Software Design Document

For

JustAsk

Version 1.0 approved

11/02/2016

Prepared by:

Sam Dowd

John Edward Schwartzenburg

Benjamin Graham

Patrick Mancuso

Miles Vesper

Table of Contents

1. Introduction

1.1 Purpose

The purpose of this document is to detail the intended software design of release 1.0 of JustAsk. JustAsk is a notification application for Android devices that allows users to respond rapidly to simple yes or no questions. After a question is sent, a notification will arise on the receiver's home screen prompting a response. A tap of yes or no alerts the sender of their response and removes the notification.

1.2 Intended Audience

Because this document is created to give an overview of the design decisions, process, and architecture, the core audience can include developers, shareholders, consultants, marketing teams and potential investors. Shareholders, marketing teams, and potential investors can take special interest in the technical architecture decisions made in sections 3.1 and 3.7 as they may be useful lending themselves to revenue interests, pricing plans, and userbase outreach estimates. Developers can turn to this document for a strong overview of the architectural design for decision-making.

1.3 Scope

This document was created to provide more details about the function of our product and its intended uses for the investors and the developers. JustAsk aims to make it as easy as possible to ask friends various questions without the hassle of group texting or calendar events.

1.4 Overview

JustAsk is a notification dependent application that sends simple questions to friends who are able to answer without even unlocking their phone. While many applications exist today to communicate plans to friends, even the best options on the market feature a robust quality making them slower and less efficient in simpler situations. The goal of JustAsk is to capitalize on the lack of simplicity in the marketplace and give users the option to communicate rapidly. By allowing the user to send a yes or no question directly to friends lock screens the number of steps can be reduced to as few as 3: wake up phone, read question, and press yes or no to reply, simultaneously removing the notification. If more information is needed by the user JustAsk allows users to view the questions that have been asked as well as who else was asked that question and their response to the question.

2. Main System Architecture

2.1 Overview

With usability and performance in mind, the architecture of JustAsk is built around five core pillars. The system allows users to create accounts through Facebook integration, add or remove contacts, ask and manage questions quickly from the home screen UI, receive and reply to notifications from the device lock screen, and resolve additional options in the settings.

2.2 Accounts

Users must create an account using an existing Facebook account. Once an account is made they can access all other features of the app including asking and answer questions and adding or removing contacts. Upon creation of a new account, a user's contact list is populated with other facebook users that have also joined JustAsk. Users can delete their accounts at any time from the settings.

2.3 Notification Basics

JustAsk will send a notification to the lock screens of the intended recipients. The notification will display the question posed by the sender as well as yes and no buttons. Once the recipients read the notification, they can easily respond yes or no. If the recipient responds, the notification disappears. The notification can also be removed manually and the question can be answered within the app. The original sender is notified of their response and can view all responses from the homescreen of the application.

2.4 Creating/Managing Questions

Users have the ability to create a question from the home screen that is up to 140 characters long to send to other users in their list of contacts. On the home screen of the application users can view a list of all questions created and asked as well as the answers of their recipients. These can then be deleted at the sender's discretion.

2.5 Contacts

Contacts are originally populated with all of a user's Facebook friends that have also registered for JustAsk. These contacts can be removed or re-added at will by the user and new contacts are automatically added as more Facebook users join JustAsk.

2.6 User Settings

Users have the ability to:
- Turn notification pop-ups on/off
- Delete their account

3. Technical System Architecture

3.1 Overview

The core of operations on the technical system architecture are built around Facebook's API and Google's Firebase services which will combine to offer JustAsk a platform on which to store data and make server calls for users. This creates a database on which to build our main functionalities like accounts, questions, settings, and Facebook information. This section discusses how each of the features from the main system architecture perform on a technical level. For more information on our database model, see 6.2 below.

3.2 Accounts

Users will create an account using the Facebook login manager which creates a unique ID for each user and places them in our implementation of Google's Firebase Authentication database which secures private information in a permission hierarchy that allows access only to the users in question.

