DESIGN AND BUILD LEARNING APPLICATIONS FOR CHILDREN AGED 4-8 YEARS BASED ON ANDROID

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ABSTRACT

An Android-based Children's Educational Game Design has been created with the aim of creating learning media for children through a game, to make children more interested in learning to recognize numbers and pictures and to build children's memory to recognize numbers more easily. At the time of making educational game applications for children, researchers used Mit App Inventor and used Game Rapid Application Development (RAD) development methods. The system design method used is the Unified Modeling Language UML. The results of the implementation of the design of educational games that have been made will display in the form of game menus, level games that will be played by children.

Keywords : *Rapid Application Developmen (RAD), Unified Modeling Language (UML), Mit App Inventor*

INRODUCTION

The development of information technology in electronic media such as cellphones or mobile phones that have many functions that can facilitate everyday human work, which is commonly called a smartphone, is growing day by day. The use of smartphones in today's era knows no age anymore, from parents to children now can use smartphones. In the use of smartphones for children, especially for children aged 4-8 years, there are now more and more, because since toddlers their parents have accustomed their children to using smartphones with the android platform. In the introduction of guessing pictures and counting to children aged 4-8 years, parents often only teach their children in Indonesian. The design of a learning and counting application system for early childhood based on Android is one of the efforts to provide information and a lesson to children about the introduction of letters, numbers, and colors as well as the basis of counting for children. In general, children really like to learn with drawing and animation methods, therefore, in designing a learning and arithmetic application system for early childhood based on Android, it can help parents to teach and introduce children to recognizing and counting.

LITERATURE REVIEW

An information system is an organized combination of people, hardware, software, communication networks and data resources that collects, transforms and disseminates information within an organization. According to Witarto in Nur et al (2017: 57), "The information system is a system that contains an SPD network (data processing system), which is equipped with

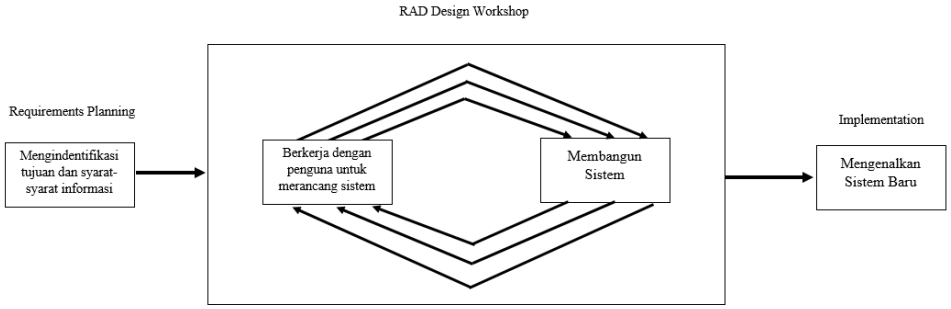
communication channels used in data organization systems. Process elements of the information system include collecting data (data gathering), processing stored data, and disseminating information.

Website is often also called the web, which can be interpreted as a collection of pages that display various kinds of text information, data, still or moving images, animation data, sound, video or a combination of all of them, both static and dynamic. form a series of interconnected buildings. According to Pontoh and Lumenta (2016). Android is an operating system (OS) created as an open source platform for Linux-based mobile devices that includes an operating system (OS), middleware, and applications. Android facilitates an open platform for developers to develop applications that they want to create.

Android has a variety of tools and frameworks to create applications easily and does not take a long time. Because of the Android SDK (Software Development Kit) application developers can start making applications on the Android platform using the Java programming language.36 The concepts contained in Java programming are related to Object-Based Programming (OOP). For programmers to access the application programming interface (API) on Android requires a Software Development Kit (SDK) provided by Android, this SDK provides a way to access the application programming interface (API) on Android. According to Ir. Yuniar Supardi (2017 : 1)

METHODOLOGY

The software development methodology used is the Rapid Application Development (RAD) method. According to Kendall (2011), RAD is an object-oriented approach to system development that includes a development method as well as software. RAD aims to shorten the time normally required in the traditional systems development life cycle between the design and implementation of an information system.



Requirements Planning

In this phase, the user and the analyzer meet to identify the goals of the application or system and to identify the information requirements that result from those goals.

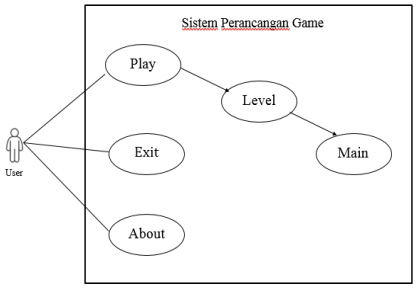
RAD Design Workshop (RAD Design Workshop)

This phase is a phase to design and improve which can be described as a workshop. Analysts and programmers can work on building and showing users a visual representation of designs and work patterns. This design workshop can take several days depending on the size of the application to be developed. During the RAD design workshop..

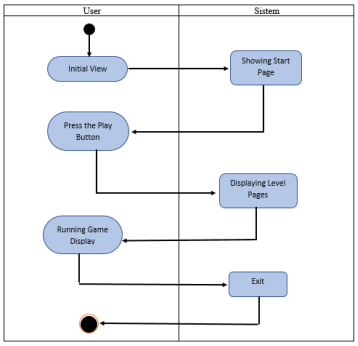
Implementation (Implementation).
In this implementation phase, the analyst works with the users intensely during the workshop and designs the business and non-technical aspects of the company. As soon as these aspects are approved and systems are built and screened, new systems

Unified Modeling Language (UML) is one of the language standards that is widely used in the industrial world to define requirements, make analysis and design, and describe architecture in object-oriented programming, according to Rosa in Irmayani & Susyatih (2017).

Usecase Diagram
Usecase Diagram is a model for the behavior (behavior) of the information system to be made. Use case describes an interaction between one or more actors and the information system that will be created

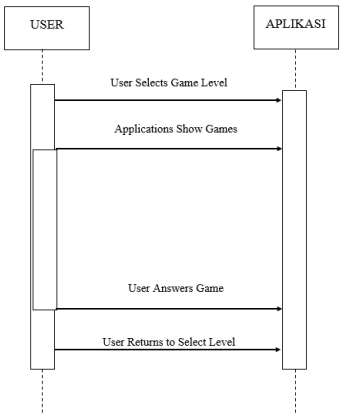


Activity Diagrams
Activity Diagrams describe the workflow or activities of a system or business process or menus in the software.



Sequence Diagram

Sequence Diagram describes the behavior of objects in use cases by describing the life time of objects with messages sent and received between objects.



FINDINGS & DISCUSSION

The results of research conducted by researchers are to produce learning media products in the form of Children's Educational Game Applications. This research and development uses MTI App Inventor. The following are the results of the research on Android-Based Application Design for Children Age 4-8 Years

Main Menu Display

There are 3 options on this main page, namely the Play, Exit, and About buttons. The following is a design display of the main menu form of the learning application in the image below:

Level Selection Display

Level Selection Display where the book is able to choose any level to play the game. Here's what it looks like below.

Show Game Time

After the user selects the level, they will be directed to the game that matches the selected level, if they have played the game, they will return to the main menu. Here's the game time display.

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