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Company: The Deconstructors

Submitted to: Todd Breedlove

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SIGNATORY PAGE

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1. INTRODUCTION
   1. **PURPOSE**

The purpose of this document is to propose the design and implementation of the Krono application. The section and subsections following are dedication to defining and describing the format of this document or the intended design plans.

* 1. **SCOPE**

The scope of this document is limited to project management, general system discussions, and a description of the product requirements which will describe in limited detail the intended design features and functionality. Also, it includes the specific functionality of modules and otherwise discrete functionalities that may later be added to the system.

* 1. **INTENDED AUDIENCE**

The intended audience of this document includes everyone, including children and any third-party interested in this project.

1. PROJECT MANAGEMENT
   1. **CHANGE MANAGEMENT PROCEDURES**

Should a change to this product become necessary, the Change Administration Team, (CAT), will convene and discuss the requested change. The CAT team will consist of Kacey Balabin, Jihyuk Chung, Jared Glasser, Michael Remley, Codey Winslow, (The Deconstructors), and Todd Breedlove, all of whom will consider the ramifications of the requested change to the product. Furthermore, the support network for The Deconstructors can be reached at

suptdeconstructors@gmail.com. Any requested changes are subject to rejection. The change request form can be located within Appendix B and will contain all relevant details from the following section.

**Medium** – Any changes must be submitted in the format presented by the Change Request Form (Appendix B). Submission is to be physical copy only – digital submissions will not be accepted.

**Response Time** – The Change Request Form will be processed over a maximum of one business week. Responses will be emailed to addresses detailed on the submitted Change Request Form.

**Impact Analysis** – Before a change is accepted, the impact that it will have on the system’s development timeline must be analyzed. If the suggested change causes the project to go significantly over or under its scope, the Change Request Form will be denied.

**Time Frame** – If a Change Request Form is accepted, future sprints must be analyzed and modified to accommodate the new change.

**Archive** – All changes, whether accepted or denied, must be archived in the Revision History section of this document (see page *i* for reference).

* 1. **DOCUMENTATION**

All documentation for the product will be provided alongside the app at https://github.com/thedeconstructors/Krono.

* 1. **CUSTOMER RESPONSIBILITY**

The customer will be responsible for providing their mobile device and access to an internet connection.

* 1. **SOFTWARE ACQUISITION**

The latest version of the product will be available at the GitHub address, throughout the product’s development.

* 1. **PROJECT RISKS**

The risks associated with this project include the following: learning a new programming language (Kotlin), finding suitable API’s, managing time, managing workloads, and navigating the agile workflow.

* 1. **STATUS REPORTING**

Once per week, Kacey Balabin, Jihyuk Chung, Jared Glasser, Michael Remley, Codey Winslow (the Deconstructors) will meet with Todd Breedlove to report on the project’s progress. Items to discuss include:

* + 1. Progress on the current sprint
    2. Future sprints
    3. Individual performance reports
    4. Identify problems/risks and discuss how to mitigate or remove them.

1. SYSTEM GENERAL DESCRIPTION
   1. **PROBLEM STATEMENT**

Develop a product that streamlines activity planning in a social context. This product should allow quick and easy creation of schedules for recreation or responsibility with optional collaboration. This will come in the form of a mobile app, and it should be designed in an open enough way to allow the user to use it in a way that fits them best.

* 1. **PERSPECTIVE**
     1. **History / Background / Prior Releases**

Krono encompasses features that have existed in many organization software products over time, but this app will be able to bring more focus to the planning process that those could not. Other apps that attempt to serve the same purpose follow more of a spreadsheet-like design which is not the direction Krono will go. There will also be more of an emphasis on connecting users of Krono via its social interfaces.

* + 1. **Relation of Development to Existing Systems**

Krono will not be built upon any existing system.

* 1. **MAJOR SUBSYSTEMS**

The application is comprised of two major subsystems: the user interface, and the database.

The user interface will consist of a login screen, a home page, several pages for plan construction and scheduling, an options menu, and a social interface. The database will hold information about activities nearby, the user’s plans, and the user’s login info.

* 1. **HARDWARE PLATFORM DESCRIPTION**
     1. Android phone (Lollipop, *Galaxy S5 and onward*)
     2. Internet access

* 1. **SOFTWARE PLATFORM DESCRIPTION**

Krono will be a smartphone application downloadable from the Google Play Store.

* 1. **THIRD PARTY LIBRARIES**

The use of third-party libraries will include:

* + 1. Java client for Google Maps services
    2. Amazon Web Services (AWS)
    3. Spring for Java
    4. Various other libraries native to Android Studio

1. PRODUCT REQUIREMENTS

This section serves the purpose of detailing all requirements the final product must meet upon launch. The functional requirements are grouped by broad areas of requisite and detailed further in subgroups. They describe the features within the app we want to deliver directly to the user.

