TYPHLO SAFETY APPLICATION

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ABSTRACT - The project aims at providing a very easy and a feasible hand-held helping application for the visually challenged people in their day-to-day life. We encounter many people who are so much talented In spite of their illness. These people are mostly dependent for some reason on their friends or on their family. Not everyone accompanies them in all their situations. We hereby would like to help these people during their challenging situation. We hereby would like to create three different solution modules for their three different situations. The first module provides an emergency alert to the emergency contact number saved in a particular mobile phone used by the person. The second module is a pill remainder, which would remind the person for taking a medicine at the particular time this works more like an alarm, but in addition it also tells what pill should be taken by the person. In order to differentiate pills they can be stored in different containers to easily make differences. The final module is an interactive feature which would read the messages received on their smartphone. So when a person receives a message on their screen, the application reads it.

Keywords: Android, Emergency Helper, Medicine Remainder, Text to Speech

1. **INTRODUCTION**

 The native android application is created in Java language. The key point of native apps is that they provide more security compared to hybrid apps. The native android applications are more efficient and compatible with all the android phones. This app is created to help the physically challenged people and elderly people. The expanding accessibility options included in the Google Android operating system, plus a wide array of affordable mobile devices that run the Android OS, have made the platform an increasingly popular choice for those looking for a Smartphone or tablet. Since Android is an open operating system, deployed by a number of manufacturers on their phones and tablets, buyers can choose from an array of hardware, without having to wonder whether the gadget they like best is accessible. In addition to the Talkback screen reader, Android's recent versions allow users with low vision to build their own accessible experiences using a combination of settings for changing the way the screen looks. A few vendors, including Samsung, have even added accessibility tools of their own to the stock Android environment

2. **SYSTEM STUDY**

 2.1 FEASIBILTY STUDY

The feasibility of the project is analyzed in this phase and business proposal is put forth with a very general plan for the project and some cost estimates. During system analysis the feasibility study of the proposed system is to be carried out. This is to ensure that the proposed system is not a burden to the company. For feasibility analysis, some understanding of the major requirements for the system is essential.

The feasibility study investigates the problem and the information needs of the stakeholders. It seeks to determine the resources required to provide an information systems solution, the cost and benefits of such a solution, and the feasibility of such a solution. The analyst conducting the study gathers information using a variety of methods, the most popular of which are:

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- Interviewing users, employees, managers, and customers.

- Developing and administering questionnaires to interested stakeholders, such as potential users of the information system.

- Observing or monitoring users of the current system to determine their needs as well as their satisfaction and dissatisfaction with the current system.

- Collecting, examining, and analyzing documents, reports, layouts, procedures, manuals, and any other documentation relating to the operations of the current system.

- Modelling, observing, and simulating the work activities of the current system.

The goal of the feasibility study is to consider alternative information systems solutions, evaluate their feasibility, and propose the alternative most suitable to the organization. The feasibility of a proposed solution is evaluated in terms of its components. These components are

- ECONOMICAL FEASIBILITY

- TECHNICAL FEASIBILITY

- SOCIAL FEASIBILITY

- OPERATIONAL FEASIBILITY

2.2 ECONOMICAL FEASIBILITY

This study is carried out to check the economic impact that the system will have on the organization. The amount of fund that the company can pour into the research and development of the system is limited. The expenditures must be justified. Thus the developed system as well within the budget and this was achieved because most of the technologies used are freely available. Only the customized products had to be purchased.

2.3 TECHNICAL FEASIBILITY

This study is carried out to check the technical feasibility, that is, the technical requirements of the system. Any system developed must not have a high demand on the available technical resources. This will lead to high demands on the available technical resources. This will lead to high demands being placed on the client. The developed system must have a modest requirement, as only minimal or null changes are required for implementing this system.

2.4 SOCIAL FEASIBILITY

The aspect of study is to check the level of acceptance of the system by the user. This includes the process of training the user to use the system efficiently. The user must not feel threatened by the system, instead must accept it as a necessity.

