

Technical Design Document: Google Takeout Viewer Suite

1. Project Overview

Google Takeout Viewer Suite is a collection of three independent, standalone Python applications designed to parse and visualize data exported from Google Takeout. Each application functions as a distinct tool with its own entry point and full GUI, replicating the native experience of smartphone or desktop productivity apps.

2. Technology Stack

- **Language:** Python 3.10+
- **IDE:** PyCharm
- **GUI Framework:** **PyQt6** (Chosen for robust widget support, HTML rendering for emails, and modern styling capabilities).
- **Data Parsing:**
 - `vobject` : For robust VCF (Contact) and ICS (Calendar) parsing.
 - `mailbox` : Standard Python library for MBOX handling.
 - `email` : Standard Python library for MIME processing.
 - `BeautifulSoup4` (optional but recommended): For sanitizing email HTML.

3. Modular File Structure (Standalone Architecture)

The structure is designed so that each viewer folder is self-contained. You can run `main.py` inside each folder to launch that specific tool immediately.

```
GoogleTakeoutSuite/
|
└── common/                                # Shared resources across apps
    ├── __init__.py
    ├── styles.qss                            # Unified theme (dark/light mode, CSS styling)
    └── utils.py                             # Shared helper functions (date formatting,
|
└── app_contacts/                          # Standalone Contact Viewer
```

```
|   └── __init__.py
|   └── main.py
|   └── ui_layout.py
|       # GUI setup (Splitter, Lists, Labels)
|   └── parser.py
|       # VCF parsing logic
|
|── app_calendar/
|   └── __init__.py
|   └── main.py
|       # Entry point for Calendar Viewer
|   └── ui_layout.py
|       # GUI setup (Calendar Widget, Event List)
|   └── parser.py
|       # ICS parsing logic
|
|── app_mail/
|   └── __init__.py
|   └── main.py
|       # Entry point for Mail Viewer
|   └── ui_layout.py
|       # GUI setup (3-pane layout, HTML Viewer)
|   └── parser.py
|       # MBOX parsing & email body extraction
|
└── launcher.py
       # (Optional) A unified menu that launches t
```