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Cloud-Based Enhanced Storage System Using Android Technology

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Abstract

Cloud storage is a secure-oriented aspect for users. It provides on-demand service to the user, where users can connect to a cloud through network to store user's data in the cloud. In a frequently connected world, users obtain personal or shared data stored in the cloud such as Dropbox, Google Drive and Microsoft One Drive with the various gadget. This shows the popularity of cloud storage being used among users. This project aims to integrate enhance features in cloud storage which can be more adaptability for users. This proposed system contains the mobile application and web application that implemented using Android Studio for mobile app, PHP for a web app and it will be stored in the cloud via Google Cloud. This system also provides basic characteristics such as delete file, attach documents and file recovery. The enhancement characteristics are QR Code and chatbot where, QR code used to scan into a web for website and chatbot allow the users to communicate within the same application. The author has chosen the questionnaire and case study as fact-finding method for proposed system.

Keywords

Cloud Storage, Personal Cloud Storage, Android technology, Web application

Introduction

Storage is a method through which digital data is stored using computing technology within a data storage device (Mindsight, 2019). Storage is a system that allows a machine to momentarily or permanently maintain information. Storage can also be related to computer data storage or electronic data storage. However, Cloud storage is a service model where information is retained, controlled, digitally backed up and rendered accessible to customers via a network (usually the Internet). Users usually charge a monthly price per consumption for their cloud data storage. While the price per gigabyte has been pushed down radically, cloud storage companies have introduced operating expenses that can render the technology more costly than customers that have been negotiated for. Cloud security among customers remains to be a problem. Providers have attempted to address these concerns by constructing safety capacities into their facilities, such as encryption and authentication. Over the past five years, local storage is taken off by cloud-based storage. As with any technology decision, the best choice for users depends on efficiency and agility (Mindsight, 2019).In this case, it clearly defines that cloud storage is a fast-growing service, whereby it gives users a safe, secure and in some cases nearly unlimited means of storing digital data online, without depending on

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personal hardware or private data centers. Therefore, this proposed system would be useful for users.

Mobile smart devices such as smartphones and tablets are progressively interwoven with our life 2012 forecasts forecast up to 10.3 billion mobile devices by 2016(Provider, Forecasts and Papers, 2019), While revenues of portable smart devices were anticipated to reach nearly 1.2 billion units in 2013 (Ferreira, Kostakos and Dey, 2015). These phones provide customers with a wide spectrum of fresh affordances and allow communication from anywhere, anytime, and any phone. One unyielding benefit of these lightweight mobile devices, however, is their restricted memory capability, limiting their potential applications as well. Thus, it clearly shows that using a smartphone are common in everyone and they would be using the mobile application in their daily activities. Therefore, the chance of using a cloud storage application would be high. As a result, the author has integrated the enhance system with a mobile application and web application.

Cloud storage architectures focus on delivering extremely scalable and multi-tenant housing on request (Curino et al., 2019). Cloud storage architectures generally comprise of a front end exporting an API for memory access. This API is the SCSI method in traditional memory devices, but these procedures are developing on the internet. Web storage front offs, file-based front offs, and even more traditional front offs (like Internet SCSI, or iSCSI) can be found there. There's a piece of middleware behind the front edge that I call the principle of memory. This coating uses a range of characteristics over traditional information positioning algorithms, such as replication and data reduction (with spatial positioning account). Finally, the rear side uses data storage for physical purposes. This may be an inner protocol implementing particular characteristics or a traditional rear door to the physical drives. (Zeng et al., 2009), (Al Shehri, 2013). Figure 1 below shows the cloud architecture.

