Android Mobile Note-Taking Optimization Using Hybrid Techniques

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ABSTRACT

Android is the most widely used smartphone OS. The proposed system is an android base system that is designed to run basically on android mobile devices and various supporting android platforms. This system will allow note taking at its very best as well as reducing the material to a mere software that can be easily moved around. The goal of this paper is to develop an android mobile Note-taking app that will be equipped to store student's note in the designed data base, keep track of time and date of note creation, allow editing of the note, accommodate speech to text and store notes online via student's email. The app allows both students, lecturers, researchers etc to take, manage and share notes, amongst other pieces of functionality that aim to make the note-taking process automated and easier for users to manage all aspects of note-taking.

This system will prevent the act of time wasting as transfer of notes will be through mobile share apps. Since students value their mobile devices very much more than their books, these notes are less prone to damages by some unforeseen factors. It's also very much more portable to move around with. The technology used to bring this software to reality includes XML, Java programming language, Android studio IDE and finally the SQLite database. The design methodology used is OOADM.

KEYWORDS: Note-taking, Android, App, Memory, Mobile

1. INTRODUCTION

Note-taking is a very simple and quite common activity of intelligence analysts, especially all-source analysts. Common as this activity is, there is little or no way specifically aimed at making it more effective and efficient, but we can enhance its ability and portability technology-wise, hence the note-taking application, but before then let us take a look at the background of note-taking, according to [1], the act of writing notes can be regarded as writing across a wide range of curriculum, it is one of the main disciplines in school. According to [2], the best ways in which one could take notes in class were by adopting any of the methods which included, mind-map, cornel method, flowchart etc. These methods had one thing in common, and it was the fact that they were all based on the traditional paper-based method. Now this is where the problem lies because, these methods involved a great deal of time wasting in terms of note

circulation. These paper materials are easily susceptible to damage, example, fire and water damages. In the same vein [3] says that, note taking on paper sometimes rubs the writers the opportunity to listen and connect fully with the teacher. Furthermore, [4] said that studies showing highly polished up learning performances for students who take notes collectively have surmised that sharing this task among group members may diminish the irrelevant absurd burden placed on each member. According to [5] the act of note-taking is a pedagogical attribute that helps to implement a technique that helps leverage students' strengths and as well their weaknesses. [6] Stated that the study had them realized that note-taking activity had gradually started changing from synchronous to multimodal and asynchronous. From [7], due to the fact that students are required to learn programming skills, the necessitated that note-taking had to be computerized. They [8] developed a mobile note taking application that had a wide range of attributes which some included the ability to allow the students draw diagrams into the platform. Apart from the fact that this application, did not make room for the physically impaired such as the blind. It also wasn't totally security tight, if by virtue, a student's mobile device was stolen, destroyed or corrupted, one would totally lose every note taken in the application. Finally, the proposed system is designed to tackle the lapses left behind by these previous works such as stated earlier that the best techniques for note taking are the following methods as stated in the above. This system will prevent the act of time wasting as transfer of notes will be through mobile share apps. Since students value their mobile devices very much more than their books, these notes are less prone to damages by some unforeseen factors. It's also very much more portable to move around with.

2. THE PROCESS OF NOTE TAKING

The note-taking process is a complex arrangement of errands. During a lecture, note taking can be very trying for most people since it includes utilizing tuning in, handling, and composing abilities at the same time or moving to and fro between these abilities. For students with gentle incapacities (MD) (e.g., learning handicaps [LD], mental hindrance [MR], or enthusiastic/conduct inabilities [E/BD]), note taking can become overpowering. At the point when Suritsky talked with students with incapacities about their note-taking abilities, she discovered different issues. In her examination, these students detailed that they experienced issues choosing which significant talk focuses to record, recording notes rapidly enough to stay aware of the educator, and keeping up with regard for the talk. These issues

shock no one and delineate the point that students, especially those with MD, ought to be given express preparing in note taking to get familiar with these abilities and procedures and practice to incorporate the coordination of these abilities. Note taking is seen as an interaction that starts preceding the talk and finishes after student survey their notes. Understanding this cycle can help instructors and guardians better plan students for note taking.

2.1. NOTE TAKING AS EXTERNAL MEMORY

Note-taking enables the learner to record between time snippets of data for later use by facilitating the heap on the functioning memory; along these lines, notes are considered as outside memory stockpiling By diminishing burden on the functioning memory, note-taking builds the ability of the student to retain and deliver better notes. Trial contemplates demonstrated that the spatial organizing of notes could be utilized to work with the creation and clear show of helpful data. Individuals take notes to record data, help their memory to recollect something that would happen later on or to recall a previous event. Note-taking is considered as a feature of the retention cycle that makes an outer memory to diminish the heap on the functioning memory and to assist with peopling resolve complex data stockpiling. Understudies have roughly half shot at reviewing recorded notes and just about 15% shot at reviewing non-recorded notes. Most note-takers depend on taking notes to help the memory and review measures for unique considerations, as they can't quickly investigate all thoughts during the talk, wherein materials are by and large introduced in a fast way.

