

MICHIGAN STATE
UNIVERSITY

Project Plan

Indexing System Mobile Dashboard

The Capstone Experience

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*From Students...
...to Professionals*

Project Overview

- Indexing System is Important
 - Integrates with Google's monitoring system and displays the states of indices
 - Crucial to analyzing and debugging system anomalies
- Need to display on Small Screen
- Create back end data store
 - Current system cannot serve data to mobile devices



Functional Specifications

- Display stacked time series data in mobile friendly way
- Store time series points in an App Engine backend
- Use web service from App Engine to serve old data and store new data
- Utility to push data into App Engine via web service



Design Specifications

- Mobile
 - Log In Screen
 - Graph Screen
 - As many variables as possible
 - Focus specific variables
 - Variable Management
 - Add / Remove variables from current graph
 - Save variable load-outs
 - Load saved variable sets

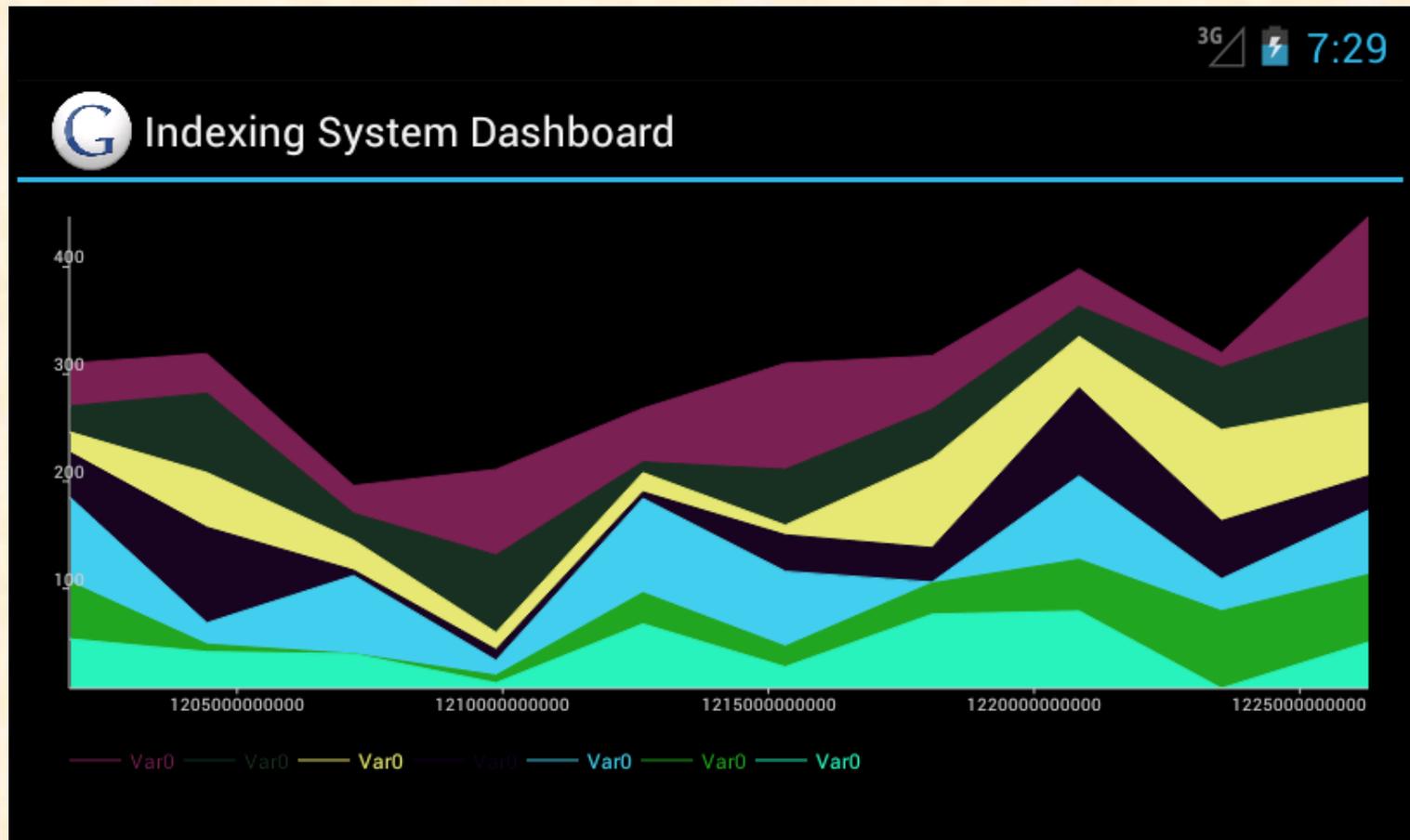


Design Specifications

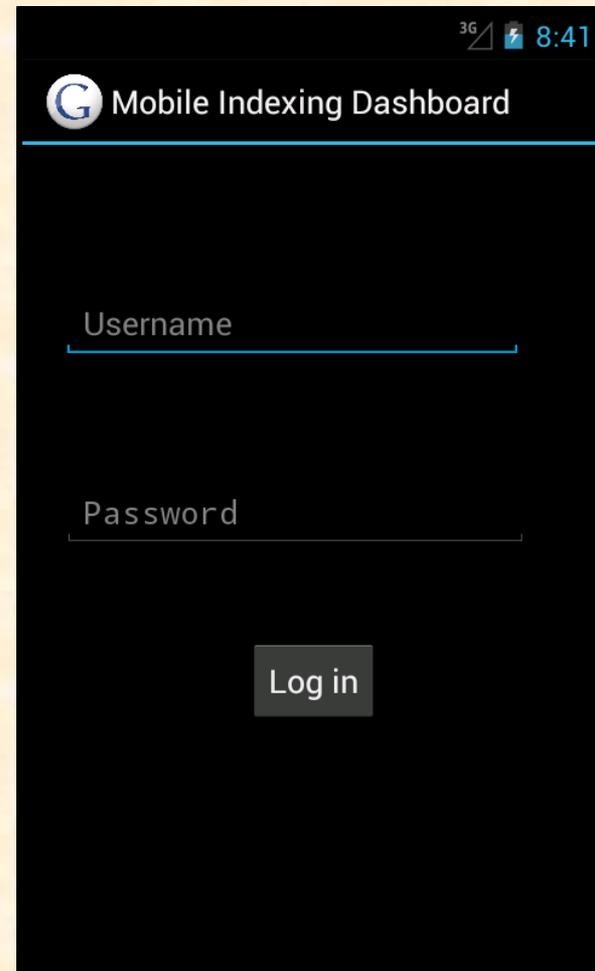
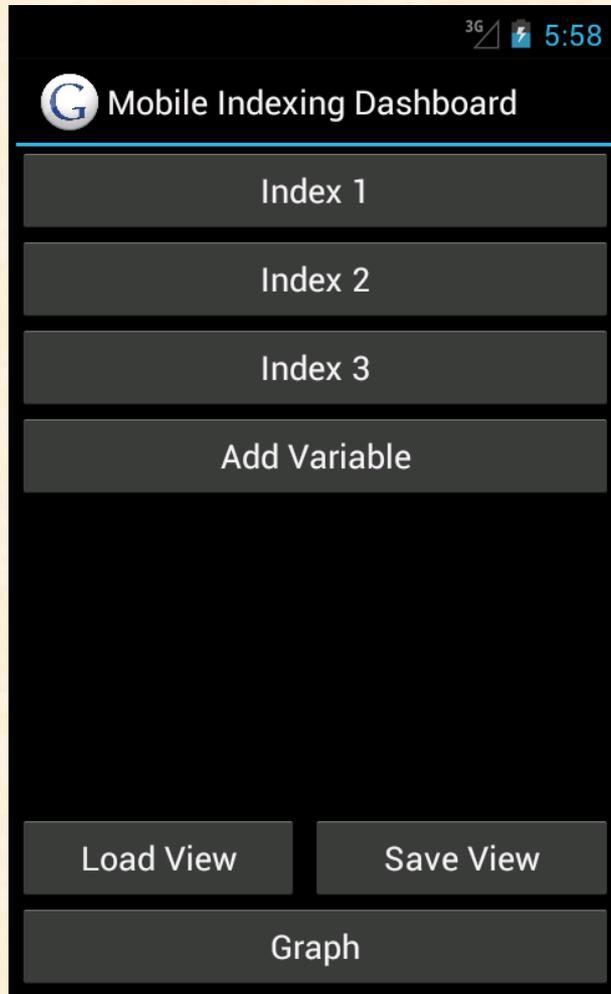
- Web Service
 - Access App Engine Database Back-End
 - Store Data
 - Retrieve data
- Tool to put data into back-end
 - Read from a pre-formatted file