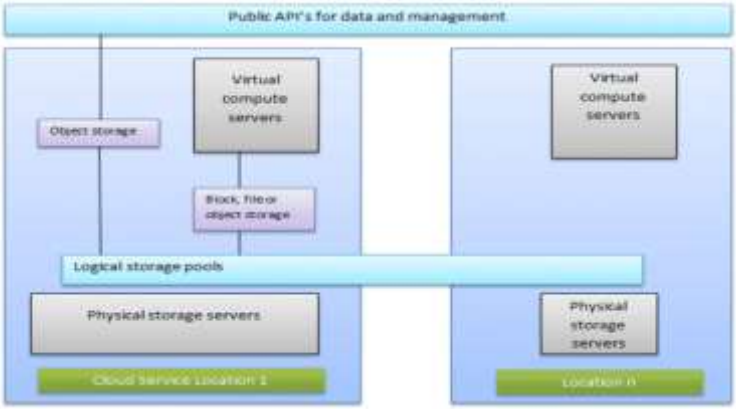

Figure 1: Cloud Architecture

Methodology

A research was conducted before the developing the proposed system. Research relates to a knowledge search or a science and systematic search for relevant data on a particular topic (Kothari, C.R., 2004). A system may collapse without any previous research or the system may not be what the user needs. The most significant element of methods and techniques for data collection is to guarantee the source of the information gathered. Therefore, a qualitative and quantitative method has been performed. Qualitative means measuring something by quality rather than quantity, while quantitative means measuring something by amount instead of

quality (SHIFT Communications PR Agency - Boston | New York | San Francisco, 2019). The author chose to use the case study method and questionnaire as the two fact-finding methods for this project.

Since it is an enhanced system, the author had to go through all the existing cloud storage in order to identify the drawbacks for improvement. Reading the journal and articles gives out useful information for the proposed system. Besides, the author able to identify user's requirement to implement in this system. Besides that, the author choses questionnaire method because it is a suitable fact-finding method for the proposed system. This also provide a chance to collect big quantities of feedback on the proposed system to obtain some understanding and opinion of the targeted audience. The questionnaire method using Google form is also an enabler to automatically analyse the answers. This software analyses the information automatically and displays its appropriate graphs and charts which help to save time as well. The questionnaire was administered to 30 persons in order to determine the needs of the users. Here's an example of a summary of questionnaire analyses.

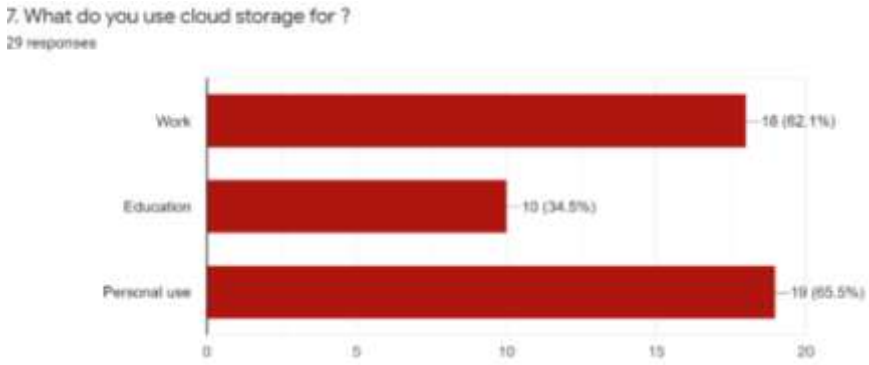

Figure 2: Questionnaire analysis

Results and Discussion

Proposed cloud storage is mainly developed using Android Studio with Java language. This Android Studio integrated with firebase for real time database, authentication and storage. Besides, the data in firebase will stored in google cloud. However, Visual Studio Code will be used for web development using PHP language. This web development will be connected to mobile app with the integration of JSON file and it will be host in web using 000webhost as shown in figure 3.

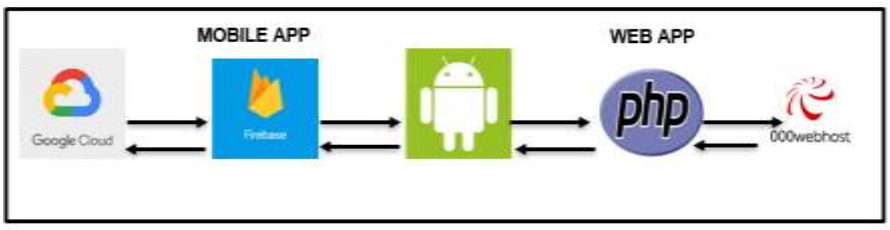

Figure 3: Web development connected to mobile application

The program begins by logging in and registering. In order to use the program, it is necessary that users register an account. Authentication from Firebase is used for login

credentials. The user is routed to the dashboard screen when logging in to the mobile application as illustrated in figure 4 .

