Design Pattern Final Project – Social Network Search Engine
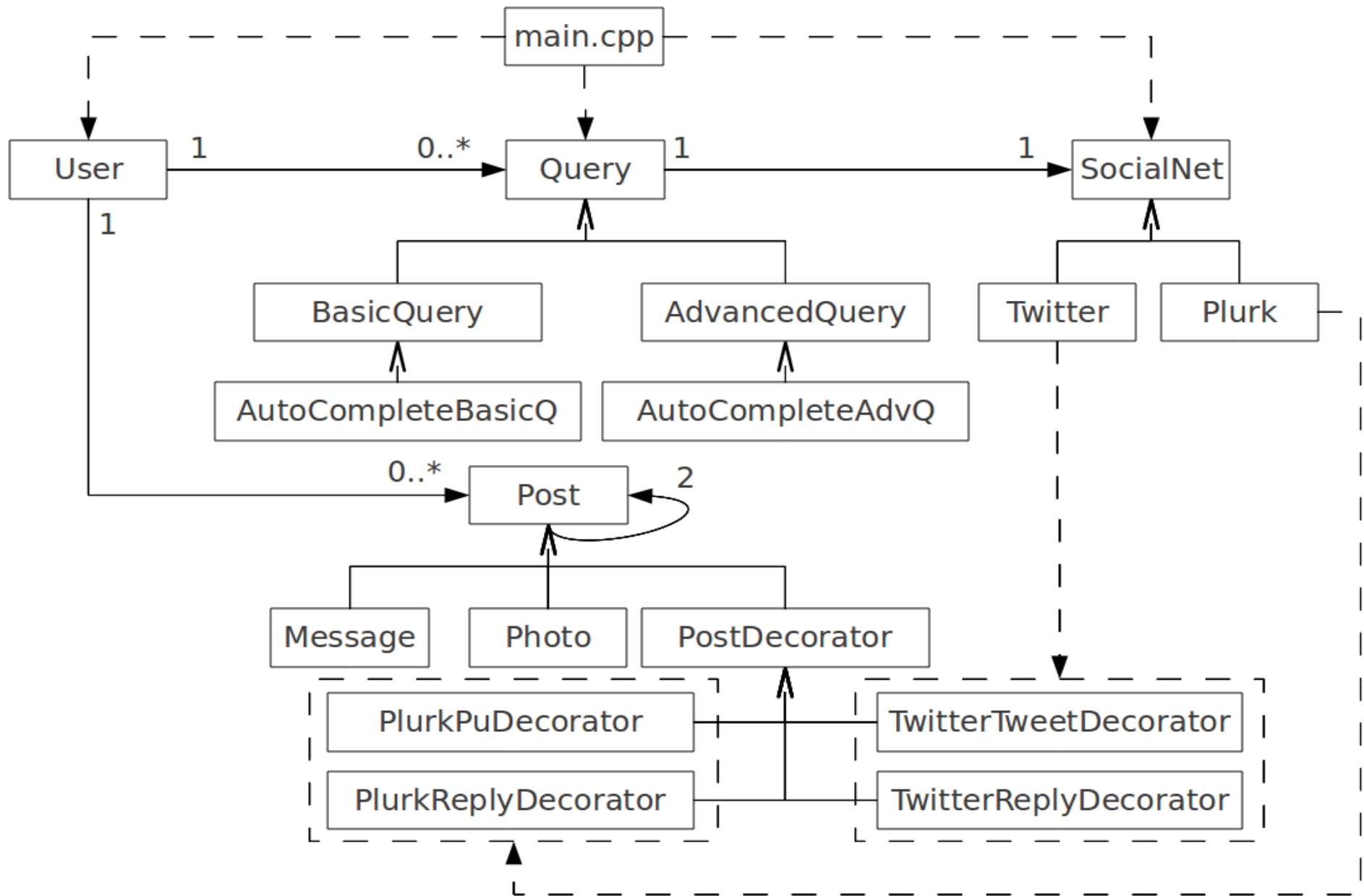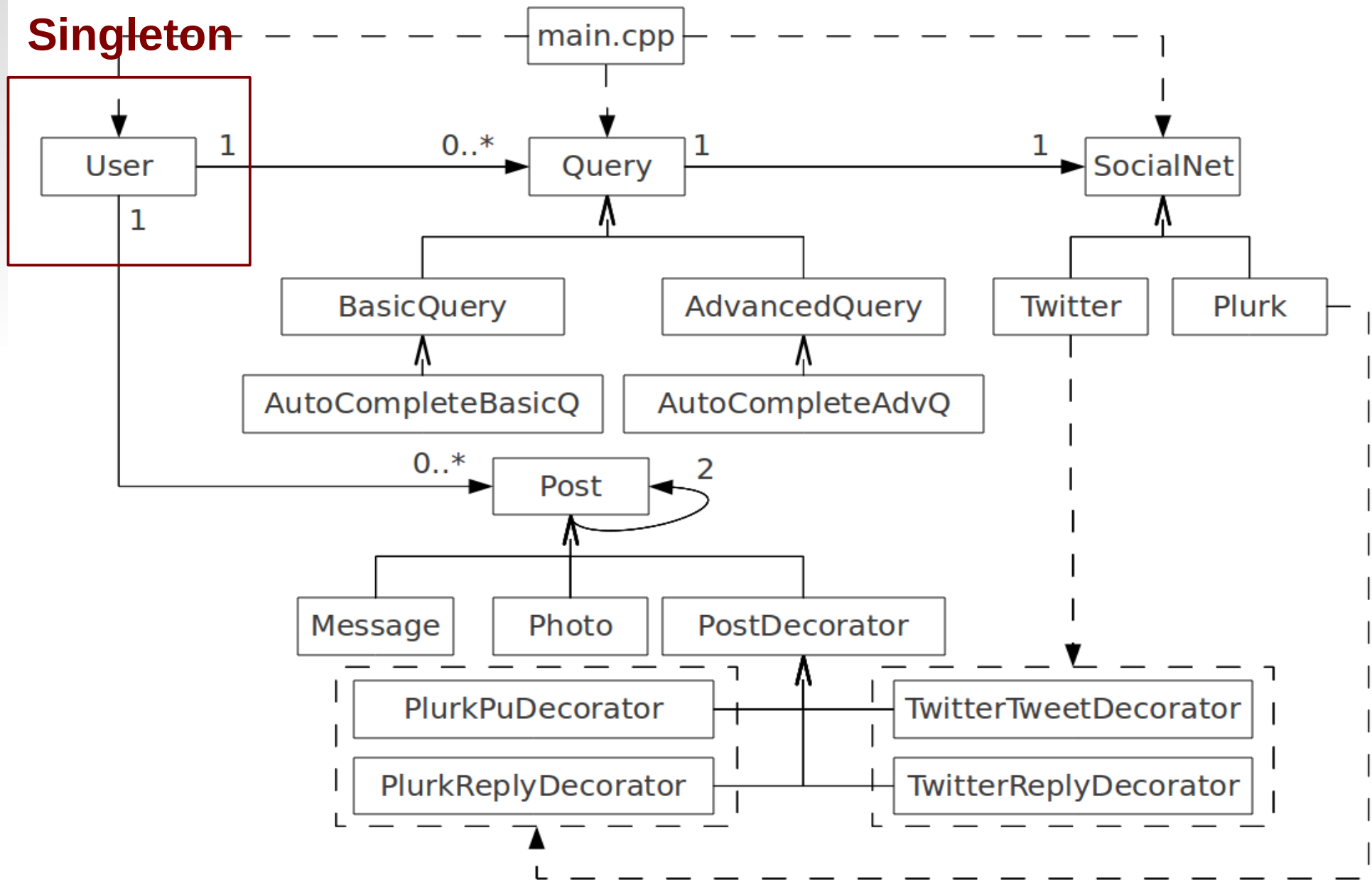
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Introduction

