## Storage Component

The Storage uses the Singleton pattern to ensure there is only one instance of the component. It maintain the persistency of the user data between sessions by utilizing the physical storage. The data stored into the medium is encoded in JSON by utilizing the Gson library. The class diagram in *Figure X* shows the structure of the Storage component and its dependency.



*Figure X. Storage component class diagram*

## APIs

*Table X* shows some of the notable API of the Storage component.

|  |  |  |
| --- | --- | --- |
| Method | Parameters | Description |
| isValidFile(String filePath): boolean | **filePath**: the path to the file to be checked. | Returns if the filePath is valid to be used. Does not guarantee the success of saveFile and loadFile. |
| saveFile(List<Task> taskList, List<String> deletedIDs, String filePath): void | **taskList**: the list of Task to be saved  **deletedIDs**: the list of Task to be saved  **filePath**: the path to the file to store the list | Encodes taskList and deletedIDs into JSON and write it into the specified file. Throws Error when fail. |
| loadFile(List<Task> taskList, List<String> deletedIDs, String filePath): void | **taskList**: a list to contain the list of Task loaded  **deletedIDs**: a list to contain the list of Task loaded  **filePath**: the path to the file to load the list from | Decode JSON from the specified file. The decoded objects will be stored into taskList and deletedIDs respectively. Throws Error when fail. |

*Table X. Storage component API*

## Google Integration Component

The Google Integration (GI) component is based on Façade pattern. GoogleIntegration abstracts the internal details from other components to reduce coupling with the internal components. It handles the synchronisation of local data and data from the Google Calendar and Tasks web service. The class diagram in *Figure X* illustrates the structure of the GI component.



*Figure X. Google Integration component class diagram*

## API

*Table X* shows some of the notable API of the GoogleIntegration component.

|  |  |  |
| --- | --- | --- |
| Method | Parameters | Description |
| sync(List<Task> taskList, List<String> deletedIDs): void | **taskList**: the list of Task to be synchronise to Google services  **deletedIDs**: the list of IDs deleted locally | Synchronises with Google services.  Throws Error when fail. |
| logout(): boolean |  | Delete Google credentials. Returns true if the credentials are deleted successfully. Returns false if credentials does not exist or the deletion fails. |

*Table X. Google Integration component API*

## Synchronisation

The synchronisation process with Google Calendar is illustrated in *Figure X*. A similar process is also used for synchronisation with Google Tasks.



*Figure X. Google Calendar Synchronisation activity diagram*

## Settings Component

The Settings component is responsible for maintaining and storing of the application settings. Its design follows the law of Demeter to lower the dependency. *Figure X* illustrates the class diagram of the component.



*Figure X. Settings component class diagram*