Engineering

Take-Home Programming Test

Landmark Remark Specification

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1 Assignment Brief

You are to create a simple mobile application – working title: "Landmark Remark" - that allows users to save location based notes on a map. These notes can be displayed on the map where they were saved and viewed by the user that created the note as well as other users of the application. The application must demonstrate the functionality captured in the following user stories:

1. As a user (of the application) I can see my current location on a map
2. As a user I can save a short note at my current location
3. As a user I can see notes that I have saved at the location they were saved on the map
4. As a user I can see the location, text, and user-name of notes other users have saved
5. As a user I have the ability to search for a note based on contained text or user-name

Your application does not need to be pretty (i.e. artist designed) but you should aim to make it as functional and useable as possible within the given constraints.

2 Implicit requirements

While the brief describes functionality that must appear in the application it is not an exhaustive list. As often happens in client-based development, when the explicit requirements are taken together implicit requirements emerge. For instance, if a user can see the user-name of a note that is not authored by them this implies some sort back-end persistence is necessary (see section 4) You are advised to think of other implicit requirements before starting implementation as these might affect how you implement the other requirements. In cases where you are proficient in more than one technology stack these requirements may also influence which stack you choose (see section 3).

3 Technology Stack

You may implement your solution to these requirements (both explicit and implicit) in **any one** of the following technology stacks (**unless you have been otherwise instructed**). Each stack has its own set of additional directions and constraints so please read this section carefully.

3.1 iOS 10.x Native Application

The iOS 10 Native Application must be written in either Objective-C or Swift using no third party (non-Apple) libraries except those explicitly called out in these specifications. You may not use WebView to implement any aspect of the application. Your application must perform well on an iPhone 7 form factor device. Source code must be developed and runnable in **XCode 8**.

3.2 Android 5.x+ Native Application (Lollipop or greater)

The Android native application should target minimum API level 21 using no third-party (non-Google) libraries except those explicitly called out in these specifications. You may not use WebView to implement any aspect of the application. Your application should perform well on a Google Nexus 5 or 6 device (or equivalent). Source must be developed and runnable in **Android Studio**.

3.3 Microsoft .NET Web Application

The Microsoft .NET Web Application must use .NET Framework 4.5+ and function as a **Single-Page Application (SPA)**, leveraging **either** Angular2, Angular1.x **or** ReactJS front-end frameworks to deliver the user interface. You are encouraged to leverage appropriate CSS to ensure that the application delivers a pleasant (if not professionally designed) user experience. You may use any Microsoft .NET and Javascript library in developing your application. The application should demonstrate **responsive design**, and function as expected on both desktop **and** mobile phone (eg. iPhone 7) form factors (only).

Source code must be developed and runnable in **Microsoft Visual Studio** (2015 or greater). You are encouraged to follow test-driven development practices in developing the application.

3.4 Java Web Application

The **Spring MVC Application** must use Spring 4+ and using **SpringBoot** and function as a Single-Page Application (SPA), leveraging Angular1.x front-end frameworks to deliver the user interface. You are encouraged to leverage appropriate CSS to ensure that the application delivers a pleasant (if not professionally designed) user experience. You may use any Java and Javascript library in developing your application. The application should demonstrate **responsive design**, and function as expected on both desktop and mobile phone (eg. iPhone 7) form factors (only).
Source code must be developed and runnable in **IntelliJ IDEA**. You are encouraged to follow test-driven development practices in developing the application.

4 Backend support

- If developing a native mobile application, you may use an appropriate Backend-as-a-Service (BaaS) provider to implement server-side aspects of your solution, see below for some suggestions (ensure the service you select has a 'free-ware' option!):
    - Firebase (https://firebase.google.com)
    - Kumulos (https://www.kumulos.com)
    - Realm Mobile Platform (https://realm.io/products/realm-mobile-platform)
- If developing a .NET web application, using Microsoft LocalDb for storage is acceptable.

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5 Recommended level of effort

You may spend as much time as you would like on the application up to deadline sent to you with this assignment. The recommended total number of "man-hours" spent on this assignment is between **5 and 12 man-hours**. As part of your submission, be sure you roughly document the number of man-hours spent.

6 Support

6.1 Reference material

You may use any reference material that you like during the course of the assignment. This includes the internet at large as well as any course materials or books.

6.2 Tigerspike Support

If you have questions about this specification you may reply to the email in which you received it. Responses will be given within one business day. If responses are given later than that, you will be granted an hour for hour extension for every hour beyond the one business day has passed until you have received our response.

7 Deliverables

7.1 Manifest

By the stated deadline you must deliver the following:

1. The entire source code (including resources) of your solution
    a. Source code must be **well commented**
    b. Source code must be your own (except where using approved libraries or where otherwise indicated in your comments)
    c. Code must compile and run in the IDE that corresponds to its technology stack (see Section 3)
2. A "readme" overview of your solution that documents:
    a. A brief outline of your approach (including any implicit requirements you recognized)
    b. How much time you spent on which aspects of the application
    c. Any known issues or limitations of the solution

7.2 Distribution

At minimum you should deliver a zip of the entire source of this project to the email address from which you received your assignment. If you are comfortable with it, you may also use a code distribution service such as "GitHub" as long as you can give Tigerspike appropriate access.

7.3 Important Note for iOS Builds

For iOS native builds, you do not need to worry about signing or provisioning profiles. Once received the code will be recompiled using Tigerspike credentials and provisioning profiles (as necessary).