This Section will illustrate the meaning of software architecture and how it improves the productivity and quality of the software, also we will describe the points that we took in view to make software architecture for our project.

**What is the Software Architecture?**

The design stage in software development is a process by which the conceptual model obtained in the requirements stage is transformed into another model which is capable of being implemented. The software architecture of a computing system is the overall structure of the system which comprises software components and the interactions among them[39].

**Benefits of software architecture.**

By now we must have understood that good software architecture is extremely important for our software project. So here are some points of benefits that we took in view to make our software architecture[40].

* It creates a solid foundation for our software.
* Increases performance of the platform.
* Providing a big-picture vision of the software.
* Better code maintainability.
* Helps manage complexity.
* risk management.

**Our Educational Game Architecture**

According to the requirements that we chose our software should provide four main functionalities:

* Providing hints to the players in the Arabic language.
* Representing the learning content with appropriate elements.
* Providing quizzes to the players to test their understanding.
* Giving players rewards to keep them motivated.

**Diagram

Description automatically generatedOur Architecture**

**Chart

Description automatically generatedDiagram

Description automatically generatedDiagram

Description automatically generatedText

Description automatically generated with low confidence**

**Data Tier**

**Application Tier**

**Presentation Tier**

**Our software architecture is split into three tires.**

**Presentation tier**

The presentation tier is the user interface and communication layer of the application, where the end-user interacts with the application. Its main purpose is to display information to and collect information from the user. This top-level tier runs on our web browsers and mobile app.

Web presentation tiers are developed using HTML, CSS, and JavaScript, and mobile presentation tiers are developed using Unity.

**Application tier**

The application tier, also known as the logic tier or middle tier, is the heart of the application. In this tier, information collected in the presentation tier is processed.

The application tier can also add, delete or modify data in the data tier.

The application tier is developed using Unity and communicates with the data tier using API calls.

**Data tier**

The data tier, sometimes called database tier, data access tier, or back-end, is where the information processed by the application is stored and managed.

In our software we used two types of databases first is a local database to store the game assets and the player progress, and the second is a cloud database to store the account information and the progress of the player

In the three-tiers, all communication goes through the application tier. The presentation tier and the data tier cannot communicate directly with one another.

**Diagram

Description automatically generated**

The image above shows the places where system operations will take place, There are two main tires first one is the client tier and the second one is the cloud tier.

The first tier contained the presentation tier and the application tier and part of the data tier. The second tier contained the second half of the data tier.