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# **Use Cases**

**for**

# **Sentiment Analytics**

**Version 1.0 approved**

**Prepared by**

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# Revision History

Name	Date	Reason For Changes	Version

# Guidance for Use Case Template

Document each use case using the template shown in the Appendix. This section provides a description of each section in the use case template.

## 1. Use Case Identification

### 1.1. Use Case ID

Give each use case a unique numeric identifier, in hierarchical form: X.Y. Related use cases can be grouped in the hierarchy. Functional requirements can be traced back to a labeled use case.

### 1.2. Use Case Name

State a concise, results-oriented name for the use case. These reflect the tasks the user needs to be able to accomplish using the system. Include an action verb and a noun. Some examples:

- View part number information.
- Manually mark hypertext source and establish link to target.
- Place an order for a CD with the updated software version.

### 1.3. Use Case History

#### 1.3.1 Created By

Supply the name of the person who initially documented this use case.

#### 1.3.2 Date Created

Enter the date on which the use case was initially documented.

#### 1.3.3 Last Updated By

Supply the name of the person who performed the most recent update to the use case description.

#### 1.3.4 Date Last Updated

Enter the date on which the use case was most recently updated.

## 2. Use Case Definition

### 2.1. Actor

An actor is a person or other entity external to the software system being specified who interacts with the system and performs use cases to accomplish tasks. Different actors often correspond to different user classes, or roles, identified from the customer community that will use the product. Name the actor(s) that will be performing this use case.

## **2.2. Description**

Provide a brief description of the reason for and outcome of this use case, or a high-level description of the sequence of actions and the outcome of executing the use case.

## **2.3. Preconditions**

List any activities that must take place, or any conditions that must be true, before the use case can be started. Number each precondition. Examples:

1. User's identity has been authenticated.
2. User's computer has sufficient free memory available to launch task.

## **2.4. Postconditions**

Describe the state of the system at the conclusion of the use case execution. Number each postcondition. Examples:

1. Document contains only valid SGML tags.
2. Price of item in database has been updated with new value.

## **2.5. Priority**

Indicate the relative priority of implementing the functionality required to allow this use case to be executed. The priority scheme used must be the same as that used in the software requirements specification.

//3 primary use cases have the same priority

## **2.6. Frequency of Use**

Estimate the number of times this use case will be performed by the actors per some appropriate unit of time.

## **2.7. Flow of Events**

Provide a detailed description of the user actions and system responses that will take place during execution of the use case under normal, expected conditions. This dialog sequence will ultimately lead to accomplishing the goal stated in the use case name and description. This description may be written as an answer to the hypothetical question, "How do I <accomplish the task stated in the use case name>?" This is best done as a numbered list of actions performed by the actor, alternating with responses provided by the system.

## **2.8. Alternative Flows**

Document other, legitimate usage scenarios that can take place within this use case separately in this section. State the alternative course, and describe any differences in the sequence of steps that take place. Number each alternative course using the Use Case ID as a prefix, followed by “AC” to indicate “Alternative Course”. Example: X.Y.AC.1.

## **2.9. Exceptions**

Describe any anticipated error conditions that could occur during execution of the use case, and define how the system is to respond to those conditions. Also, describe how the system is to respond if the use case execution fails for some unanticipated reason. Number each exception using the Use Case ID as a prefix, followed by “EX” to indicate “Exception”. Example: X.Y.EX.1.

## **2.10. Includes**

List any other use cases that are included (“called”) by this use case. Common functionality that appears in multiple use cases can be split out into a separate use case that is included by the ones that need that common functionality.

## **2.11. Special Requirements**

Identify any additional requirements, such as nonfunctional requirements, for the use case that may need to be addressed during design or implementation. These may include performance requirements or other quality attributes.

## **2.12. Assumptions**

List any assumptions that were made in the analysis that led to accepting this use case into the product description and writing the use case description.

## **2.13. Notes and Issues**

List any additional comments about this use case or any remaining open issues or TBDs (To Be Determineds) that must be resolved. Identify who will resolve each issue, the due date, and what the resolution ultimately is.

