CS174A Early Project Report
Bo Luan

ER Diagram: see the page attached

Relation Schemas
Note: the underlined attributes are primary keys; the types of the fields are string unless otherwise specified; if there is a different between this version and the handwritten version on the page attached, check this version.
Users(email, phone, password, screenname)
Managers(email, phone, password, screenname) (inherits Users)
Massages(message_id, timestamp(time), text, sender: F. Key Ref. Users(email) NOT NULL)
MyCircle_msg(message_id, timestamp(time), text, flag(boolean), sender: F. Key Ref. Users(email) NOT NULL) (inherits Messages)
ChatGroup_msg(message_id, timestamp(time), text, flag(boolean), sender: F. Key Ref. User(email) NOT NULL, name: F. Key Ref. ChatGroup(name) NOT NULL) (inherits Messages)
Topic_words(word)
ChatGroups(name, duration(int), owner: F. Key Ref. Users(email) NOT NULL)
friend(email1: F. Key Ref. Users(email), email2: F. Key Ref. Users(email))
receives(email: F. Key Ref. Users(email), message_id: F. Key Ref. Messages(message_id))
topic_u(email: F. Key Ref. Users(email), word: F. Key Ref. Topic_words(word))
topic_m(message_id: F. Key Ref. Messages(message_id), word: F. Key Ref. Topic_words(word))
in(message_id: F. Key Ref. Messages(message_id), name: F. Key Ref. ChatGroups(name): NOT NULL)

Integrity constraints captured:
All primary key constraints and foreign key constraints
Key constraint and total participation constraint on Messages in relation sends
Key constraint and total participation constraint on ChatGroup in relation owns
Key constraint and total participation constraint on ChatGroup_msg in relation appears
Integrity constraints NOT captured:
Total participation constraint on ChatGroup in relation in
Total participation constraint on Messages in relation receives
Total participation constraint on MyCircle_msg in relation topic_m
How to prevent the violation of these integrity constraints?
When each entry of the table is created, make sure to make it participate in these relations.

Architecture: Classes and methods

Note: the fields of the classes are specified in the relation schemas above; methods are only used for user interface; the specifications and parameters of the methods are subject to change

```
class User{
        post_private_msg(text, receiver);
        post_MyCircle_msg(text, topic_word, flag);
        post_ChatGroup_msg(text, ChatGroup_name);
        browse_msg([email, ChatGroup])
        display_more([email, ChatGroup])
        delete_msg(message_id);
        create_ChatGroup(name, duration);
        modify_ChatGroup(name, new_name, new_duration);
        invite(email, ChatGroup_name);
        accept(message_id);
        search_msg_match_all(n, [topic_words[]]);
        search_msg_match_one(n, [topic_words[]]);
        search_user([email[], topic_words[], n, m]);
        friend_request(email);
        accept_friend(message_id);
        summary_reports();
}
class Manager extends User{
        find_active_users();
        find_top_msg();
        num_inactive_users();
        complete_report();
}
class Message {}
class MyCircle_msg extends Message {}
class ChatGroupt_msg extents Message {}
class ChatGroup {}
```

Task Divisions

1. create tables for database
2. implement classes and methods
3. test