3.3 Notification Basics

When a JustAsk question is created, all users included in the recipient list are joined in a new Firebase database entry. After the entry is created, users are notified of the question through server fetch requests. The notification will display the question posed by the sender as well as yes and no buttons. Once the recipients read the notification, they can easily respond yes or no. The notification is terminated, the database is updated with the recipient's response, and the original sender is notified upon fetching the database update.

3.4 Question Management

When a user opens the app, a connection is made with the server and all the questions associated with the user are downloaded and displayed on the home screen of the app. Attributes of a question are also pulled from the database with the question, so the app is ready to display information of the recipients and their responses immediately when requested.

Questions can be deleted by the sender at anytime by clicking the delete button. This permanently removes the question from the database.

3.5 Contacts

Contacts are pulled from a user's Facebook account using the Facebook API. Users within their friends list who have also joined JustAsk are added to the friend column associated with our user in the Facebook database on Firebase.
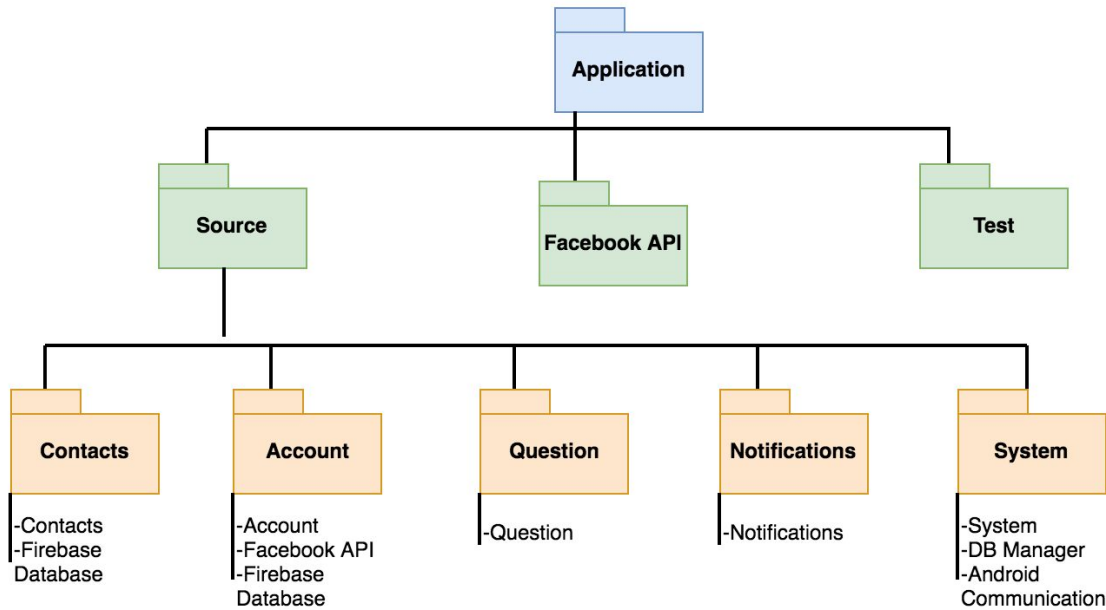
3.6 User Settings