The level of acceptance by the users solely depends on the methods that are employed to educate the user about the system and to make him familiar with it. His level of confidence must be raised so that he is also able to make some constructive criticism, which is welcomed, as he is the final user of the system.

2.5 OPERATIONAL FEASIBILITY

The ability, desire, and willingness of the stakeholders to use, support, and operate the proposed computer information system. The stakeholders include management, employees, customers, and suppliers. The stakeholders are interested in systems that are easy to operate, make few, if any, errors, produce the desired information, and fall within the objectives of the organization.

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3. SOFTWARE ENVIRONMENT

Android is a software stack for mobile devices that includes an operating system, middleware and key applications. Google Inc. purchased the initial developer of the software, Android Inc., in 2005.

Android's mobile operating system is based on the Linux kernel. Google and other members of the Open Handset Alliance collaborated on Android's development and release.

The Android Open Source Project (AOSP) is tasked with the maintenance and further development of Android. The Android operating system is the world's best-selling Smartphone platform.[

The Android SDK provides the tools and APIs necessary to begin developing applications Android platform using the Java programming language. Android has a large community of developers writing applications ("apps") that extend the functionality of the devices. There are currently over 250,000 apps available for Android.

3.1 FEATURES

- **Application framework** enabling reuse and replacement of components
- **Dalvik virtual machine** optimized for mobile devices
- **Integrated browser** based on the open source WebKit engine
- **Optimized graphics** powered by a custom 2D graphics library; 3D graphics based on the OpenGL ES 1.0 specification (hardware acceleration optional)
- **Media support** for common audio, video, and still image formats (MPEG4, H.264, MP3, AAC, AMR, JPG, PNG, GIF)
- **GSM Telephony** (hardware dependent)
- **Bluetooth, EDGE, 3G, and WiFi** (hardware dependent)
- **Camera, GPS, compass, and accelerometer** (hardware dependent)
- **Rich development environment** including a device emulator, tools for debugging, memory and performance profiling, and a plugin for the Eclipse IDE

Figure1 . Android Architecture

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3.2 Libraries

Android includes a set of C/C++ libraries used by various components of the Android system. These capabilities are exposed to developers through the Android application framework. Some of the core libraries are listed below:

- **System C library** - a BSD-derived implementation of the standard C system library (libc), tuned for embedded Linux-based devices

- **Media Libraries** - based on PacketVideo's OpenCORE; the libraries support playback and recording of many popular audio and video formats, as well as static image files, including MPEG4, H.264, MP3, AAC, AMR, JPG, and PNG

- **Surface Manager** - manages access to the display subsystem and seamlessly composites 2D and 3D graphic layers from multiple applications

- **LibWebCore** - a modern web browser engine which powers both the Android browser and an embeddable web view

- **SGL** - the underlying 2D graphics engine

- **3D libraries** - an implementation based on OpenGL ES 1.0 APIs; the libraries use either hardware 3D acceleration (where available) or the included, highly optimized 3D software rasterizer

- **FreeType** - bitmap and vector font rendering

- **SQLite** - a powerful and lightweight relational database engine available to all applications

3.3 Android Runtime

Android includes a set of core libraries that provides most of the functionality available in the core libraries of the Java programming language.

Every Android application runs in its own process, with its own instance of the Dalvik virtual machine. Dalvik has been written so that a device can run multiple VMs efficiently. The Dalvik VM executes files in the Dalvik Executable (.dex) format which is optimized for minimal memory footprint. The VM is register-based, and runs classes compiled by a Java language compiler that have been transformed into the .dex format by the included "dx" tool.

The Dalvik VM relies on the Linux kernel for underlying functionality such as threading and low-level memory management.

3.4 Linux Kernel

Android relies on Linux version 2.6 for core system services such as security, memory management, process management, network stack, and driver model. The kernel also acts as an abstraction layer between the hardware and the rest of the software stack.

The Linux kernel is an operating system kernel used by the Linux family of Unix-like operating systems. It is one of the most prominent examples of free and open source software.