# Use Cases

## 1.Login

Use Case ID:	1		
Use Case Name:	Log in		
Created By:	Cao QingTian	Last Updated By:	Huang Jingfang
Date Created:	6/2/2022	Date Last Updated:	14/4/2022

Actor:	User
Description:	User logs in with an account name and password
Preconditions:	1.The App is connected to the internet 2.User has a registered account
Postconditions:	User will be able to access all the apps' functions
Priority:	Medium
Frequency of Use:	1-2 times per day
Flow of Events:	<ol style="list-style-type: none"> <li>1. System display the login page</li> <li>2. User enters username and password, then press login button</li> <li>3. System first calls the Validate Account to check if the username is valid.</li> <li>4. System then calls the Validate Password to check if the password matches the username.</li> <li>5. System logs the user in and returns to main dashboard</li> </ol>
Alternative Flows:	<p>AF-S3: Invalid Username:</p> <ol style="list-style-type: none"> <li>1. If the username is not in the user database, then the system will display that user does not exist.</li> <li>2. Returns to normal flow step 1</li> </ol> <p>AF-S3: Invalid Password:</p> <ol style="list-style-type: none"> <li>1. If the password does not match the username, the system will tell users that the password and username does not match.</li> <li>2. Returns to normal flow step 1</li> </ol>
Exceptions:	<p>EX-S3: If any fields is left blank</p> <ol style="list-style-type: none"> <li>1. System displays "Please fill up the necessary information."</li> <li>2. User will click the "ok" button</li> <li>3. User is returned to the login page</li> </ol>
Includes:	<p>Validate Account</p> <p>Validate Password</p>
Special Requirements:	-
Assumptions:	-
Notes and Issues:	-

**2.Query**

Use Case ID:	2		
Use Case Name:	Query		
Created By:	Cao QingTian	Last Updated By:	Huang Jingfang
Date Created:	6/2/2022	Date Last Updated:	14/4/2022

Actor:	User
Description:	User search for data related to a keyword
Preconditions:	-
Postconditions:	Data about last 7 days are retrieved and analysis is performed
Priority:	High
Frequency of Use:	3-4 times a day
Flow of Events:	<ol style="list-style-type: none"> <li>1. User types in a keyword in the search field and press search</li> <li>2. System will check if the keyword is already in the database</li> <li>3. The system will display that the keyword is not currently in the database, but it is being fetched now. The user may click on 'update' to view progress.</li> <li>4. The system will call Handle Tweets (Use Case 10) to fetch tweets and run analysis. The percentage of tweets being fetched will be updated in the progress bar once the 'update' button is pressed.</li> <li>5. The tweets are processed in Sentiment Analysis (UC13) and Summary generation(UC14)</li> <li>6. A scatter plot of the sentiment over 7 days is displayed, followed by summary statistics and summary for tweets with positive and negative sentiment respectively.</li> </ol>
Alternative Flows:	<p>AF-S2: keyword already exists in our database</p> <ol style="list-style-type: none"> <li>1.The system will pull the seven day's tweets from our own database.</li> <li>2.Return to normal flow step 5</li> </ol>
Exceptions:	<p>EX-S5: Not enough data to generate summary</p> <p>In the place designated for summary, a message titled 'Not enough data to generate summary' will be displayed instead</p>
Includes:	<p>Handle Tweets</p> <p>Sentiment Analysis</p> <p>Summary Generation</p>
Special Requirements:	-
Assumptions:	-
Notes and Issues:	-

### 3. Graph Interaction

Use Case ID:	3		
Use Case Name:	Graph Interaction		
Created By:	Cao QingTian	Last Updated By:	Huang Jingfang
Date Created:	6/2/2022	Date Last Updated:	19/2/2022

Actor:	User
Description:	Users can select or unselect the indicators in order to change the information displayed on the graph.
Preconditions:	Users must search for a keyword first (Use Case 2)
Postconditions:	-
Priority:	High
Frequency of Use:	3-4 times a day
Flow of Events:	<ol style="list-style-type: none"> <li>1. After <i>Query</i>, the system displays the result: a graph, some summary statistics, and summary for both positive tweets and negative tweets over the 7 days.</li> <li>2. Users can choose to select indicators to better understand the graphs. The available indicators are: moving average, exponential average, quantile intervals, quantile by day, maximum/minimum sentiment by day, overall maximum/minimum sentiment, and the count of tweets having positive, negative or neutral sentiment.</li> <li>3. The system will call Graph class to compute.</li> <li>4. The system displays the graph with chosen indicators selected in the interface.</li> </ol>
Alternative Flows:	-
Exceptions:	-
Includes:	-
Special Requirements:	-
Assumptions:	-
Notes and Issues:	-



