Summer Fellowship Report

On

Kotlin Tutorial Series

Submitted by

Abhishek Shah

Under the guidance of

Prof. Kannan M. Moudgalya
Chemical Engineering Department
IIT Bombay

July 20, 2018

Acknowledgment

I, Abhishek Shah, a FOSSEE intern of the Spoken-Tutorial Project would like to use this opportunity to express my gratitude to everyone who supported me throughout the creation of the Kotlin Tutorial series. I am thankful for their aspiring guidance, invaluably constructive criticism and friendly advice during the project work. I am sincerely grateful to them for sharing their truthful and illuminating views on a number of issues related to the project.

I express my warm thanks to Mr. Rajesh Kushalkar and Mrs. Nancy Varkey for selecting me to be a part of the Kotlin project and guiding me throughout the project without whom I would not be able to contribute to this project.

I would also like to thank Miss. Kirti Ambre who provided me with the facilities being required and conductive conditions for my project. She helped me to identify the workflow and was always there whenever I needed help. She also created the Spoken API required for the tutorial in intermediate stages without which the tutorial wouldn't had been possible.

I am very thankful to Mrs. Nirmala Venkat, for sharing the process of tutorial creation, which helped me rectify the division of tutorials and making it easy to understand for end users. She also showed and taught me the rules and regulations that are to be followed in writing the script and allowed me to write the rough scripts.

Last but not the least, I wholeheartedly thank all the other colleagues working in different projects for helping me evolve better with their support & advices

With Regards,

Abhishek Shah
(BVM, Anand)

Abstract

The Spoken Tutorial project is the initiative of the 'Talk to a Teacher' activity of the National Mission on Education through Information and Communication Technology (ICT), launched by the Ministry of Human Resources and Development, Government of India.

The use of spoken tutorials to popularize software development and its use will be coordinated through this website.
(The Spoken Tutorial project is being developed by IIT Bombay for MHRD, Government of India.)

The spoken Tutorial Project aims to make spoken tutorials on FOSS available in several Indian languages, for the learner to be able to learn in the language he/she is comfortable in. The goal is to enable the use of spoken tutorials to teach in any Indian language, and to be taught to learners of all levels of expertise- Beginner, Intermediate or Advanced.

This project is for the community and by the community. Through the portal, we aim to reach out to like-minded individuals to collaborate with us and with each other to create Spoken Tutorials. The next step is to get each Spoken Tutorial dubbed into as many Indian languages as possible. This will help anyone anywhere to understand the contents of the Spoken Tutorials. Each of the Tutorials, whether original or dubbed, go through a strict review procedure, after which they are uploaded on the public domain. This is to ensure that the highest possible quality is attained.

Contents

1. Introduction

Spoken tutorial provides tutorial video for free and open source software's & tools in various Indian regional language. The latest task that came into discussion was introduction to some new tech tutorials on languages and technologies which are currently being used in the industry.

2. Kotlin Buzz

On 17th May 2017, Google officially announced that it will support Kotlin for Android Development. This opened new doors for the mobile development and inspired developers to start learning this new language and create their own Android Apps. After this announcement, there was great hype getting created about the new language that was introduced which led to the generation of the tutorial series here at Spoken Tutorial Project.

3. Kotlin Language

Kotlin is a super new programming language built by JetBrains, which also coincidentally develops the JetBrains IDE that Android Studio — Google's official developer tool — is based on. Like Java, which is the default language for Android development, Kotlin is a language that runs on the JVM (Java Virtual Machine), and it's already possible to use Kotlin and many other JVM languages for Android development.

Android doesn't use the JVM exactly, but the Java roots are strong, and Kotlin's interoperability with Java have made it a popular choice for developers. Official Google support will be a huge boost for the nascent language, however, and will presumably make working with Kotlin on Android a lot more natural.

Kotlin tools will be included with Android Studio 3.0 by default, and JetBrains and Google are pledging to support the language going forward.

4. Spoken Tutorial Search App

The first task was to create an application completely on Kotlin, with basic selection of FOSS (Java, C++, Python, etc.) and along with populating the languages related to that FOSS selected. Initially by converting java code into Kotlin code, it was easy to make out what are the changes that need to be made in java programming to get comfortable in Kotlin.

Next learning from documentation directly, helped me learn the basic fundamentals and syntax of Kotlin. Watching some fresh tutorials also helped me in the process, but still the tutorials also could not give full knowledge about the Kotlin language.

Gradually, the mobile app was programmed with new screen and new functionalities added every day that too in this new Kotlin language. The application included three basic screens:

- Select Foss and Language screen.

- Display search results according to selection.

- Play video which has been clicked from YouTube using YouTube API.

The final app constituted all of the above functionalities and was purely made in Kotlin.