Screen Mockup: Mobile Chart



Screen Mockup: Variable Management & Log In



Technical Specifications

- Use on Android 4.0 and later
- Graph data using achartengine
 - Open source android graphing utility
- Stacked time series graph limitations:
 - Phone processing power
 - Calculations may need to be done on back end
 - Phone screen size

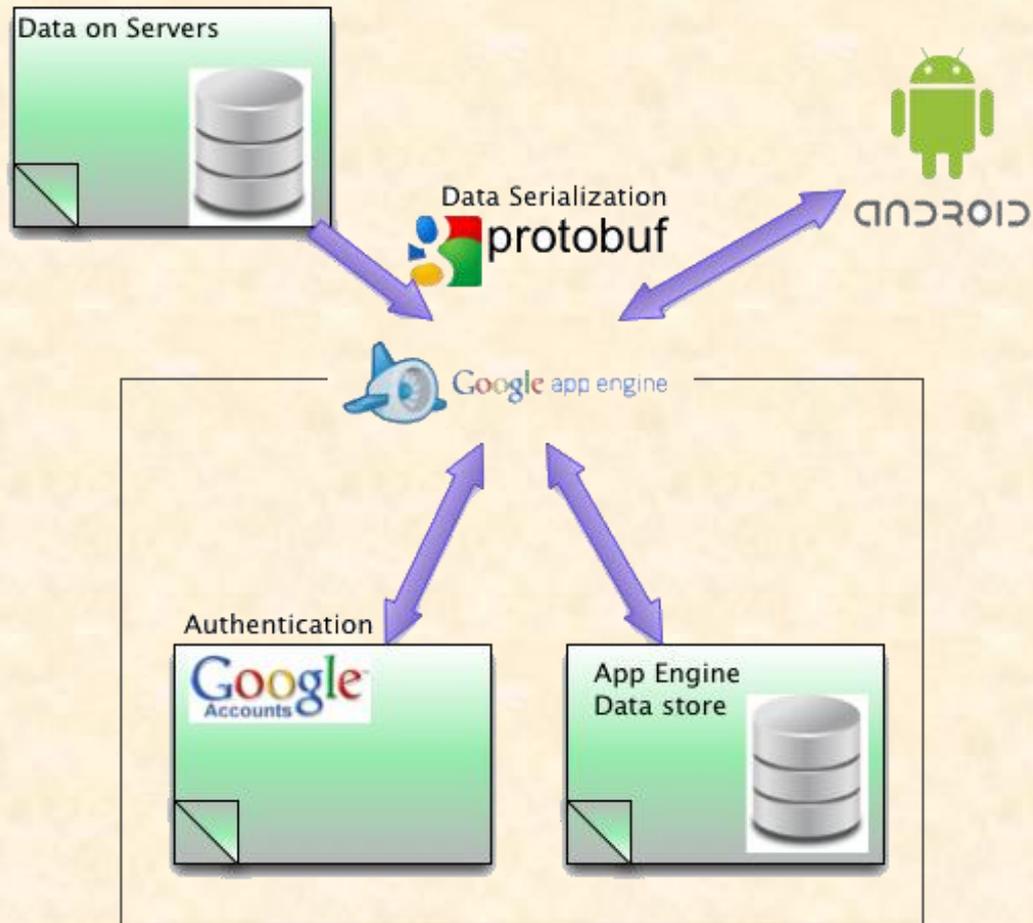


Technical Specifications

- Use Google App Engine API
 - Serialize time series objects with Google Protocol Buffers for web service
 - Store Data using App Engine's built in Data Storage
 - Authenticate using App Engine authentication with Google Accounts



System Architecture



System Components

- Hardware Platforms
 - Mobile Phones
- Software Platforms / Technologies
 - Android
 - Google App Engine
 - achartengine
 - Google protocol buffers



Testing

- Web API
 - Proper Interfacing for queries and stores
- Data Retrieval
 - Retrieval by date
 - Retrieval by variable
- Graph Display
 - Properly stacked graph
 - Easily manipulated
 - Computational intensity
- Push Utility
 - Data pushed is properly stored



Risks

- How to create a Web Service
 - Look at online examples
 - Use classmates as a resource
- Android Development
 - Online and Book tutorials
 - Use classmates as a resource
- Graph Time Series on Android
 - Research different graph libraries for compatibility
- Using the App Engine
 - Follow tutorials and online documentation