The user setting to mute all notifications will be stored in Firebase so as to associate it with the account logged in to the device. If another user were to log in to the same device, their settings would be transferred to reflect their options. Choosing to delete the account will remove all database columns associated with the user including question recipient lists, and friend lists.
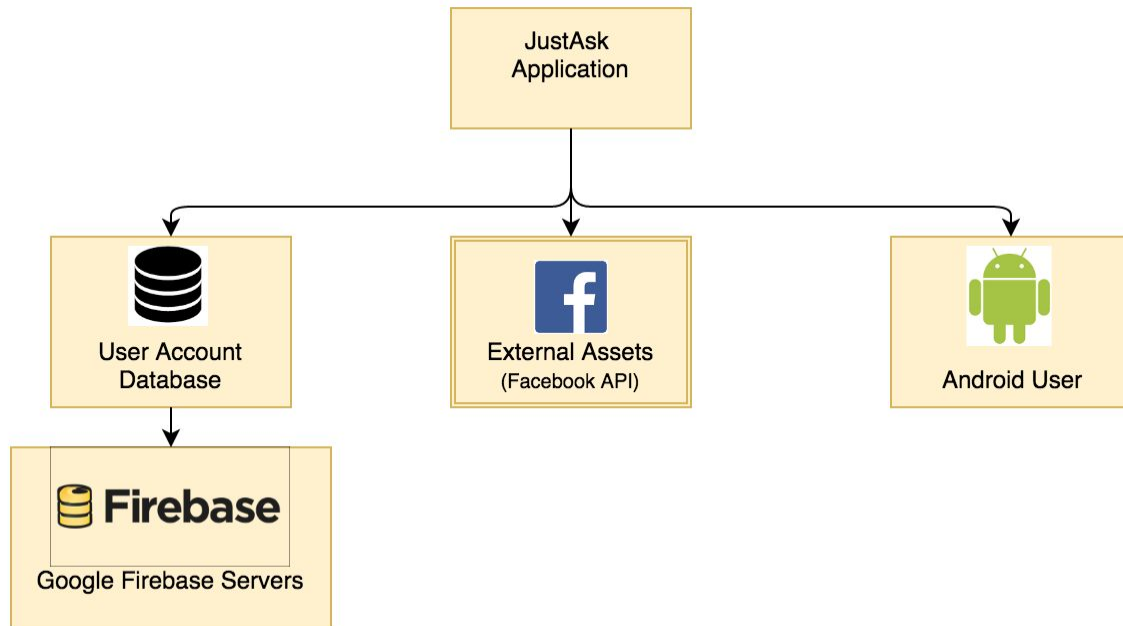
3.7 Technical Scalability Aspects

Firebase allows 100 simultaneous connects, 10 GB of data downloading, and 1 GB of storage for free, and plans scale at a pay as you go rate defined on their website which allows for massive product scaling. Facebook API is free to use and offers features to include advertising for future development.

4. Application Views

4.1 Development View

4.2 Physical View

4.3 Work-Assignment View

All documents will be written in collaboration between all members of the JustAsk team. The tasks in creating the JustAsk application will be divided into three teams.

- The first team will be Ben Graham working alone. Ben will focus on the database and other backend considerations. He has a background in Firebase and is confident he can handle creating an API in the backend for the frontend to interface with.
- Sam Dowd and Patrick Mancuso will form the second team. This team will focus on user interface design. They will be tasked with creating the layout and functionality (through an interface with Ben's API) of the main page, the new question page, and the contacts page. They will also ensure that the user can move from page to page in the app easily.
- The final team will consist of John Edward Schwartzenburg and Miles Vesper. Their main responsibilities will be the login system, the push notification system, and the display of a user's contacts.

