**3. Specific requirements**

In this project, we will get tweets and location information from Twitter, and we will keep this information in a database. We will do sentiment analysis on Turkish sentences according to the tweet contents in the database. For example, the positive/ negative emotions in these Tweets according to the hashtags and specific contents (name, organization name, etc.) will be extracted. The main aim of the project is to develop a new algorithm to do sentiment analysis on Turkish sentences. In the scope of the project, Turkish tweets in the health, politics, education, municipalities, brands areas will be analyzed by using the algorithm that will be developed to figure out the opinions of the users about the selected topics.

**3.1 External interface requirements**

**3.1.1 User interfaces**

* **A Colorful Map of Turkey:** In the project we will have a map of Turkey in our home page, that shows the mood of people if they generally are sad, happy or neutral. These moods will be as emoji symbols on the map. The colors in the map will be divisible into three major colors (Red for sad mood, Green for happy mood, and Yellow for neutral mood).
* **Login Page:** Another requirement will be login page for the members or the people who want to join our application.
* **The List of Categories:** Users can access the categories such as health or education that they want to search for.
* **Results Reporting:** Detailed results report should be provided to the user about the analysis.
  + Results report should include the searched keyword or hashtag
  + Results report should include the number of tweets related with the searched keyword or hashtag that were analyzed
  + Results report should include the timestamp of the analysis
  + Results report should include city location information of the tweets (e.g. Ankara) and the sentimental results of the analysis (e.g. 70% positive opinions)

**3.1.2 Hardware interfaces**

We do not need any hardware interfaces in our project.

**3.1.3 Software interfaces**

* **C# Language:** We will implement the project using C # language.
* **Visual Studio 2015:** We will use Visual Studio 2015 IDE and Windows form application project template.
* **SQL Sever Management Studio 2012:** Beside this, we use SQL Server Management Studio 2012 for our Database ınterface. For our application we will create the Tables which are (Tweet, User, Categories, Hashtag, and Admin Tables).
* **NuGet :** We will implement our application in C# language as a Windows form application and we will use NuGet package manager to use Twitter API library.
* **GitHub:** We will use GitHub which is a Web-based Git repository hosting service in our project. Beside this, we will use SourceTree as a tool to connect to the Git repository. These tools will allow us to access the project resources exactly where we want to be.

**3.1.4 Communications interfaces**

* **Twitter and DevTwitter APIs:** We will use a Twitter account (proje20152016) for our application to access the tweets by using the Twitter and DevTwitter APIs.

**3.2 System features**

**3.2.1 Collect Twitter Data**

**3.2.1.1 Introduction/Purpose of feature**

The system should collect Tweets according to the keyword or hashtag and specific date range provided by the user.

**3.2.1.2 Stimulus/Response sequence**

**i.** User enters keyword or hashtag

**ii.** User chooses date range

**iii.** Send request to the Twitter Servers

**iv.** Get the Tweets related with the keyword or hashtag

**3.2.1.3 Associated functional requirements**

**3.2.1.3.1 Functional requirement 1**

User should enter keyword or hashtag to the textbox

**3.2.1.3.2 Functional requirement 2**

User chooses date range from the date pickers

**3.2.1.3.3 Functional requirement 3**

System should send hashtag or keyword to the Twitter Servers in order to get corresponding tweets.

**3.2.2 Sentiment Analysis**

**3.2.1.1 Introduction/Purpose of feature**

Tweets will be collected and analyzed according to the Turkish language supported algorithm and it should obtain a result that expresses sentiment as positive, negative or neutral emotion.

**3.2.1.2 Stimulus/Response sequence**

**i.** SearchTurkish tweets according to the keyword or hashtag

**ii.** Store the tweets in database

**ii.** Tweet cleaning: Correct the spelling and grammar errors

**iii.** Tweet analysis for extracting emotions

**iv.** Provide sentimental result

**3.2.1.3 Associated functional requirements**

**3.2.1.3.1 Functional requirement 1**

Only the Tweets that are in the Turkish language can be transferred to the system.

**3.2.1.3.2 Functional requirement 2**

The contents of tweets are corrected according to the Turkish language grammar and spelling rules. Spelling and grammar errors should be corrected.

**3.2.1.3.3 Functional requirement 3**

Tweets should be analyzed in order to extract the positive/ negative emotions in these Tweets via the algorithm developed for the Turkish language.

**3.2.1.3.4 Functional requirement 4**

The system should give a result that expresses the sentiment of the sentence in percent.

**3.2.1.3.5 Functional requirement 5**

The system should store the tweets and sentimental results in a database.

**3.3 Performance requirements**

**i.** The system should get and store all related tweets about the searched keyword or hashtag into the database at most 3 minutes.

**ii.** The system should find the emotions in all related tweets at most in 3 minutes.

**3.4 Design constraints**

**i.** The high complexity of grammar and spelling rules of the Turkish Language is the most important design constraint in this project.

**ii.** Twitter API allows to get only 100 tweets in one request.

**3.6 Non-functional requirements**

**i.** The system should find the sentimental result above 70% accuracy.