**4.Generate Report**

Use Case ID:	4		
Use Case Name:	Generate Report		
Created By:	Cao Qingtian	Last Updated By:	Huang Jingfang
Date Created:	6/2/2022	Date Last Updated:	15/4/2022

Actor:	User
Description:	User can choose to download a pdf version of report
Preconditions:	User must have searched for a keyword.
Postconditions:	A report is generated in the designated directory.
Priority:	Medium
Frequency of Use:	3-4 times a day
Flow of Events:	<p>1.Check if user is logged in and is either a professional or organizational account</p> <p>2.After the included Use Case 3 <i>direct interaction with the graph</i>, if the users select “generate report”, a pdf version of the graph, the table for reasons of certain sentiment changes and the indicators user selected will be generated.</p> <p>3.The pdf will be created in the designated directory.</p>
Alternative Flows:	<p>AF-S1: Invalid Credential</p> <p>1.If the user is not logged in or is using a free account, a message asking the user to log in or start a subscription is added. If the user exceeds the subscription limit, another message is displayed to tell users to upgrade their subscription to ‘organization’.</p> <p>2.The report will not be generated, and the system returns to the main dashboard.</p>
Exceptions:	-
Includes:	-
Special Requirements:	-
Assumptions:	Users have already selected the information that they want to include into the report.
Notes and Issues:	The report can only display latin-1 coded characters. For characters outside latin-1, it will be replaced by a question mark.

**5. Favorites**

Use Case ID:	5		
Use Case Name:	Favorites		
Created By:	Cao QingTian	Last Updated By:	Huang Jingfang
Date Created:	6/2/2022	Date Last Updated:	15/4/2022

Actor:	User
Description:	Users can add keywords to “Favorite”
Preconditions:	User must have an account and they must be logged in
Postconditions:	Keywords are added to Favorites
Priority:	Medium
Frequency of Use:	1-2 times a day
Flow of Events:	<ol style="list-style-type: none"> <li>1. The user can add the keyword that they are searching to favorites via a “Add to Favorites” button.</li> <li>2. The keyword is displayed under the ‘Favorites’ title, and the system will record down the favorite keywords in the user database.</li> <li>3. If they wish to see detailed reports of favorites, they simply click on the keyword and the system will redirect them to Graph Interaction (UC3)</li> </ol>
Alternative Flows:	-
Exceptions:	-
Includes:	-
Special Requirements:	-
Assumptions:	-
Notes and Issues:	-

**6. Create Account**

Use Case ID:	6		
Use Case Name:	Create Account		
Created By:	Cao QingTian	Last Updated By:	Huang Jingfang
Date Created:	6/2/2022	Date Last Updated:	15/4/2022

Actor:	User
Description:	user creates an account
Preconditions:	-
Postconditions:	-
Priority:	Medium
Frequency of Use:	1-2 times per lifetime
Flow of Events:	<ol style="list-style-type: none"> <li>1. User clicks “Create Account”</li> <li>2. The system will prompt users to enter account name, password, password confirmation, and security question answers.</li> <li>3. Users fill in the blanks and press the ‘sign up’ button.</li> <li>4. The system then calls the Validate Account.</li> <li>5. The account is created and the user is automatically logged in. The system returns to the main dashboard.</li> </ol>
Alternative Flows:	<p>AF-S2: Account name is already in database</p> <ol style="list-style-type: none"> <li>1. If the account name is already in the system, ask the user to enter a new name until the name is not in the system.</li> <li>2. Returns to normal flow step 2</li> </ol> <p>AF-S2: Password and confirm password does not match</p> <ol style="list-style-type: none"> <li>1. Error message is displayed to prompt the user to enter them again, until they match.</li> <li>2. Returns to normal flow step 2</li> </ol>
Exceptions:	<p>EX-S2: If any fields is left blank</p> <ol style="list-style-type: none"> <li>1. System displays “Please fill up the necessary information.”</li> <li>2. User will click the “ok” button</li> <li>3. User is returned to the login page</li> </ol>
Includes:	Validate Account
Special Requirements:	-
Assumptions:	User has entered a valid email address.
Notes and Issues:	-

