From Students…
…to Professionals

Alpha Presentation
Android Vulnerability Database

The Capstone Experience

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Project Overview

• Compile Android Security Bulletin and National Vulnerability Database vulnerabilities into one place.
• Enable OEMs to identify high priority security vulnerabilities.
• Easy to use web-application implementing our API to allow Users to query vulnerabilities.
System Architecture

Google Cloud Services

- Google Cloud Storage
- MySQL Database Instance
- API (Flask, SQLAlchemy)
- ETL Pipeline
  - NVD Data Extraction
  - ASB Data Extraction
- Cloud Build
- Deploy
- Retrieve code
- Web App Frontend
- Deploy

Repository

Client

Android Security Bulletin

National Vulnerability Database
Home Screen
Vulnerability Custom Query
Individual Vulnerability Page
Vulnerability Dashboard
API ETL deploy
NVD Extract

```python
# Connect to GCP bucket
client = storage.Client(project="solid-gamma-411111")
bucket = client.get_bucket('nvd-extract-data')

# Generate start/end dates [to be changed later]
start = [2024, 1, 1]
stop = [2024, 1, 1]
end = [2024, 2, 1]
start_date = datetime(start[0], start[1], start[2])
stop_date = datetime(stop[0], stop[1], stop[2])
end_date = datetime(end[0], end[1], end[2])
```
Cloud Scheduler

<table>
<thead>
<tr>
<th>Name</th>
<th>Status of last execution</th>
<th>Region</th>
<th>State</th>
<th>Description</th>
<th>Frequency</th>
<th>Target</th>
<th>Last run</th>
<th>Next run</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>monthly-nvd-pull</td>
<td>Success</td>
<td>us-central1</td>
<td>Enabled</td>
<td>monthly job to pull the data from the NVD database</td>
<td>0 23 3 1-12</td>
<td>URL: <a href="https://us-central1-solid-%5Cn">https://us-central1-solid-\n</a></td>
<td>Feb 17, 2024,</td>
<td>Feb 17, 2024,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(America/Detroit)</td>
<td>0-6</td>
<td>nvd-extract  \n</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>test-scheduler</td>
<td>Has not run yet</td>
<td>us-central1</td>
<td>Paused</td>
<td>will run once a day</td>
<td>0 0 ***</td>
<td>Topic: projects/solid-gamma-411111/\n</td>
<td>Feb 17, 2024,</td>
<td>Feb 17, 2024,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(America/Detroit)</td>
<td>(America/</td>
<td>topics/test-asb-topic</td>
<td>12:00:00 AM</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Logging
BigQuery

Your BigQuery projects will have new capabilities after February 14, 2024. Services and roles will be enabled automatically to help with these changes.
What’s left to do?

• Update ETL automation pipelines
• UI/UX improvements
• Minor web scraper adjustments
• Secure API from SQL injection attack
• Stretch Goals
  ▪ Change Log
  ▪ Scrape bulletins for other devices vulnerabilities
Questions?
Videos
Videos