2.2. REVIEW OF LITERATURE

In the course of this study, we have come to the conclusion that note-taking is a very vital aspect of learning and a huge boost for human research. In this section of the research work, the previous works on this related topic will be reviewed. Below are some of the existing systems:

According to [13], they emphasized the importance of this action in terms of memory retention for students and there exist two best note formats which include the linear and non-linear style. Linear styles, or note-taking in a format similar to conventional written texts or outlining are some of the most common styles of notes used by students [14]. In contrast, non-linear styles that use graphical representations (e.g., the mapping method) allow students to organize the content of their notes in a systematic, yet unconventional fashion that may be difficult for others to understand easily. In the same vein, [15] stated that in recent years, note-taking improvement

has failed technology wise because, most app programmers focus only on making note-taking easier and hereby forgetting the major effects on the psychological aspect of the note-taking process. Furthermore, [16] states that there is a need to inculcate note-taking into the school curriculum as to help student improve their learning comprehension. They also stated that there are various types of note taking methods which include, the Sentence Method, Mind Mapping Method, The Formal Outline Procedure, Clustering, and the Cornell Method (CM), and they finally advised that however, trained note-takers yield significantly better performance than untrained note-takers because they are instructed, though informally, to take a more systematic step towards note-taking. In the same context, [17] stated that note-taking provides a platform to carry out a research on consecutive interpreting, according to this research, interpreters preferred abbreviations to full text, English language to foreign languages etc. Also, [18], recorded that a group of researchers did a study where they compared pen-and-paper note-taking with taking notes on the computer. The authors found that although there was no difference in recalling information, the computer was better for transcribing notes than for organizing them. With this, they were able to conclude that the introduction of a software that helped in note-taking would greatly improve the learning comprehension of students. According to [19], note-taking is a very vital practice that is carried out in meetings and if automated, will make the job easier. He proposed a note taking application that would allow users in the meeting successfully take down important points to be remembered. Furthermore, [20] brought to light that, between the male and female gender, the females write more detailed notes than the males, but the males have more speed than the females, also language comprehension and working memory. In the same vein [21] recorded that note-taking is an important skill for postsecondary success, they also carried out a research on the type of note-taking which he concluded were guided, split-page and self-restructured. Also [22], compared the effects of taking notes with a laptop and also using longhand form of note-taking and realized that, laptop note takers recorded more note in exact manner than the other method. This means that with the introduction of technology into this traditional process of note-taking, there has been nothing but great improvements in this field of research. [23] Carried out an investigation between note taking on paper with the hand and note-taking using the laptop and concluded that note-taking with longhand was a bit more superior and preferred to the other. According

to [24], testing and note-taking could be much more desirable when compared to each other. They further stated that testing is a well-established desirable difficulty. [25] have it that students' notes were analyzed to know which method was more effective between PowerPoint slides and overheads, and with the result they figured out that significant effects were also found on performance quiz items with due diligence to the quantity of notes the educator provided. According to [26], Most lecturers consider note-taking a vital part of classroom learning. Due to advancements in technology such as tablet computers applications, mobile applications, and recorded classes are altering classroom dynamics and affecting the way student's carryout and review class notes. These tools may improve a student's ability to take notes, but they also may hinder learning. Also, [27] stated that note-taking is an activity carried out by students to improve the amount of knowledge they remember after every class they attend. They also stated that there exists a beneficial effect of note-taking which he concluded was the encoding effect. According to [28], they carried out a research to investigate the recent changes in the note-taking classrooms and if they changes have been for the better or for the worse, at the end of this research, he figured out that with the help of technology, students enjoy note taking more recently as there isn't much stress as there used to be. Finally, [29] has it that note-taking helps students to memorize their course contents easier than just attending lectures and listening in class.

3. NOTE LEAK FROM APP

Android runs on a Customized Linux Kernel which controls the equipment like Memory and CPU and permits correspondence b/w equipment and client [1]. Two principle segments of Android application are Activities and Fragments [5]. Non-upgraded code for these parts which is the vast majority of the occasion's blunder of assets [7], can prompt different memory spills and henceforth memory issues. Subtleties of these parts are talked about underneath: Activities are essential segments of any Android OS. They essentially address a View Controller. A solitary view in an application is an Activity. At whatever point, another view is shown, it's another action, when that view is excused, and the action is excused. Sections are bits of UI. They are reusable parts which can be utilized in different exercises. Their life is subject to the existence of a movement. At the point when an action is made, parts are made. At the point when a movement is obliterated, pieces are additionally annihilated.

