In this section, we will describe our software system with different types of diagrams like (Use case diagram, Database diagram, Activity diagram, Flowchart diagram, Package diagram, and Sequence diagram)

and this representation will help us to describe our software system well and make us understand our requirements and also take the best decisions will system implementation and testing.

In the following few pages, we will represent our system with the UML diagrams that have been mentioned previously and we will try to explain some of the diagrams with some UML tables that have much details of the diagrams.

**Our actors:**

1. Parent
2. Child

**Use case diagram:**

**Diagram

Description automatically generated**

**Use case Tables:**

* Registration

|  |  |
| --- | --- |
| Use case id | 1 |
| Use case name | Registration |
| Actors | Parent |
| Precondition | Parent must have valid email to register with. |
| Post condition | parent registration occurred, and user must verify its account |
| Input data | Email , password, username |
| Description | User open the website and if he/she is a new user, he opens registration page.  user will enter the username, email and password, then the user press register, after that once verification process runs successfully, user registration is done, and user will be redirect to the login page. Also If the verification process failed, a message will appear to the user with the error while verification, user must try register again. |
| Comments & exceptions |  |

* Verify Account

|  |  |
| --- | --- |
| Use case id | 2 |
| Use case name | Verify |
| Actors | Parent |
| Precondition | Parent must enter his/her personal data in the registration page fisrt. |
| Post condition | Account registered |
| Input data |  |
| Description | User open the website, and after he/she done the registration phase an verification email will be sent to the user then he/she will open the email and press on the link to verify the account.  After that the user will be redirected to the login page. |
| Comments & exceptions |  |

* Login

|  |  |
| --- | --- |
| Use case id | 3 |
| Use case name | Login |
| Actors | Parent/Child |
| Precondition | User already created an account and account verified |
| Post condition | Logged in the website or in the application. |
| Input data | Username, Password |
| Description | Users open the application/website, then go to the login page, user enters the username and password and then press the login button, if login success, user redirect to home page, if login failed, a message will appear for the failed and ask the user to try again. |
| Comments & exceptions |  |

* Logout

|  |  |
| --- | --- |
| Use case id | 4 |
| Use case name | Logout |
| Actors | Parent/child |
| Precondition | User must be logged in firstly in the application/website |
| Post condition | Logout from the application/website |
| Input data |  |
| Description | Users open the application/website, then go to the settings page, then  Press on logout button. |
| Comments & exceptions |  |

* Placement test

|  |  |
| --- | --- |
| Use case id | 5 |
| Use case name | placement test |
| Actors | child |
| Precondition | **-** |
| Post condition | Show the score for the user |
| Input data | **-** |
| Description | The child opens the application for the first time this will not appear again |
| Comments & exceptions |  |

* Evaluate placement test

|  |  |
| --- | --- |
| Use case id | 6 |
| Use case name | evaluate placement test |
| Actors | child |
| Precondition | placement test must be completed |
| Post condition | go to home page |
| Input data | - |
| Description | the application calculates or predicts the user's age throw the placement test and opens the appropriate games for him |
| Comments & exceptions |  |

* Select game

|  |  |
| --- | --- |
| Use case id | 7 |
| Use case name | select game |
| Actors | child |
| Precondition | placement test score |
| Post condition | select level |
| Input data | - |
| Description | user can select the game in the appropriate games that open for him based on the placement test score |
| Comments & exceptions |  |

* Select level

|  |  |
| --- | --- |
| Use case id | 8 |
| Use case name | select level |
| Actors | child |
| Precondition | Select game |
| Post condition | play game |
| Input data | - |
| Description | every game contains a bunch o levels just the first level will be open in every new game the user unlock |
| Comments & exceptions |  |

* Play game

|  |  |
| --- | --- |
| Use case id | 9 |
| Use case name | play game |
| Actors | Child |
| Precondition | Select level |
| Post condition | Evaluate score |
| Input data | - |
| Description | once you select the level the game will be started |
| Comments & exceptions |  |

* Evaluate game

|  |  |
| --- | --- |
| Use case id | 10 |
| Use case name | evaluate game |
| Actors | child |
| Precondition | Playing any level at any game |
| Post condition | open next level |
| Input data | - |
| Description | after finishing the game in a specific time, the app will calculate the points you collect or the achievement you will get and your progress in the game |
| Comments & exceptions |  |