**7. Reset Password**

Use Case ID:	7		
Use Case Name:	Reset Password		
Created By:	Cao QingTian	Last Updated By:	Cao QingTian
Date Created:	6/2/2022	Date Last Updated:	14/4/2022

Actor:	User
Description:	User changes the password
Preconditions:	User must be logged in
Postconditions:	-
Priority:	Medium
Frequency of Use:	1 times per month
Flow of Events:	<ol style="list-style-type: none"> <li>1. After pressing 'change password' in settings, the system displays three fields of old password, new password and security question for the user to enter.</li> <li>2. User enters the answers to the three fields mentioned above and presses the 'confirm' button.</li> <li>3. The new password is recorded in the user database.</li> <li>4. The system displays that the user has successfully changed the password.</li> </ol>
Alternative Flows:	AF-S2: Either wrong old password or wrong answer to security question <ol style="list-style-type: none"> <li>1. System displays that the user enters invalid credentials</li> <li>2. Returns to normal flow step 1</li> </ol>
Exceptions:	EX-S2: If any fields is left blank <ol style="list-style-type: none"> <li>4. System displays "Please fill up the necessary information."</li> <li>5. User will click the "ok" button</li> <li>6. User is returned to the login page</li> </ol>
Includes:	-
Special Requirements:	-
Assumptions:	-
Notes and Issues:	-

**8. Search History**

Use Case ID:	8		
Use Case Name:	Search History		
Created By:	Cao QingTian	Last Updated By:	Cao QingTian
Date Created:	9/2/2022	Date Last Updated:	14/4/2022

Actor:	User
Description:	User can view their search history
Preconditions:	User has searched some keywords before
Postconditions:	-
Priority:	Medium
Frequency of Use:	1 time per day
Flow of Events:	<p>1.User presses search after entering a keyword</p> <p>2.If the keyword is not currently in the search history, it will be displayed under the 'search history' title.</p> <p>3.Users can re-select the keywords from the search history list and the information will be re-displayed on the dashboard.</p>
Alternative Flows:	-
Exceptions:	-
Includes:	-
Special Requirements:	-
Assumptions:	-
Notes and Issues:	-

**9. Transaction**

Use Case ID:	9		
Use Case Name:	Transaction		
Created By:	Cao QingTian	Last Updated By:	Cao QingTian
Date Created:	6/2/2022	Date Last Updated:	15/2/2022

Actor:	User
Description:	User can choose a subscription plan based on their needs
Preconditions:	User is logged in
Postconditions:	-
Priority:	Medium
Frequency of Use:	2-3 per lifetime
Flow of Events:	<ol style="list-style-type: none"> <li>1. After clicking 'change plan' in setting, the system displays the three plans: Free, Professional and Organization</li> <li>2. The system will direct users to a payment page.</li> <li>3. When the transaction is complete , the system stores the type of the plan, the start date, the end date in the user database.</li> </ol>
Alternative Flows:	-
Exceptions:	-
Includes:	-
Special Requirements:	-
Assumptions:	-
Notes and Issues:	-

**10. Validate Account**

Use Case ID:	10
Use Case Name:	Validate Account

Created By:	Cao QingTian	Last Updated By:	Cao QingTian
Date Created:	10/2/2022	Date Last Updated:	14/4/2022

Actor:	System
Description:	System needs to check if the account name is valid and if it exists in database
Preconditions:	-
Postconditions:	-
Priority:	Medium
Frequency of Use:	1 time per day
Flow of Events:	<ol style="list-style-type: none"> <li>1. An account name is received</li> <li>2. User Manager checks if the account name is valid, i.e. without illegal characters or attempt of SQL injection attack.</li> <li>3. UserManager checks if the account exists in the user database.</li> <li>4. Returns True/False value for account's existence to interface</li> </ol>
Alternative Flows:	AF-S2 :Account name is invalid <ol style="list-style-type: none"> <li>1. Returns an 'account name is invalid' message back to the interface for display.</li> </ol>
Exceptions:	-
Includes:	-
Special Requirements:	-
Assumptions:	-
Notes and Issues:	-

## 11. Validate Password

Use Case ID:	11		
Use Case Name:	Validate Password		
Created By:	Cao QingTian	Last Updated By:	Cao QingTian
Date Created:	10/2/2022	Date Last Updated:	14/4/2022

Actor:	System
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Description:	System needs to check if the account password matches the one recorded in the user database
Preconditions:	-
Postconditions:	-
Priority:	Medium
Frequency of Use:	1 time per day
Flow of Events:	<ol style="list-style-type: none"> <li>1. Given an account and password, the system looks for the account in the user database</li> <li>2. UserManager compares the password with the password recorded in the user database</li> <li>3. Returns a true/false value to interface</li> </ol>
Alternative Flows:	-
Exceptions:	-
Includes:	-
Special Requirements:	-
Assumptions:	-
Notes and Issues:	-

## 12. Handle Tweets

Use Case ID:	12		
Use Case Name:	Handle tweets		
Created By:	Cao QingTian	Last Updated By:	Cao QingTian
Date Created:	10/2/2022	Date Last Updated:	14/4/2022

Actor:	System
Description:	System needs to call twitter API to fetch tweets
Preconditions:	-
Postconditions:	-
Priority:	High



Frequency of Use:	2-3 time per day
Flow of Events:	<ol style="list-style-type: none"> <li>1. The system first logs in to the twitter API.</li> <li>2. Given a keyword, the system calls the twitter API to fetch tweets based on the keyword for the last 7 days.</li> <li>3. The system also estimates the progress of fetching and returns the progress information back to the interface for display.</li> <li>4. The tweets fetched are being stored in the Tweet Keyword database.</li> </ol>
Alternative Flows:	-
Exceptions:	-
Includes:	-
Special Requirements:	-
Assumptions:	-
Notes and Issues:	-

### 13. Sentiment Analysis

Use Case ID:	13		
Use Case Name:	Sentiment Analysis		
Created By:	Cao QingTian	Last Updated By:	Cao QingTian
Date Created:	10/2/2022	Date Last Updated:	14/4/2022

Actor:	System
Description:	The system analyses the sentiment for all tweets.
Preconditions:	-
Postconditions:	-
Priority:	High
Frequency of Use:	3-4 time per day
Flow of Events:	<ol style="list-style-type: none"> <li>1. For each tweet stored in the tweets database, SentimentReasoning class runs the analysis of sentiment over the entire tweets.</li> </ol>

	<ol style="list-style-type: none"> <li>A score of 1 to -1, with 1 being most positive, and -1 being most negative, is generated for this tweet.</li> <li>The score is recorded in the Sentiment Reasoning database for that tweet.</li> </ol>
Alternative Flows:	-
Exceptions:	-
Includes:	-
Special Requirements:	-
Assumptions:	-
Notes and Issues:	-

## 14. Summary generation

Use Case ID:	14		
Use Case Name:	Summary generation		
Created By:	Cao QingTian	Last Updated By:	Cao QingTian
Date Created:	10/2/2022	Date Last Updated:	14/4/2022

Actor:	System
Description:	System generates summary on a day-by-day basis
Preconditions:	-
Postconditions:	-
Priority:	High
Frequency of Use:	3-4 time per day
Flow of Events:	<ol style="list-style-type: none"> <li>Given a keyword and a 7-day period, the Summary class will generate a summary based on the positive and negative tweets for each day.</li> <li>The summary for each day for positive and negative sentiment is recorded in the Sentiment Reasoning database</li> </ol>
Alternative Flows:	-

Exceptions:	When there are not enough tweets fetched for summary, the system will display "not enough tweets for summary" on the user interface.
Includes:	-
Special Requirements:	-
Assumptions:	-
Notes and Issues:	-

## Use Case Diagram