The Linux kernel is released under the GNU General Public License version 2 (GPLv2), (plus some firmware images with various licenses), and is developed by contributors worldwide. Day-to-day development takes place on the Linux kernel mailing list.

The Linux kernel has extensive support for and runs on many virtual machine architectures both as the host operating system and as a guest operating system. The virtual machines usually emulate Intel x86 family of processors, though in a few cases PowerPC or ARM processors are also emulated.

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3.5 Hardware running Android

The main supported platform for Android is the ARM architecture.

The Android OS can be used as an operating system for cellphones, netbooks and tablets, including the Dell Streak, Samsung Galaxy Tab, TV and other devices.[68][69] The first commercially available phone to run the Android operating system was the HTC Dream, released on 22 October 2008.[70] In early 2010 Google collaborated with HTC to launch its flagship[71] Android device, the Nexus One. This was followed later in 2010 with the Samsung-made Nexus S.

The early feedback on developing applications for the Android platform was mixed. Issues cited include bugs, lack of documentation, inadequate QA infrastructure, and no public issue-tracking system. (Google announced an issue tracker on 18 January 2008.)

3.6 Android operating   system

Android is an operating system based on Linux with a Java programming interface. It provides tools, e.g. a compiler, debugger and a device emulator as well as its own Java Virtual machine (Dalvik Virtual Machine - DVM). Android is created by the Open Handset Alliance which is lead by Google.

Android uses a special virtual machine, e.g. the Dalvik Virtual Machine. Dalvik uses special bytecode. Therefore you cannot run standard Java bytecode on Android. Android provides a tool "dx" which allows converting Java Class files into "dex" (Dalvik Executable) files. Android applications are packed into an .apk (Android Package) file by the program "aapt" (Android Asset Packaging Tool) to simplify development Google provides the Android Development Tools (ADT) for Eclipse. The ADT performs automatically the conversion from class to dex files

4.   MODULES

4.1 MESSAGE READER

- MESSAGE LISTENER
- RECEIVE MESSAGE
- ALERT SYSTEM
- TEXT TO SPEECH

MESSAGE LISTENER

The message listener has started while the app starts. The listener is started to receive the new message. The listener runs in background to receive the new SMS. Message Reader detects the new message using a broadcast receiver (until this moment the app has not been wasting battery)

RECEIVE MESSAGE

This module receives new SMS when the receiver mobile receives SMS. This event has risen by the broadcast receiver module. This event finds a new SMS which is received in the inbox.

ALERT SYSTEM

This alert system, alerts the user while the new SMS received. This alert system plays a sound whenever a new SMS received.

TEXT TO SPEECH

Starts a background service with the TTS (Text To Speech) system, when all the work is done, Message Reader will start to speak the message. In this module the received text words that should be heard clearly with the correct pronunciation. For this voice generation the TTS library file called and the parameter is passed to that library. The parameter should be in the text format.

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4.2 EMERGENCY REQUESTER

The emergency requester module, works with the physical keys present in the mobile phone. This module generates an emergency help request with the location information. While the blind people needs help, the person have to press the power button for few times in their mobile phone, the user location is gathered using the GPS module, then the emergency help request sent to the contact as SMS with the location information of the blind person.

4.3 MEDICINE REMAINDER

PILL BOX

In this module the user can add medications for their illness based on the prescriptions given by the doctors. The pill box should be maintained with the schedule and time details. The patient can schedule the remainder for once or can every day in a week.

TRIGGERING ALARM

The alarm can be set for multiple medicines and timings including date, time and medicine description. While the current time reaches the scheduled time to take medicine, this system plays an alarm and intimate the patient to take medicine

5. SYSTEM DESIGN

5.1 INPUT DESIGN

Input design is the process of converting user-originated inputs to a computer-based format. Input design is one of the most expensive phases of the operation of computerized system and is often the major problem of a system.

In the project, the input design is made in various web forms with various methods. For example, in the user creation form, the empty username and password is not allowed. The username if exists in the database, the input is considered to be invalid and is not accepted. Likewise, during the login process, the username is a must and must be available in the user list in the database. Then only login is allowed. The project details and the errors which are occurred in the customer projects are the major input forms in this section.

5.2 OUTPUT DESIGN

Output design generally refers to the results and information that are generated by the system for many end-users; output is the main reason for developing the system and the basis on which they evaluate the usefulness of the application.

In the project, the customer details, the error details, allocate details, are the mobile application forms in which the output is available

5.3 DATABASE DESIGN

The database design is a must for any application developed especially more for the data store projects. Since the android application system method involves retrieving the information in the table and produced to the users, proper handling of the table is a must. In the project, login table is designed to be unique in accepting the username and the length of the username and password should be greater than zero. The different users view the data in different format according to the privileges given.

6. SYSTEM DEVELOPMENT

A Systems Development Life Cycle (SDLC) adheres to important phases that are essential for developers, such as planning, analysis, design, and implementation, and are explained in the section below. A number of system development life cycle (SDLC) models have been created: waterfall, fountain, and spiral build and fix, rapid prototyping, incremental, and synchronize and stabilize. The oldest of these, and the best known, is the waterfall model: a sequence of stages in which the output of each stage becomes the input for the next.

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The waterfall model is a popular version of the systems development life cycle model for software engineering. Often considered the classic approach to the systems development life cycle, the waterfall model describes a development method that is linear and sequential. Waterfall development has distinct goals for each phase of development. Imagine a waterfall on the cliff of a steep mountain. Once the water has flowed over the edge of the cliff and has begun its journey down the side of the mountain, it cannot turn back. It is the same with waterfall development. Once a phase of development is completed, the development proceeds to the next phase and there is no turning back.

The advantage of waterfall development is that it allows for departmentalization and managerial control. A schedule can be set with deadlines for each stage of development and a product can proceed through the development process like a car in a carwash, and theoretically, be delivered on time. Development moves from concept, through design, implementation, testing, installation, troubleshooting, and ends up at operation and maintenance. Each phase of development proceeds in strict order, without any overlapping.

6.1   SYSTEM IMPLEMENTATION

Implementation is the process that actually yields the lowest-level system elements in the system hierarchy (system breakdown structure). The system elements are made, bought, or reused. Production involves the hardware fabrication processes of forming, removing, joining, and finishing; or the software realization processes of coding and testing; or the operational procedures development processes for operators' roles. If implementation involves a production process, a manufacturing system which uses the established technical and management processes may be required.

The purpose of the implementation process is to design and create (or fabricate) a system element conforming to that element's design properties and/or requirements. The element is constructed employing appropriate technologies and industry practices. This process bridges the system definition processes and the integration process.

System Implementation is the stage in the project where the theoretical design is turned into a working system. The most critical stage is achieving a successful system and in giving confidence on the new system for the user that it will work efficiently and effectively. The existing system was long time process.

7.   CONCLUSION AND FUTURE ENHANCEMENT

The "Application for visually impaired people" is a complex system involving many sub process. The system overcomes the limitation of existing manual system. This project has been designed, developed and implemented thus providing a full-fledged approach for proficient and best of results. The project satisfies each efficient user for saving his time and also helps him in clearing the providing help to the physically challenged peoples.

This project deals with the elements of the native technologies.

•   It enables the physically challenged and the elderly people to overcome their difficulties and live without much support from others.

•   It enables the well wishers of the user's to know their location to ensure their security and safety.

The project monitoring services can be updated with necessary enhancements in the database. The system overheads the problem in the existing ones by capable of processing voluminous data in a user-friendly manner.

The persons, who are involved in working the task manually, have seen this project running and expressing **satisfaction** about the working procedures and the **"conversion handling"** incorporated in the project.

Future enhancements can be made such as issuing user id to the user, where by the user can use that as a reference which specifies all his previous performance, the project work us stopped at this satisfactory level, due to time constraints.

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