5. User Interface Design

5.1. Overview

Keeping in mind that the goal of our app is efficiency, the user interface will be streamlined to allow the user to access pertinent information as quickly as possible. This means the user should be able to reply to questions as easily and quickly as possible. A simple text notification with a yes and no box will suffice as the main method of answering questions. That can be the extent of a user's experience unless they want to create a question or review other users' answers to questions.
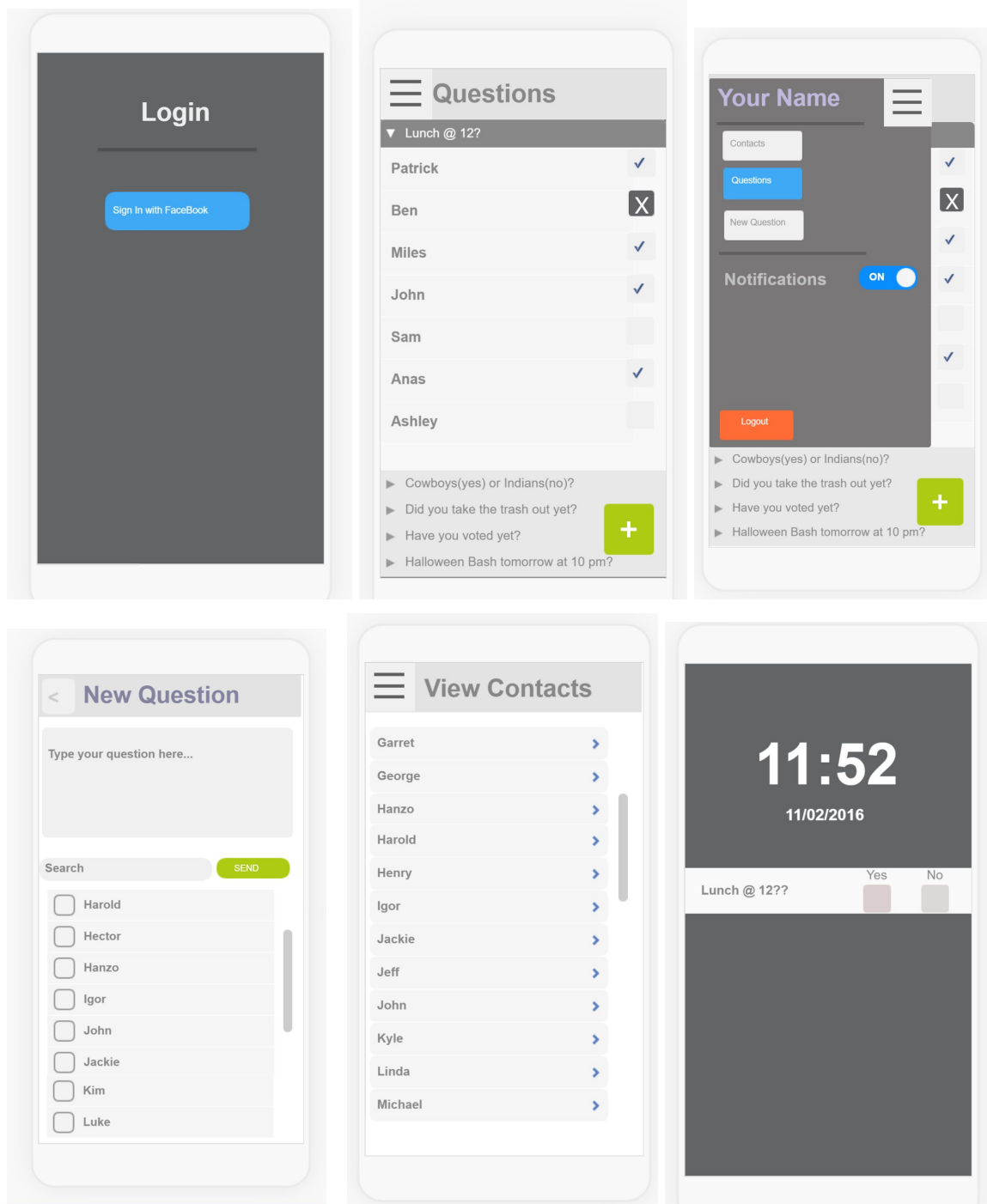
5.2. User Interface Diagrams

Version 1.0 of the JustAsk app consists of four screens and a navigation drawer.

- Upon first opening the app the user will be taken to a login screen where they must join with an existing Facebook account. This will store the new user into the Firebase database and allow them to send/receive questions.
- The main screen will be displayed when logged into the app. It will consist of a fixed bar at the top with a 3-layer menu icon that displays the settings drawer and the title "Questions." Beneath the bar, there will be a list of questions displayed that consists of both questions the user has asked and questions a user has been asked. Each question will have the question text displayed on the left and a downward facing arrow icon on the right of its list element. When a question's list element is tapped, the question will expand to show the people asked and their responses, and the downward facing arrow icon will be replaced by an upward facing arrow icon. The last element on the main screen is a plus icon in a bubble. When tapped, the plus icon will take the user to the new question page.
- The new question page will be displayed when the user chooses to create a new question by tapping the plus icon at the bottom right of the main page. The new question page will consist of a fixed bar at the top that contains a leftward facing arrow that returns the user to the main page in the top left and the title "New Question." Under the bar will be a box to enter the question text and a list of contacts with check boxes on the left to select whom to ask.
- There will be a "slide out drawer" that will allow the user to quickly navigate to different pages(contacts, login, settings) that is accessible from any screen in the app. Along with your account information at the top(your name/logout button), you will have tabs for each of the pages you can access and your current tab will be highlighted. There will also be a settings dropdown that you can press to drop down a list of setting switches such as

mute, turn off notifications, sleep, etc. (we need to have a concrete list of setting options before we turn this in)