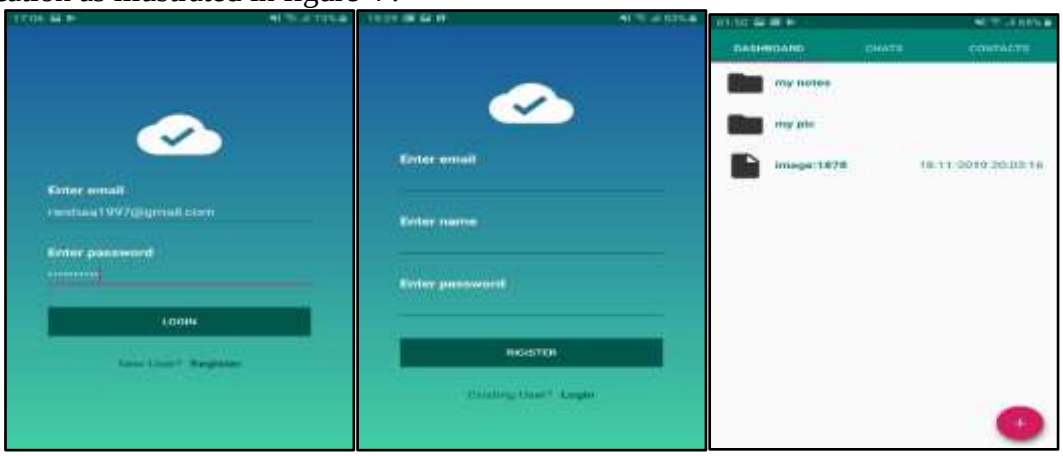

Figure 4: Login and Registration

On dashboard screen, the users able to upload files, create folders and can delete the unwanted files. These files are stored in the Firebase store. In addition, Firebase Storage seamlessly incorporates Firebase Authentication to define users and provide declarative security that allows users to control access to personal records as user preferences. Figure 5 shows the features for upload, create folder and delete.

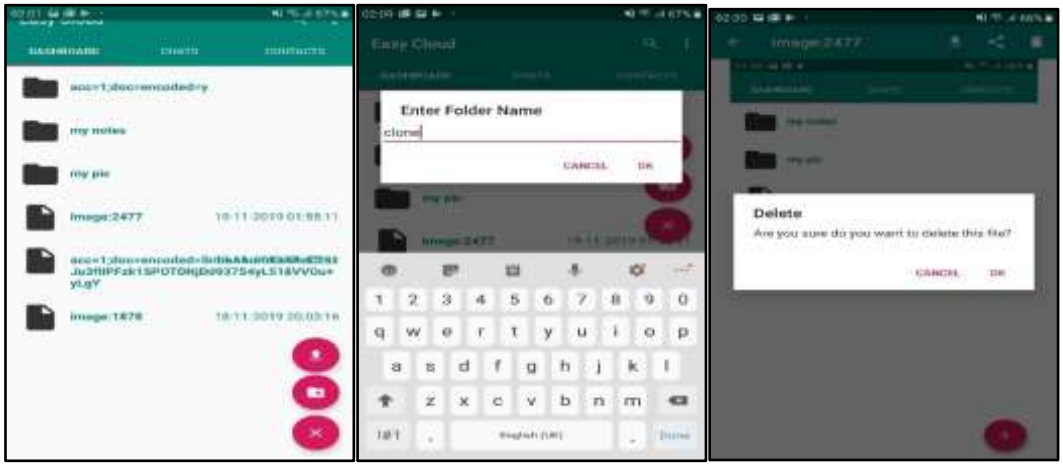

Figure 5: Upload, Create folder and Delete

The chatbot feature as illustrated in figure 6 allows users to interact and exchange files with users of this app. On the other side, the users can only view the contact list of whom has been saved to their contact that subscript to this application.