* 1. **FUNCTIONAL**

1. **Platform**
   1. Android Studio development
   2. Application and server code written in ~~Kotlin~~ Java
   3. Database management with ~~DynamoDB~~ \*Google Cloud Firestore
2. **Login**

A method to enter identifying information for personalized use of the application. These methods described below show the many ways in which one may tailor their experience from the first click.

* 1. Local Database  
     Our local database will contain login information for users that wish to solely use our application without connecting to Facebook, or Google, but would still like to use our online services. (Users may still connect to their favorite social platform in later settings)
     1. Username and Password entry via textboxes
     2. Web service for communication
     3. Cloud data services for storage and query capability
  2. ~~Google  
     Using the Google login method allows one to sign in to our application via Google services and provides access to any Google contacts, or otherwise useful features that pertain to the many social aspects of our app.~~
     1. ~~Google embedded login button~~
     2. ~~Google API for communication~~
  3. ~~Facebook  
     Using the Facebook login method allows one to sign into our application via Facebook services and provides access to any Facebook friends, or otherwise useful features that pertain to the many social aspect of our app.~~
     1. ~~Facebook embedded login button~~
     2. ~~Facebook API for communication~~
  4. ~~Fingerprint (optional)~~

~~Using the Fingerprint login method allows one to sign into our application via fingerprint authentication.~~

* + 1. ~~Fingerprint embedded login button~~
  1. ~~Offline option  
     Allows the option of bypassing all online features, whether to test the application and its features before signing up, or to purely use the app as an activity planner.~~
     1. ~~Offline login button~~
  2. Sign-up  
     Provides users that have not yet signed up to our database and do not wish to use any of the other log in options.
     1. Prompt for data entry
        1. Username
        2. Password
        3. Email (optional)
     2. Sign-up button
     3. Sign up web service

1. **Activity Bank**

The activity bank is our supporting feature that allows the rest of the app to work; containing the ability to suggest actives based on location or allow a user to specify an activity themselves.

* 1. Custom Activities  
     These activities are custom built by the user
     1. Activity name
     2. Activity description
     3. Duration
     4. One-time activity checkbox
     5. Social checkbox  
        This checkbox would allow other users (dependent on current settings) to see this activity, and possibly interact with you through it.
  2. ~~Geological activities  
     Using Google’s API for nearby points of interest (POI), activities can be suggested based on your availability and location regarding these POIs.~~
     1. ~~Google API for nearby POIs~~
     2. ~~Map view for local POIs  
        See what’s around you, what’s closest, and what might appeal to you most.~~
     3. ~~List view for local POIs  
        A similar view to the map, however in a more concise and data driven method.~~
     4. ~~Parser for POI to Activity  
        Convert a POI into a schedulable activity, similar in form the a custom activity.~~
  3. ~~(Stretch) Tags~~
     1. ~~Extra tag dropdown field for custom activities~~
     2. ~~‘Add new’ option in dropdown to create new tag~~

1. **Cloud Activities**

Our cloud services for this app will provide a responsive method for us to use regarding per user activity storage, as well as the many personal identifying records that are required for online connectivity.

* 1. Cloud Storage
     1. ~~Amazon Web Services (AWS)~~
     2. \*Google Cloud Firestore
  2. Cloud Communication
     1. ~~Amazon Web Services (AWS)~~
     2. \*Google Firebase

1. **Plan Construction**

Plan construction is the majority substance that makes up the bulk of our program. Plan construction allows users to string together activities in a meaningful way. Allowing other friends and community members to engage in one another’s plans (based on user settings). Plan Construction also allows users to get an idea of a day, week, or months, layout in a matter of seconds.

* 1. New Plan

Creating a new plan is the first step in allowing a user to move forward in planning a day, week, or month out.

* + 1. Custom activity list / Local activity list / Current Plan View
    2. Plan date
    3. Plan duration
    4. ~~Plan location~~
    5. Privacy setting
    6. \*Collaborators  
       ~~Does one want to use the more social aspects of the app, or not. This setting would allow one to hide these plans from others.~~
    7. ~~Joinable checkbox~~
  1. Edit Plan  
     Editing Plans allows users to change their upcoming, or current plans; given a plan mistake or unexpected change of plans.
     1. Custom activity list
     2. Local activity list
     3. Current plan view (dynamic)
     4. Plan date
     5. Plan duration
     6. Plan location
     7. Privacy setting
     8. ~~Joinable checkbox~~
  2. Delete Plan  
     Allows the deleting of a plan, given a mistake or issue with the plan.
  3. ~~Duplicate Plan  
     Duplicate a plan to another day, week, or month, over any set time period.~~

1. **~~Plan Visualization~~**

~~Visualizing a plan is the best way to get an overview of your day, week, or month.~~

* 1. ~~Time Based Presentation  
     A timeline of your current, day, week, or month. Allow a graph or calendar visualization of a timeline.~~

1. **Friends**

Friends can make plans and activities better, allow users to designate friends from Facebook, phone number, email, or Google. This allows people to interact with one another or keep up to date with each other. Through settings one may even set the level of interaction they prefer, whether that be none, a little, or a lot.

