### **Automatic Time Management System**

(ATOMS)

# **CS 3337 Software Engineering**

# **Application Requirements Specification Document**

## Prepared By:

LaFrance, Montague

Chan, Micky

Gomez, Carlos

Vargason, Austin

# **T**able of Contents

|  |  |  |
| --- | --- | --- |
| Section Number | Section Name | Page Number |
| 0.0 | Document Revision History | [3](#_Document_Revision_History_1) |
| 1.0 | Introduction | [4](#_Introduction) |
| 1.1 | Purpose | [4](#_1.1_Purpose) |
| 1.2 | Intended Audience and Reading Suggestions | [4](#_1.2_High_Level) |
| 1.3 | Product Scope | [4](#_1.3_Product_Scope) |
| 1.4 | Definitions, Acronyms, and Abbreviations | [4](#_1.4_Definitions_and) |
| 1.5 | References | [5](#_1.5_References) |
| 2.0 | Overall Description | [6](#_Overall_Description) |
| 2.1 | Product Perspective | [6](#_2.1_Product_Perspective) |
| 2.2 | Product Functions | [6](#_2.2_Product_Functions) |
| 2.3 | User Classes and Characteristics | [7](#_2.3_User_Classes) |
| 2.4 | Operating Environment | [7](#_2.4_Operating_Environment) |
| 2.5 | Design and Implementation Restraints | [7](#_2.5_Design_and) |
| 2.6 | User Documentation | [7](#_2.6_User_Documentation) |
| 2.7 | Assumptions and Dependencies | [7](#_2.7_Assumptions_and) |
| 2.8 | Apportioning of Requirements | [8](#_2.8_Apportioning_of) |
| 3.0 | External Interface Requirements | [8](#_External_Interface_Requirements) |
| 3.1 | User Interfaces | [8](#_3.1_User_Interfaces) |
| 3.2 | Hardware Interfaces | [9](#_3.2_Hardware_Interfaces) |
| 3.3 | Software Interfaces | [9](#_3.3_Software_Interfaces) |
| 3.4 | Communications Interfaces | [9](#_3.4_Communication_Interfaces) |
| 4.0 | Requirements Specification |  |
| 4.1 | Functional Requirements |  |
| 4.2 | External Interface Requirements |  |
| 4.3 | Logical Database Requirements |  |
| 4.4 | Design Constraints |  |
| 5.0 | Other Nonfunctional Requirements |  |
| 5.1 | Performance Requirements |  |
| 5.2 | Safety Requirements |  |
| 5.3 | Security Requirements |  |
| 5.4 | Software Quality Attributes |  |
| 5.5 | Business Rules |  |
| 6.0 | Other Requirements |  |
|  |  |  |

# Document Revision History

|  |  |  |  |
| --- | --- | --- | --- |
| Version # | Revision Author | Revision Summary | Revision Date |
| 0.1 | Austin Vargason | Initial Draft | 2/23/19 |
| 0.2 | Austin Vargason | Meeting Template Requirements | 3/9/19 |
| 0.3 | Carlos Gomez | Added Performance and Safety Requirements | 3/13/19 |
| 0.4 | Austin Vargason | Completed Section 2 and 3 | 3/14/19 |

# Introduction

This document seeks to outline the software requirements for the Automatic Time Management System (ATOMS) android application. ATOMS is an Android Application that helps the user automatically manage their time. The ATOMS application allows users to schedule projects, assignments, goals, or other activities around their current schedule. ATOMS allow users to integrate their existing Google Calendar data, which creates an intuitive scheduling experience. The goal of the ATOMS development team is to improve time management and reduce stress for our users.

## 1.1 Purpose

This SRS document version 0.1 contains specifics for the ATOMS application for Android. In this document, the overall description of the product, as well as the product’s functional, interface, design, and, security, and safety requirements will be outlined. The architects involved in the completion of the ATOMS project shall use this document to create an overall Solution Design Document (SDD).

## 1.2 Intended Audience and Reading Suggestion

This document is intended to be viewed by developers and architects involved with the ATOMS application to fully understand the requirements of the application and the interfaces it presents. This document may also be viewed by third-parties under the scope of product presentations.

## 1.3 Product Scope

The scope of the ATOMS application is Android Users on operating systems at or above: Android version 7.1.