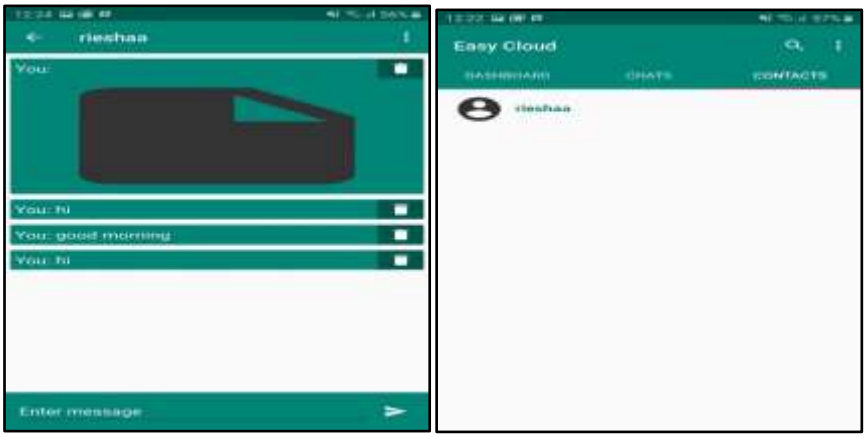

Figure 6: Chatbot and Contact features

Trash features in figure 7 embedded in the application where users will permanently delete the files from trash and restore certain files to be used. In addition, the users can access files from trash to their physical device by selecting the store location.

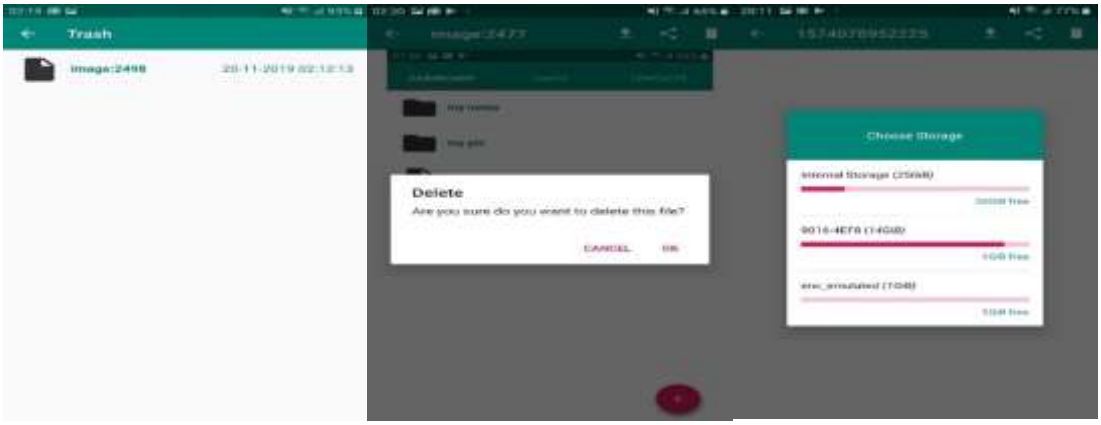

Figure 7: Trash features

As shown in figure 8 below, the option toggle on / off , the user can transform the theme into the dark mode or light mode. In this case, users will change their password only and all information will remain the same. This feature was developed to enhance the functionality and behaviour of an application.