* 1. Add Friend  
     Add a friend through our local services, be that email, or via request given a username.
     1. Find by Email
     2. Send request
  2. Remove Friend  
     Added a friend by mistake? Maybe you broke up? Use this feature to be free of them once and for all.
     1. Confirmation
  3. ~~Friend Group  
     Choose friends through mutual friends~~
     1. ~~Choose friends~~
  4. Messaging  
     This allows friends to stay in touch, and coordinate just that much faster through our app.
     1. Friend
     2. ~~Group~~
     3. ~~Attach Plan (optional)   
        attach a plan for friends to coordinate through.~~

1. **Collaborative Planning**

Friends and community members around the world can interact with each other and group up through mutual events, hobbies, and activities.

* 1. View Friend Plans  
     Given their settings, you can view a friend plans for the day, week, or month.
     1. ~~Friend list  
        Users may sort through this friends list given different filters.~~
     2. ~~Request to join  
        Request to join an event nearby or far, through the map or through the friends list.~~
     3. ~~Request to edit  
        Request to edit friends plans to re-arrange times, or activities. One may even request to edit events / activities they have joined.~~
  2. Group Plan  
     Bringing friends and communities together through the ease of lists and logic.
     1. Choose friends  
        Choose some friends that are willing to join up.
     2. Choose plans  
        Choose a plan or create one from scratch.
        1. Custom activities
        2. Localized activities
  3. ~~Share Plan  
     Share the plan with a group of friends.~~
     1. ~~Choose friends (messaging)~~
  4. ~~Request to join / edit~~

1. **Geo Capability**

Depending on some personal settings (one may opt out of this program) users can view friends’ locations, and see local activities and plans made by those in the community.

* 1. ~~View Friend Location  
     See what someone is up to, when they ghosted your text earlier.~~
     1. ~~Map view  
        View people from space.~~
     2. ~~View on map from friends list  
        View your friends from space.~~
  2. ~~Local Activities~~
     1. ~~Google Maps API~~
     2. ~~POI parser to activities~~
  3. Attach Location to Activities  
     Tag your activities with a location, this allows others in your area to see what’s happening around them.

1. **~~(Stretch) Plan Generator~~**
   1. ~~Generate Using Tag Structure~~
      1. ~~Choose tags to include in plan~~
      2. ~~Choose time constraints per tag~~
      3. ~~Generate button~~
      4. ~~List of possible plans~~
2. **Notifications + Reminders**
   1. The system will have a notification and reminder system
      1. ~~The system will notify the user of upcoming events through push notifications~~
         1. ~~The system will use the Android’s native push notifications and banners~~
      2. ~~The users will be able to disable messaging notifications~~
   2. There will also be in-app notifications
      1. Friend requests
      2. ~~Requests to join plans~~
      3. ~~Requests to edit plans~~
      4. ~~Plan invitations~~
3. **Settings**
   1. The system will have a settings tab containing app preferences
      1. The system will allow the user to edit how they are reminded about upcoming events.
   2. The system will have a privacy tab containing privacy preferences
      1. The system will give the user choice to always be online and discoverable by others
      2. ~~The system will allow the user to edit privacy settings~~
      3. ~~The system will allow the user to disable private messages~~
   3. ~~The system will have a cloud tab containing save preferences~~
      1. ~~The system will give the user choice to save plans to the cloud~~
      2. ~~The system will give the user choice to share plans with friends~~
4. **Graphic User Interface**

The application’s main interface and button layout

1. The system will display a login page
   1. ~~Fingerprint~~
   2. Username and password
2. ~~The system will have adjustable time frames for selected activities~~
3. ~~The system will have visual aids for constructed schedules and plans~~
4. **Installer**
   1. Create Installer for Android devices
      1. ~~(Optional) Add ability to change language~~
   2. ~~(Optional) Create a Website for PC users~~
5. **Error Handling**
   1. ~~Create custom error module~~
   2. **PERFORMANCE**

The application will move fluidly in 60 fps. Anytime the application needs to load data, it will display a loading symbol so that the user understands what is happening.

* 1. **RELIABILITY**

Software reliability is, without a doubt, one of the most important aspects of software. There will be software reliability tests to measure the application’s ability to function. The goal is to maintain 98% reliability based on this equation: 1 - (number of failing cases / total number of cases under consideration).

1. USER PROFILES

The users of Krono are everyone who is interested in a new application to manage and organize their localized activity alone or with friends or colleagues.

1. APPENDIX A – GLOSSARY OF TERMS

Krono – The proposed project, which is and planner application for everyone to help manage daily life and localized activities better.

Points of Interest - A **point of interest**, or POI, is a specific point on a map that someone may find useful or interesting, such as a convention center, school, or hospital.

1. APPENDIX B – CHANGE REQUEST FORM

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date Requested: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Description of Proposed Change:

Reason for change:

Comments: