Requirement analysis

1. Non-functional requirements
   * Accessibility

In our project, we will focus on the basic and important parts which can be used or operated correctly and legally. Because the aim of our project is navigation on campus. We have to use Google map so that we can make sure user’ current location. Then depending on our platform and algorithms, the program will display the information. In the accessibility part, we adopt the newest vision of Android system to develop so that the user who used different vision to apply this program.

* + Efficiency

For a good program, efficiency is an important fact of all non-functional requirement. There are some branches of this requirement.

1. Structure of design is simple

Due to our purpose is navigation, we simplify the structure of design. The purpose of the program is easy to be understood. Thus when user run this program, the simple operation can improve the efficiency.

1. Interface of design is simple

In our project, we used few interface to achieve the program. Every single interface have its unique and determinate function and purpose. User do not need speed a lot of time on recognise and familiar with this program so that it will help user increase their efficiency and improve familiarity.

1. Simplify the buttons

Because the function of this program is not very difficult, we used several buttons to operator the change of users interface. Every function of button is quite simple. Thus it will easy to be used and improve the efficiency.

* + Fault tolerance

Our program designed around the concepts of fault tolerance. The essence of fault tolerant is the system must be able to continue working or running. If there are some problems or running time error when user use the program.

1. Respond to hardware

Because our project will be developed in mobile platform, we must make sure the hardware available. The battery, screen and the camera works or not. We and the user should make sure the working. If there are problems in this kind of facts. Our project will respond error message even quit this program.

1. Respond to software
2. Fault of software tolerance is whether the system is ability to provide protection of data.
3. Providing error message when project is in endless loop and turning backward to the security blocks
   * Privacy
4. For this non-functional requirement, depending on users’ personal information, we do not allow the user to review the history searching data and history searching location. This system do not allow login. The system do not receive any message except the searching location in every running time.
5. This requirement dictate protection for sensitive information such as the user current location and destination location. Using Google API can guarantee individual information security.
   * Reliability

Reliability is an important non-functional requirement for this program even most software products so this requirements content this requirement. System reliability depends on the structure reliability and test reliability. There is no question that any part of hardware will be broken. Same as fault tolerance, when the hardware fail or wearing out. The system must return message and go back to security block.

1. Structure reliability

The structure reliability is usually defined as the probability that this program will operate without failure for a specified number of uses. The system is stable or not, the structure is safety or not. The operation is fluent or not.

1. Testing reliability

First of all, how do we make sure the system or product safety? Except design, user interface and algorithm. This very important concept is this system can be test or not. If this product is good, it have to be tested a lot of time. Reliability test results should state in terms of measurements. During the testing of product, we can find and solve the problems (bugs) even predict or forecast of the performance of the product in the future.

* + Accuracy

This requirement about accuracy and precision of the data. This product is related to cohesion between Google map service and Android system. So in the situation of all the interface connect correctly, the design of algorithm and exchange of data must own high accuracy. The important parts are whether the system can display correct location and the direction.

* + Performance

This requirement is about the response time when the project is running or the waiting time to get results. After accepting the inputs, how long does the system respond and show the destination and direction in the map. The performance requirement includes running performance and testing performance. Both of them will be analysed below.

1. Running performance: it includes responding time of running and waiting time of exchanging interface. Less waiting time will improve the experience of user.
2. Testing performance: it checks that for a given range of user (in this product we set the number of user equal to one) testing performance.
3. Data performance: in this fact, it includes the uploading data, transporting data and displaying data.
   * Stability

This requirement is related to security level in the program. It ensures the normal operation of program.

1. This product must have high level stability which means there is less running time error inside.
2. This product must not damage the hardware of the platform. In another word, making sure the security of platform. Because this product based on Android platform and it calls the current camera and location, this product must not damage the Android system and its software as well.
   * Testability

A good product should own this non-functional requirement. We know testing is a very important stage in a life cycle of applications. In the period of testing, developers have to consider all the possible solutions and situations. They need to fix and complete the program depending on every case.

* + Hardware consideration

In this product, our purpose is developing the navigation on campus on mobile platform. So there are several hardware considerations requirements. This product

1. Does not damage the stability of Android system.
2. Connects to Google API safely.
3. Calls mobile camera successfully.