## 1.4 Definitions and Acronyms

Android Studio: Development environment to develop Android Applications

Java: Object Oriented Programming Language

GUI: Graphical User Interface

ATOMS: Automatic Time Management System

API: Application Programming Interface

OS: Operating System

XML: extensible markup language

Strictly Scheduled Event: A calendar event that has a pre-defined start and end time

Automatically Scheduled Event: A calendar event scheduled by the defined ATOMS algorithm

## 1.5 References

1.5.1 Google Sign-In and Google Play Services Authentication

Author: Google

Version Number: 16.0.1

Source: <https://developers.google.com/identity/sign-in/android/start-integrating>

1.5.2 Google Calendar API

Author: Google

Version Number: v3-rev305-1.23.0

Source: <https://developers.google.com/calendar/>

1.5.3 Google OAuth Client

Author: Google

Version: 1.23.0

Source: <https://developers.google.com/api-client-library/java/google-oauth-java-client/>

1.5.4 Google Code Labs for Android Development

Author: Google

Source: <https://codelabs.developers.google.com/android-training/>

1.5.5 Android Studio Documentation

Author: Google

Source: <https://developer.android.com/studio/intro>

# Overall Description

The ATOMS application has been conceived as an Android application for use on Android phones at or above OS level 7.1. The ATOMS application establishes a connection to the user’s Google account through an initial sign in screen the first time the app is launched. Once logged in, the user will be taken to a screen showing the user’s events for today’s date with a floating action button in the bottom corner. The floating action button gives the user to add auto-scheduled events to their calendar, or strict events (those events with a defined start and end time). The main screen will also have an options button that will allow the user to change the theme of the app as well as sign out, switch user accounts, or change the calendar view to a daily, weekly or monthly view. The user may also use gesture controls (swipe left, or right) to navigate throughout their calendar.

## 2.1 Product Perspective

Many applications have designed for the task of time Management, but many of them feel unintuitive and require too much effort to justify consistent use. The ATOMS development team has the perspective that the ATOMS application can be a powerful time management tool that is also easy to use.

## 2.2 Product Functions

* Login: User is able to log in through their Google Account
* Calendar Views: Presents the choice of Daily, Weekly, or Monthly Calendar View
* Adding Events: The user may add a strictly scheduled event or an automatically scheduled event
* Theme Options: The user shall have the ability to change the color theme of the app
* Gesture View Switching: The user shall have the ability to use a swipe-left or swipe-right gesture to switch to the next day, week, or month’s events depending on the current view provided
* Account Switching: The user shall have the ability to switch the user account through an option in the options menu
* Data Backup: All calendar changes will be applied to the user’s Google calendar data. If the user chooses to undo their changes, they may undo the previous added event or go back to their original calendar import.

## 2.3 User Classes and Characteristics

* General Assumptions:
  + Technical Expertise: Basic Smartphone Usage
* Business Professionals:
  + Frequency of Use: High
  + Characteristics: Uses ATOMS with business meetings present in Google Calendar and uses ATOMS scheduling abilities to schedule project workloads or deadlines
* Students:
  + Frequency of Use: High
  + Characteristics: Uses ATOMS with classes present in Google Calendar and Uses ATOMS scheduling abilities to schedule workloads for assignments and studying.
* General Consumer:
  + Frequency of Use: Medium
  + Characteristics: Uses ATOMS with general meetings or events present in Google Calendar and uses ATOMS scheduling abilities to schedule out chores, work, or general day to day tasks.

## 2.4 Operating Environment

The ATOMS application requires Android version 7.1 and above.

## 2.5 Design and Implementation Restraints

* Hardware Limitations:
  + Limited to Android devices
* Memory Constraints
* Capabilities of Google APIs

## 2.6 User Documentation

* Help documentation present in ATOMS application

## 2.7 Assumptions and Dependencies

* API Dependencies: Google Calendar and Google Sign In
* This application uses a minimum API version of Android in order to support as many devices as possible as presented in [2.4 Operating Environment](#_2.4_Operating_Environment)

## 2.8 Apportioning of Requirements

* User Theme Creation: Would allow users to define a custom theme for the application instead of choosing a preselected theme.
* Account Switching: Allows Users to switch accounts in the application if using multiple email accounts
* Undo: Ability to undo a previously submitted change to the User’s calendar in scheduling.

# External Interface Requirements

## 3.1 User Interfaces

|  |  |
| --- | --- |
| Requirement Number | Requirement Description |
| 3.1.1 | Login screen shall be presented to the user on the first time the app is opened |
| 3.1.2 | The login screen shall present the ATOMS logo at the top of the layout |
| 3.1.3 | The login screen shall present a button to login with Google Sign In, this will redirect the user to the standard google sign in screen as Implemented in the API |
| 3.1.4 | A smooth transition from login screen to the main app screen shall be created |
| 3.1.5 | The center of the main app screen shall consist of card views, each representing a calendar event |
| 3.1.6 | The main app screen shall have an easily accessible floating action button in the right corner of the screen to add a new event to the current view (dynamically scheduled, or statically scheduled) |
| 3.1.7 | The main app screen shall present a settings button in the upper right-hand corner of the app, which presents a dropdown menu listing the options: “change theme”, “change view”, “log out” |
| 3.1.8 | The change theme screen shall present a list of themes in a option box format to update the theme of the application |
| 3.1.9 | The change view screen shall present a list of view types (daily, weekly, monthly) in a option box format to change the event view on the main app screen. |
| 3.1.10 | The add event screen as accessed from the floating action button shall present an event type option (static, dynamic) in a select box format. |
| 3.1.11 | The add event screen shall change its user input fields based on event type selected |
| 3.1.12 | Both statically scheduled events and dynamically scheduled events shall populate the event screen with a textbox representing the title of the event. |
| 3.1.13 | Statically scheduled events shall populate the event screen with a date chooser representing a start datetime and a date chooser representing an end time. |
| 3.1.14 | Dynamically scheduled events shall populate the event screen with a number chooser representing expected work in hours needed and a date chooser representing a due date |

## 3.2 Hardware Interfaces

The supported hardware are devices that run Android version 7.1 and later.

## 3.3 Software Interfaces

3.3.1 Google Sign-In and Google Play Services Authentication

Author: Google

Version Number: 16.0.1

Source: <https://developers.google.com/identity/sign-in/android/start-integrating>

3.3.2 Google Calendar API

Author: Google

Version Number: v3-rev305-1.23.0

Source: <https://developers.google.com/calendar/>

3.3.3 Google OAuth Client

Author: Google

Version: 1.23.0

Source: <https://developers.google.com/api-client-library/java/google-oauth-java-client/>

## 3.4 Communication Interfaces

* Google Sign In is handled through Google Play Services API
* Google Calendar and Oath work through Google’s REST API communication methods

# Requirements Specification

## 4.1 Functional Requirements

TODO: THIS NEEDS REWORK

|  |  |
| --- | --- |
| Requirement Number | Requirement Description |
| 1 | Login shall be handled using Google Sign in API, this is necessary for pulling Google Calendar data |
| 2 | Google Login Shall be implemented on Login Activity with a Respective Layout |
| 3 | A smooth transition to the main app screen shall be created |
| 4 | The backend code shall pull user’s Google calendar data upon entry to the main app screen |
| 5 | The main app screen center view shall consist of calendar events for the current day placed into dynamically generated and animated cards |
| 6 | The user shall be able to view the current day’s events, navigate to the next day’s event, or navigate to the previous day’s events by gesture control |
| 7 | The main app screen shall have an easily accessible button to add a new statically scheduled event or an auto scheduled event series |
| 8 | The app shall handle the users request to create a new statically scheduled event and add it into the user’s calendar |
| 9 | The app shall handle the users request to create a new auto scheduled event series and auto schedule the event, given the current calendar and event details |
| 10 | The user shall be able to enter a goal of something they would like to achieve through a quick access button on the main app screen |
| 11 | The app shall give users the ability to easily access a quick context menu to change the theme of the app or change the current view of the app (Monthly, Weekly, Daily) |
| 12 | The App shall provide a screen for users to choose between a set of predefined themes or create their own custom theme |
| 13 | The app shall not modify those existing calendar events on first input to prevent scheduling errors, unless directly authorized by the user |
| 14 | The app shall robustly handle invalid scheduling requests (scheduling two events at the same time, etc.) |
| 15 | The app shall provide OS level notifications for upcoming events, important messages, and friendly reminders |

TODO: COMPLETE SECTION 4, Austin, Montague, Micky

TODO: COMPLETE SECTION 5, Carlos