Project Plan Presentation
Android Vulnerability Database

The Capstone Experience

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Project Sponsor Overview

- Founded in 1998 by Larry Page and Sergey Brin, later reorganized under alphabet
- Best known for its search engine ("Just Google it"), acquired Android (aka Android Open-Source Project) in 2005
- Android is the most widely utilized mobile OS (Over 3 Billion active monthly users)
- Our sponsor Shailesh Saini, head on Android Platform Security and Assurance is responsible for ensuring that security issues for Android OS are handled efficiently
Project Functional Specifications

• Situation: Android vulnerability data can be found in ASB and NVD.

• Problem: It is not intuitive to get the information needed from these sources.

• Solution: An API that provides this data and more.
Project Design Specifications

• Google Cloud
• Restful API to connect the web interface to the database
• User friendly Flask web interface to show API results
• Predetermined API calls for users
• Ability to create user specific API calls
Screen Mockup: Home Screen
Screen Mockup: Database Dashboard
Screen Mockup: Vulnerability Index
Screen Mockup: Vulnerability Page
Project Technical Specifications

- Python Scripts for Web Scraping Data
- Store data and scripts in Google Cloud Storage
- MySQL database hosted on Google Cloud
- Virtual Machine hosted on Google Cloud
- Flask Web Application
- Flask REST API and SQL Alchemy for communication between website and MySQL database
Project System Architecture

Google Cloud Services

- Google Storage
- MySQL Database Instance
- Cloud Run Service
  - API
  - Web App Frontend

ETL Pipeline
- NVD Data Extraction
- ASB Data Extraction

Deploy

- Cloud Build

Retrieve code

Repository

Android Security Bulletin

National Vulnerability Database

Client

ETL Pipeline

NVD Data Extraction

ASB Data Extraction

Deploy

Deploy

Deploy

Retrieve code

Repository
Project System Components

• Hardware Platforms
  ▪ Local Environments
  ▪ Google Cloud Computing

• Software Platforms / Technologies
  ▪ Google Cloud Platform
    o Cloud Run
    o Cloud Build
    o Cloud Storage
    o MySQL Instance
  ▪ Python
  ▪ Flask
  ▪ SQLAlchemy
Project Risks

• Visualizing Data Patterns
  ▪ We are unsure what patterns to look for in our data and if there are patterns that are identifiable
  ▪ Communicate in detail with our customer for what patterns to look for and look at other vulnerability databases

• Google Cloud APIs and services
  ▪ Don’t know which of Google Cloud’s many API’s will best suit our needs
  ▪ Google has first party documentation on their APIs we can read

• Data Verification
  ▪ Need to verify that the data we collect and store is correct
  ▪ We have identified that Google Cloud has a Data Validation Tool (DVT) that we are testing
Questions?