

Q1: Determine whether the following requirement is functional or non- functional requirement.

1. The system should enable users to find other Facebook users on the same network. The system organizes networks by city, workplace, school, region...etc. Then it allows users to connect and interact with each other on their mutual network.
2. It enables users to send friend requests. The system sends a friend request to the person desired, if accepted he/she is added to the user's "friend list".
3. It must allow users to send friend requests to their email contact(s). The system asks for your email(s) and automatically sends friend requests to your Facebook registered contacts. However, others will receive invitations to join Facebook, as well as a friend request.
4. It should display common friends based on user's interest. The system searches its database according to search criteria (interests for example) and displays the users that match the former search condition.
5. The system provides users with the ability to view their friends' profiles. The system marks every user's friend profile visible for further access.
6. It should display friends of a user's friends and allows him/her to send friend requests. The system should allow users to view their friends' friends in a hierarchal manner. Sending friend requests to them is also allowed (see req#2)
7. It must provide users with the ability to create their own committees and groups. The system will create a new group starting with the user initiating it, and then it'll allow others to join the group according to the group administrator's (creator) policies. Each group will have its own dedicated wall, different discussion threads, photo albums....etc, and each member will receive news feed\* from the group administrator (\*See req#17).
8. The system should enable the users to edit and view their profiles. Every user has the ability to edit and change any field based upon their preference, of course these changes are confirmed by the user before it takes effect and appears on Facebook.
9. It should allow users to comment on their friends' profiles. When viewing a friend's profile, the user can write on their wall or comment on their recently added items, and these comments are viewable by all permitted contacts.
10. It should allow users to add albums to their profiles. The system creates a folder in which photos are uploaded from the user's PC.
11. It will allow users to poke their friends. The system sends a message to the 'poked' friend grabbing their attention with an attached message.
12. It should allow users to take a variety of quizzes. The system displays questions. Based upon users' choices, the result is displayed after offering to send the same quiz to friends.
13. The system must allow users to send and receive readymade chains. The system keeps track of the list of people who have received the chain (a letter for example), and then the chain is updated by adding the recipient to the chain, who is allowed to send the received chain to friends.
14. It must enable users to use the instant messaging system. The system allows users to write messages to their online friends and allow their friends to respond all at once.
15. It should allow users to send private messages to their friends. The system allows users to create messages and send them to their friends as an internal basic mailing system. Obviously, the message will be visible to the receiver only.
16. It should enable users to send numerous types of gifts to their friends. The system provides users with a variety of gifts, which are basically small icons of novelty items, then the user either sends the gift publicly (that will show on friends wall with a message), privately (the gift will be sent directly to the gift box of the receiver), or anonymously (public gift and a private message).
17. It should provide users with news and feedback. The system keeps track of profile changes, upcoming events, birthdays...etc. Then it updates the news feed list (shown to friends) constantly whenever needed. In addition, the user has the ability to select what is to be shared.
18. The system must be able to serve an approximate number of 20 million users at a time. This speed will ensure user's satisfaction (i.e. them continuing to use FaceBook). Preventing the server from crashing is also a plus.

19. Any request for any application will take no longer than 10 seconds average. The user will be anxious to take a look at his/her profile and engage in activities, if the process took too long, user satisfaction will decrease, thus, reducing the number of users.
20. Database capacity will be increased with every 2 million user registrations. The system will accommodate more users and give them the ability to update their profile continuously.
21. The database must be updated continuously after every action (0.3 second). In order for a successful communication between users to occur and user profiles be up to date by the second.
22. The back up database should be updated gradually every day. In case of data loss, or system failure, the system will return to some extent its previous state.
23. The system should be user friendly. The system should be used by people of all ages, thus should increase in simplicity.
24. The graphical display should be attractive and well designed. The system will be used by people of all ages, and cultures, thus the design should be formal and attractive due to the user variety.
25. The system's operations shouldn't be time consuming or overwhelming. The system's easy operations make it less time consuming, thus making it more approachable to users.
26. The system must be free to use. Although people like communicating with each other, they are generally not willing to pay money for it (through the internet at least). In addition, there are already websites that provide users with similar services to our system and for free (MySpace for instance).

Q2 : Based on the following description of case studies, build a preliminary use case diagram.

### **CASE STUDY 1**

Patrons have access to the library information to search for book titles and to see whether a book is available. A patron can also reserve a title if all copies are checked out. When patrons bring books to the circulation desk, a clerk checks out the books on a loan. Clerks also check books in. When books are dropped in the return slot, they check in the books. Stocking clerks keep track of the arrival of new books. The managers in the library have their own activities. They will print out reports of book titles by category. They also like to see (online) all overdue books. When books get damaged or destroyed, they will delete information about book copies. Managers also like to see what books are on reserve.

### **CASE STUDY 2**

Develop a use case diagram for the dental clinic. The receptionist keeps track of patient and head of household information. He/she will enter information about the patients and head of household. He/she will also keep track of office visits by the patients. Patient information is also entered and maintained by the office business manager. In addition, the business manager maintains the information about the dental staff persons. The business manager also prints the invoices. Patient invoices are printed monthly and sent to the head of household. Insurance invoices are printed weekly. When the invoices are printed, the business manager double-checks a few invoices against information in the system to make sure it is being aggregated correctly. She also enters the payment information when it is received. Each dental staff person is responsible for entering information about the dental procedures that he/she performs. The business manager also prints an overdue invoice report showing heads of household who are behind on their payments. Sometimes dentists like to see a list of the procedures they performed during a week or month, and they can request that report.