5. Search App Flow

The mobile application that was created had the following screen flow:

1. Main screen displaying two fields to be selected.	
2. Showing available languages while selecting the FOSS.	
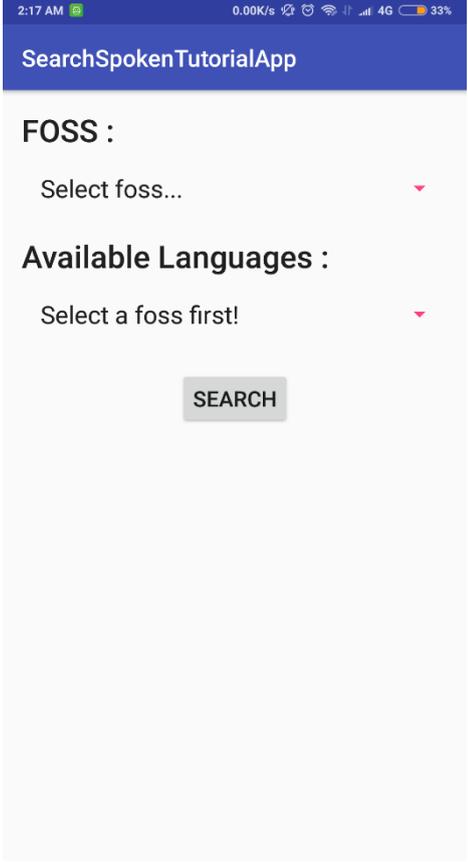
3. After selecting Foss, showing available languages for the selected foss.	
4. After selecting FOSS and Language, press SEARCH button	
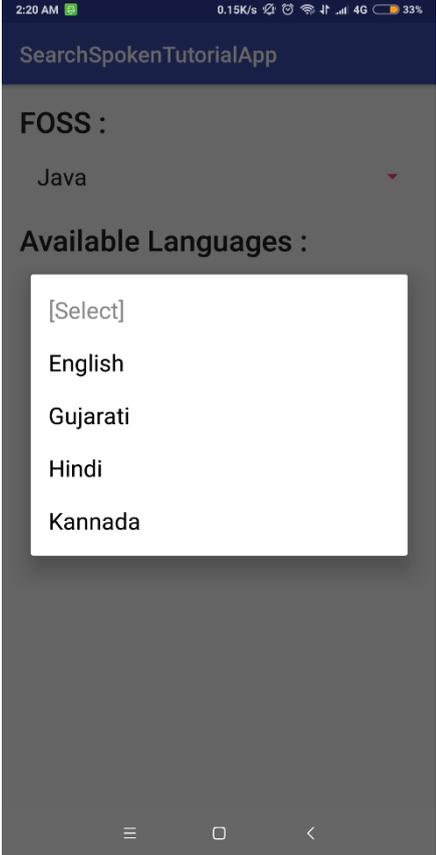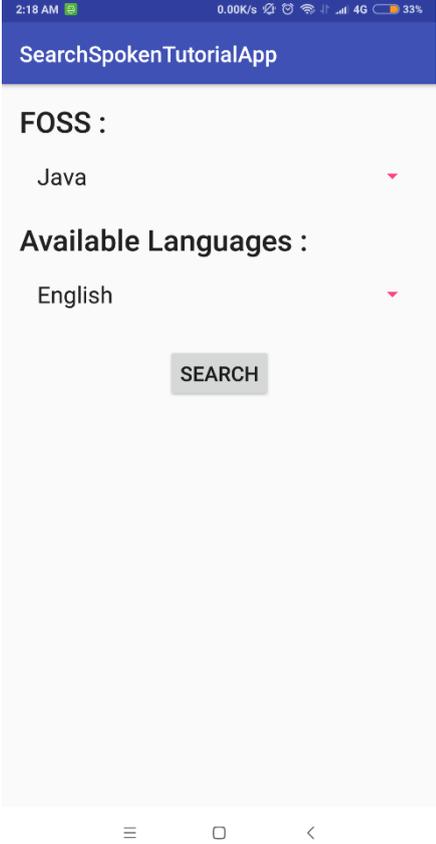
|	
5. Second Screen calling the Spoken server API and requesting the specified list of videos and then displaying the search results.	
6. A video from the search results is clicked. Next screen loads the video from YouTube using YouTube API and is ready to play.	
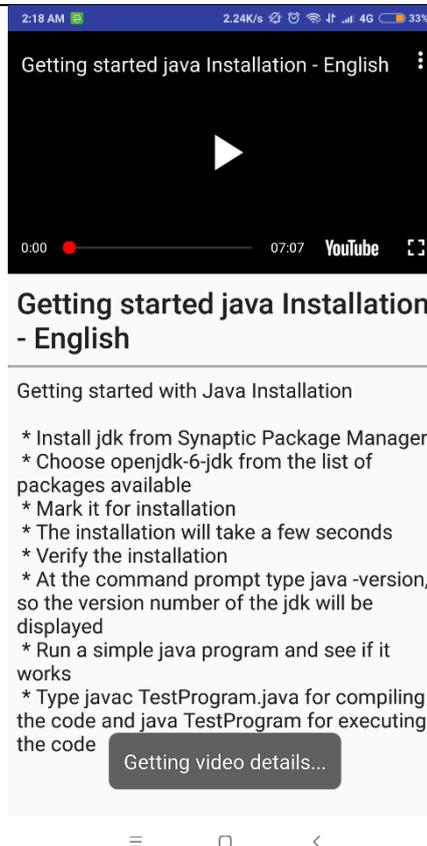
7. Pressing the play button starts the video.	
8. The video can also be viewed in landscape mode.	
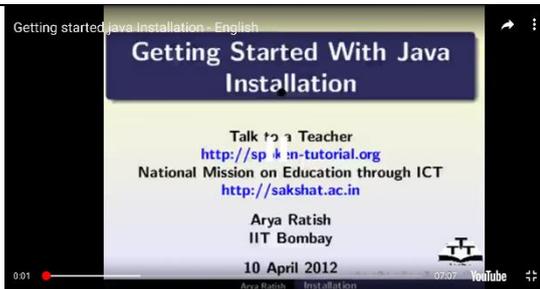
6. Kotlin Tutorial