- The final page is the contacts page. It will consist of a bar at the top with a leftward facing arrow that takes the user back to the main page in the top left and the title "View Contacts." Below the bar, the page will be populated by a list of the user's friends.
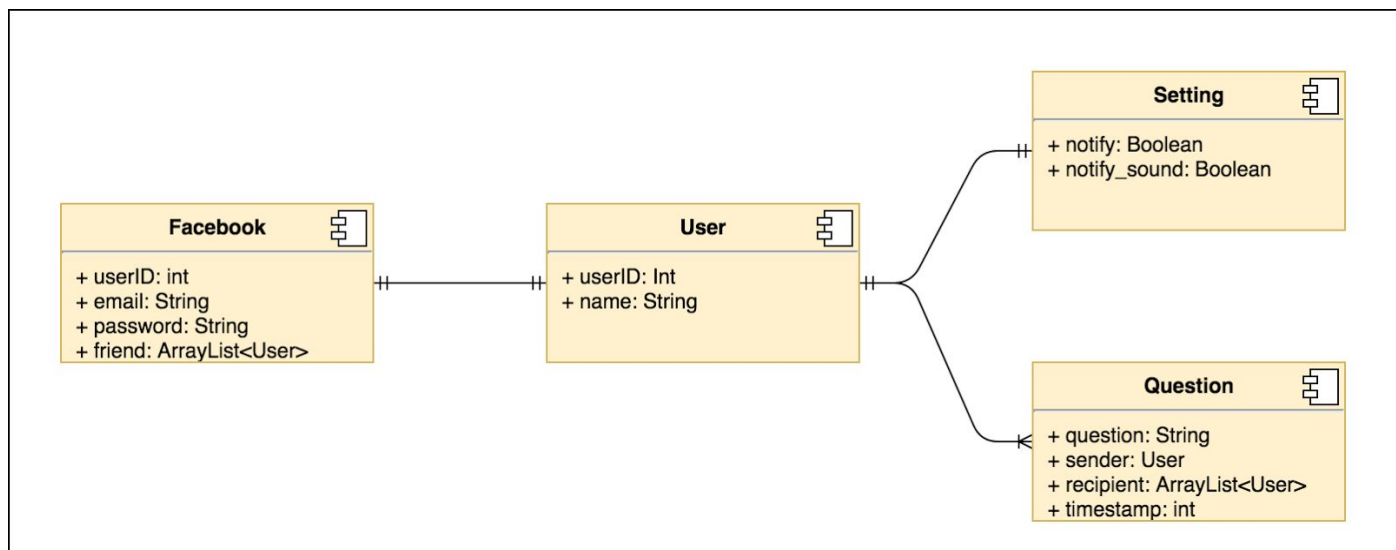
6. Database Design
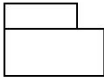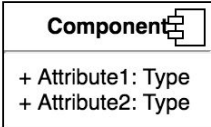
6.1 Database Description

The database is designed for scalability as the user base increases. By flattening out the structure (denormalizing) of our database the space complexity may rise slightly due to overlap in attributes among the tables (userID is repeated), but the benefit is a lowered time complexity finding these attributes which allows for significantly faster calls as the database grows, meaning connections can terminate quicker and more users can access their data without alarming stress on the servers.

6.2 Database Diagram

7. Element Catalog

7.1 Diagram Key

Symbol	Description
	Server
	Android Device
	Facebook API
	Database and Server
	Software Module
Component + Attribute1: Type + Attribute2: Type	Database Node

7.2 User Interface Key

≡ Menu button that takes the user to the app settings drawer

< Back button that brings user back to the Questions page

+ Create a new question button. Sends you to the new question page

logout   lets the user log out

✓ means that recipient responded "yes" to question

X means that recipient responded "no" to question

Recipient hasn't responded