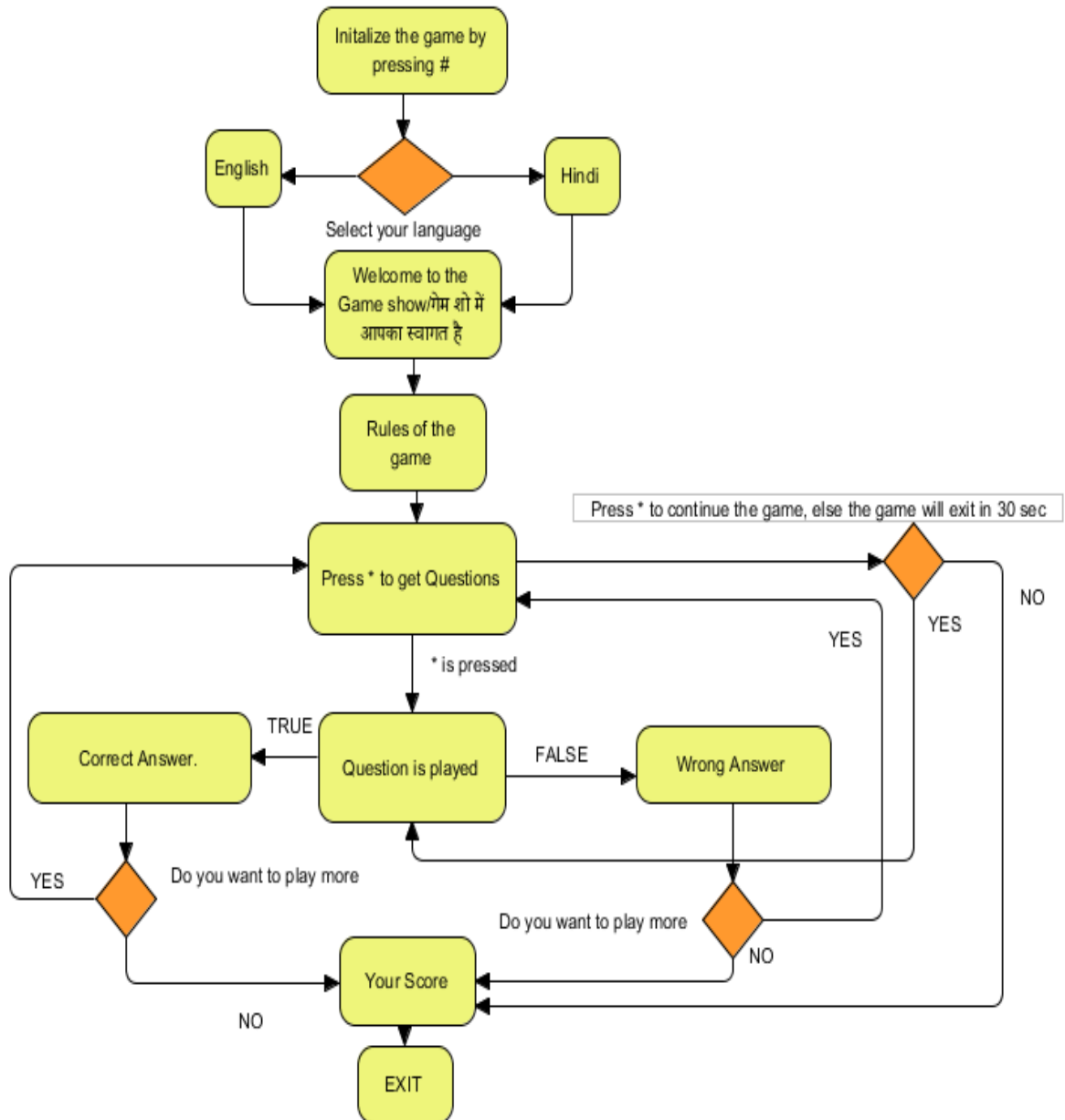
If the user press the '*' the game moves forward and a question is played. If the user answer's right the game continues. Similarly the user may get 3-5 questions in total. If the answer is wrong the correct answer is output in the form of audio and the user is asked whether he/she wants to continue the game or not.

The data from the server will be collected and saved in our database. This data will be analyzed for a company to rate or give suggestions about the company's inclusion and diversity.

There are also information about unique id of the employees so the employee with maximum number of correct answer could be awarded and the most diversified employee.
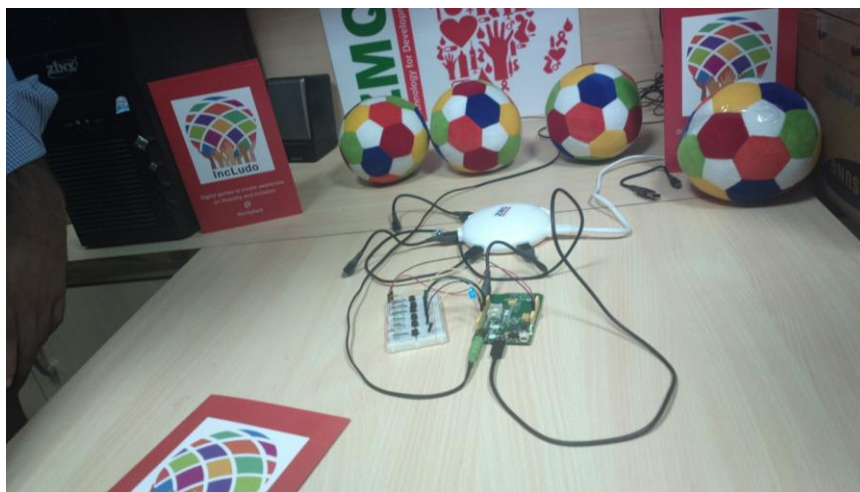
Most inclusive company which not just believe in making big bucks but also look after their employees, cater to their needs and value their contribution.

Logical Flow Diagram

Prototype of Game Ball (version 1.0)

In prototype we used Breadboard, Push buttons, Jumper wires, External speaker, Wi-Fi antenna and SD card. Here some pics depicting the prototype of **'GAME BALL' (**without casing).

And A Video Link Of The Game Ball-

https://drive.google.com/open?id=0B_MbTd7mt0PnUHBXZ1ZWdGRVc2c

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