3.1. NOTE-TAKING TECHNIQUES

Various methods have been proposed to reduce and eliminate memory leaks such as use of LeakDAF [5], creating test cases to identify and fix memory leaks [6][7] by following certain programming guidelines. **LeakDAF** uses UI test techniques to run the app and analyze memory dump files to identify leaked activities and fragments. **Test Cases** technique to identify and fix memory leaks have been proposed by researchers in two separate ways which are as follows:

1. Prioritize Test Cases: Utilize an approach to deal with focus on experiments and run those cases in explicit request as opposed to running all the experiments as they can be costly and brings about putting a great deal of burden on the CPU. The need of the experiments is controlled by executing AI calculations which anticipate precision of an experiment to decide a memory spill [8].

2. Test Generation for Detection of Leaks: Proposes a procedure which decides a characteristic arrangement of GUI occasions, for example, application dispatch and close. Redundancy of such occasions ought not to build memory utilization in case there are no memory spills. In

case there are spills, memory will continue expanding [8].

3.2. ANALYSIS OF THE PROPOSED SYSTEM

The proposed system is an android base system that will be designed to run basically on android mobile devices and various supporting android platforms. This system will allow note taking at its very best as well as reducing the material to a mere software that can be easily moved around. The aim is to develop an android mobile Note-taking app that will be equipped with the following objectives:

1. To store student's note in the designed data base.
2. To keep tract of time and date of note creation.
3. To delete unwanted materials (notes).
4. To accommodate speech to text.
5. To store notes online via student's email.

4. YSTEM ARCHITECTURE

The system architecture is a 3-tier, and this include the presentation tier, middle tier, and the data tier. The presentation tier is the user interface designed using XML. The middle tier is the logic tier, which is designed using Java programming language. Then the data tier is responsible for storing the data. The database management system used to develop this system is SQLite database. The figure below illustrates the architecture for the system:

Server

Presentation Tier

Middle Tier

Data Tier

XML

JAVA

SQLite Database
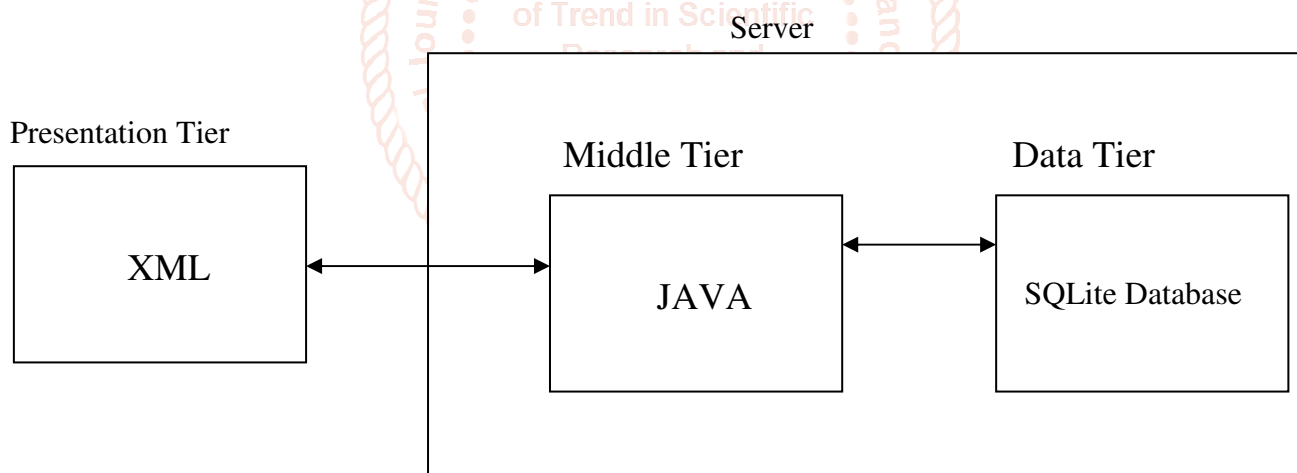
Fig 4.0 System Architecture

4.1. RESULT AND DISCUSSION

This paper was designed to tackle some of the setbacks caused by the traditional way of taking notes, as well as improve learning ability in the various areas of education. This paper is also designed to help students in the portability aspects of the notes and a special way of storing these notes to prevent them from damages from unforeseen circumstances. It allows students to take down notes adequately and faster, it allows room for students to add their own personal knowledge and allows for more than one way of inputting data into the note app which includes typing through the keyboard and finally using voice speech to text technology. It

allows students to edit their notes at any convenient time, also with a special API intent, one is capable of uploading their notes to their desired emails which will be stored for a long period of time. This system was developed to solve and enhance note-taking performance in federal institutions mostly because, most private institutions do not allow the use of mobile devices in their learning environments.

5. CONCLUSION

In conclusion, the importance of an Android app for Note-taking cannot be overemphasized, neither can it be overlooked, especially in this era where lots of students struggle with keeping up to date with various

notes from various courses. Note-taking is a very important technique or skill used to enhance learning ability in schools, higher institutions as well as meetings etc. Hence, it is necessary to try to the best of our abilities to enhance the process of note-taking. With this project, some new advancements have come into play to help students academically as well as the physically impaired students. This project was developed using android as it is the most used platform in the country and the world at large.

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