* Next level unlock

|  |  |
| --- | --- |
| Use case id | 11 |
| Use case name | Next level unlock |
| Actors | child |
| Precondition | Playing and win the level |
| Post condition | Evaluate game |
| Input data | - |
| Description | you finished the level with a win, after the game calculates the points, the next level will be unlocked |
| Comments & exceptions |  |

* Collect points

|  |  |
| --- | --- |
| Use case id | 12 |
| Use case name | collect points |
| Actors | child |
| Precondition | finish level |
| Post condition | Evaluate game |
| Input data | - |
| Description | after finishing every level, you will get points depending on the time you finish the level. |
| Comments & exceptions |  |

* Get achievement

|  |  |
| --- | --- |
| Use case id | 13 |
| Use case name | get achievement |
| Actors | child |
| Precondition | win the game |
| Post condition | Evaluate game |
| Input data | - |
| Description | -- |
| Comments & exceptions |  |

* Get progress

|  |  |
| --- | --- |
| Use case id | 14 |
| Use case name | get progress |
| Actors | child |
| Precondition | Playing the level |
| Post condition | Evaluate game |
| Input data | - |
| Description | -- |
| Comments & exceptions |  |

* Mange profile

|  |  |
| --- | --- |
| Use case id | 15 |
| Use case name | mange profile |
| Actors | child |
| Precondition | User already created an account and account verified |
| Post condition | Change the name or avatar or wallpaper |
| Input data | - |
| Description | Users open the application, then go to the profile page there you can change the name, avatar, and wallpaper |
| Comments & exceptions |  |

* spend points

|  |  |
| --- | --- |
| Use case id | 16 |
| Use case name | spend points |
| Actors | child |
| Precondition | User already created an account and account verified and play games |
| Post condition | buy an avatar and wallpaper |
| Input data | - |
| Description | If you have an account and play any game that means you have collect points, to spend it you have to go to the shop and buy what you can buy |
| Comments & exceptions |  |

**Use Case Scenario tables:**

* Registration

|  |  |
| --- | --- |
| Scenario id | 1.1 |
| Scenario name | Success User Registration |
| Target use case | User Registration |
| Scenario events | Users register with valid Email and the verify the account so user registration happen successfully |

|  |  |
| --- | --- |
| Scenario id | 1.2 |
| Scenario name | Fail User Registration |
| Target use case | User Registration |
| Scenario events | Users register with invalid Email so user registration happen unsuccessfully |

* Verify Account

|  |  |
| --- | --- |
| Scenario id | 2.1 |
| Scenario name | Success account verification |
| Target use case | Verify |
| Scenario events | User enter his/her a valid email and a verification link will be sent to this email, User will click on the link, then it will be successfully verified, and finally user will be redirect to home page |

|  |  |
| --- | --- |
| Scenario id | 2.2 |
| Scenario name | Fail account verification |
| Target use case | Verify |
| Scenario events | User enter his/her a wrong email and a verification link will not be sent to the email then it will be unsuccessfully verified. |

**Diagram

Description automatically generatedClass diagram:**

**Database Diagram:**

**ERD**

**Diagram

Description automatically generated**

**Schema**

**Timeline

Description automatically generated with low confidence**

**Description:**

• Proposed entities (User, Parent, Child, Game, Level, Achievements, Shop\_item) that belong to the system

• Proposed attributes, it shows in each table.

**Tables:**

• User

* User\_id
* User\_Username
* User\_Email
* User\_Password

• Parent

* Parent\_id
* Parentr\_name

• Child

* Child\_id
* Child\_name

• Game

* Game \_id
* Game \_name
* Game \_describtion
* Game \_completed
* Game \_Total\_Star\_completed

• Achievements

* Achievements \_id
* Achievements \_name
* Achievements \_Hint
* Achievements \_Target
* Achievements \_Image\_path

• Level

* Level \_id
* Level \_Stars\_Collected
* Level \_Complete\_State

• Shop\_item

* item \_id
* item \_name
* item \_Price
* item \_Type
* item \_Image\_path

**Activity diagram:**

**Child**

**Graphical user interface, application

Description automatically generatedGraphical user interface, application

Description automatically generated**

**Graphical user interface, application

Description automatically generatedGraphical user interface, application

Description automatically generated**

**Graphical user interface, application

Description automatically generated**

**Parent**

**Graphical user interface, application

Description automatically generatedGraphical user interface, application

Description automatically generatedGraphical user interface, application

Description automatically generated**

**Flow Chart:**

**Package diagram:**

**Sequence diagram:**