After completing the app, the next task was to create a flow for creation of tutorials. Going with two to three iterations and pointing out the flaws in the order and rectifying them later the final list of tutorials generated:

- ➢ **Basic**

  - Overview

  - Installing Android Studio

  - Getting started and HelloWorld App

  - Creating Simple form

  - Creating Complex form

  - Displaying image

  - Making list with ListView

  - List with RecyclerView

  - Playing YouTube video in app

- ➢ **Intermediate**

  - Creating search page with options

  - Requesting URL and parsing JSON data

  - Displaying search results.

  - Playing the clicked video.

7. Tutorial Considerations

The pre-requisite for this tutorial is to have a basic understanding of Java programming language and some or no experience in developing android apps.

The tutorial related specifications are:

- Ubuntu OS version: 16.04
- Android Studio version: 3.1.3
- Kotlin version: 1.1.0
- Minimum RAM requirements: 4GB/+

The person using the tutorial must have a properly working internet connection to ensure proper installation and working of projects.

8. Results

While using the Kotlin tutorials, user is able to make self-independent apps and run on phone to see the final output. Some of the apps look like below:
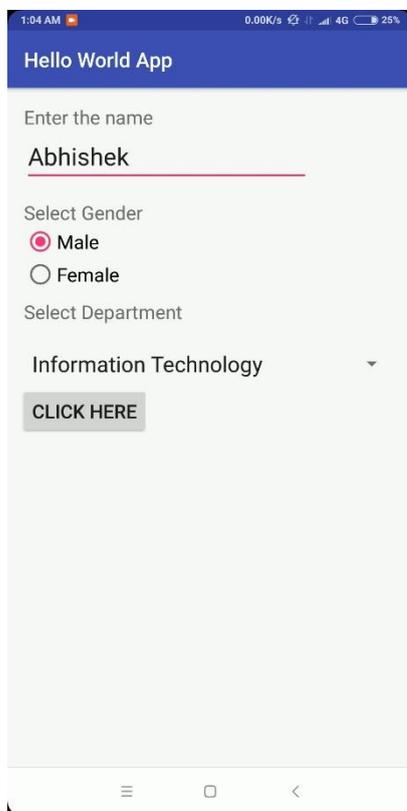
(a) Form
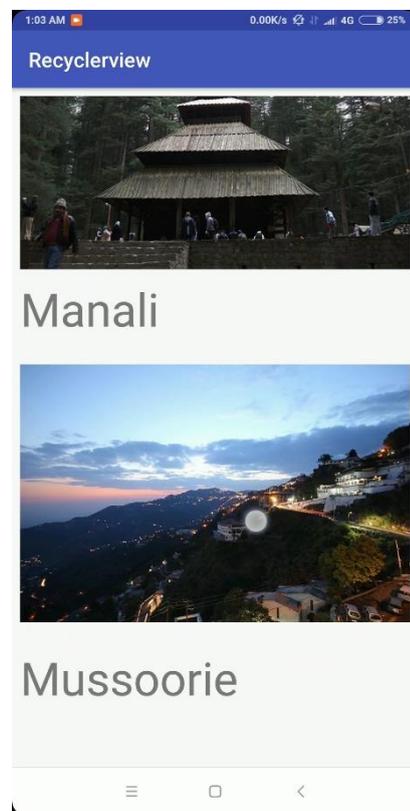
(b) List of hill stations

9. References

- **Kotlin official documentation**: https://kotlinlang.org/docs/reference/android-overview.html
- **Android Studio official website:** https://developer.android.com/studio/