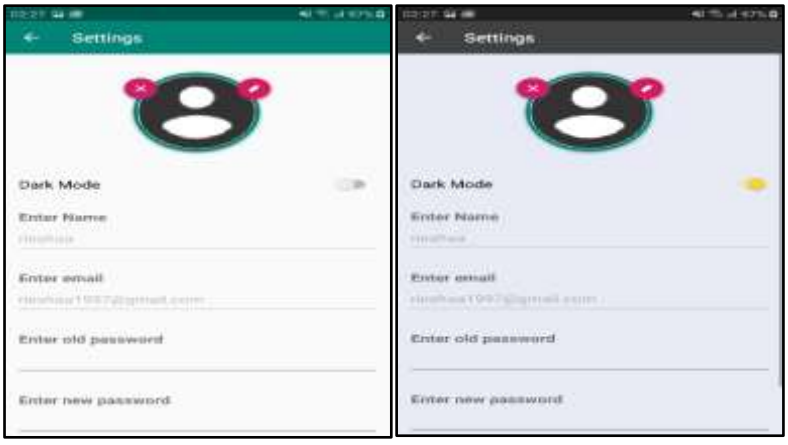

Figure 8: Toggle features

The QR code designed to access into web. Here, the users have to scan their QR code from the web in order to access into web and it will appear into bigger screen. On the other hand, the user must also sign in for a web application. In that case, the users can scan the QR code that appear in web application to use the application in bigger screen. The user can use the entire mobile application feature in the web application, but the settings function is only applicable in mobile application. The web application knowledge is expressed in figures 9 and 10.

Figure 9: QR code scanner, QR Code and Upload image function

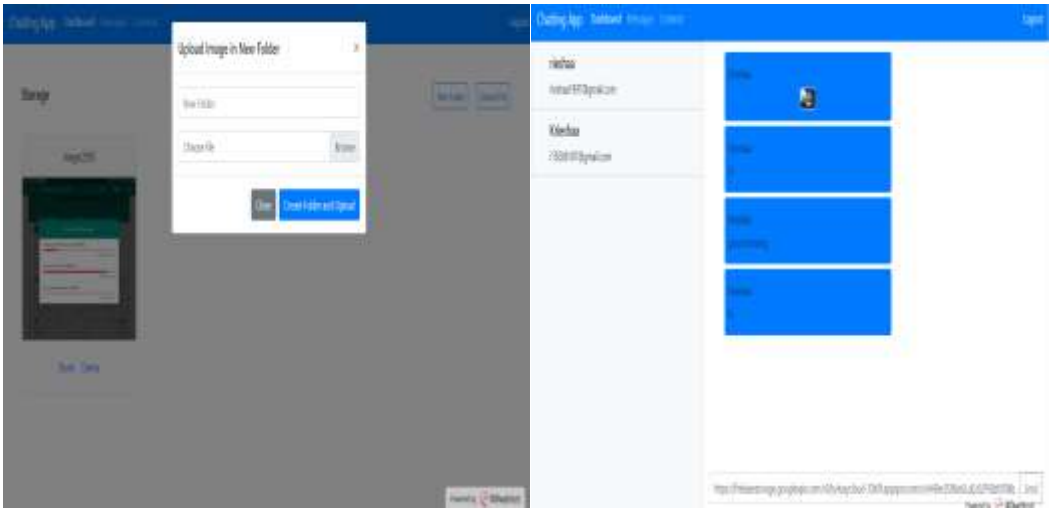

Figure 10: Create folder, upload function and Uploaded images for view

Finally, feedback from the users are analysed. the author decided to perform user evaluation with prospective users of the system by face-to-face demos and then gather their feedback on the developed system. As a conclusion all user are satisfied with the proposed system.Based on the user analysis performed and the input received, the author believes that the system developed is working as expected and has no issue with its target audience is used. The users who tested the program were technologically inclined to consider the functionality better for the users. The system's usability component was also at good quality.

Conclusions

The proposed system has succeeded in achieving the stated goal. The development to add new functionality such as chatbot and QR code helps to improve the security layer. The developer successfully developed mobile apps using Android Studio and web apps using PHP. To ensure

that the program is suitable for the proposed idea, the designer has also carried out extensive testing and evaluation. In the future, the inclusion of push message notification is one potential of improvement. This message notification can be added to notify users of a chatbot message and storage usage. In addition, a cross-platform application can be developed to enable a larger audience to access this mobile application. Another approach to enhance the request by giving users used in terms of the on-demand system extra storage space for high data. It means users paying depending on the subscription for the highly consumed storage space which is the idea of Cloud Platform as a service**.**

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