- Main features:
  - Search keyword and/or person
  - Browse
  - Like
  - Reply
- Support Plurk and Twitter for now
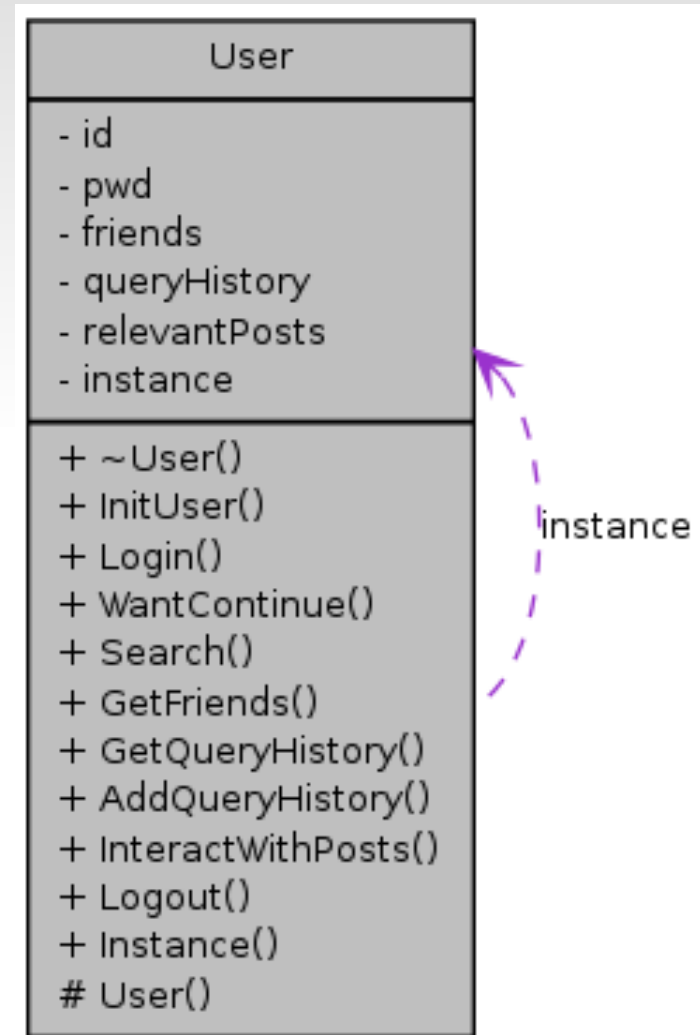- Implementation: C++ and Python

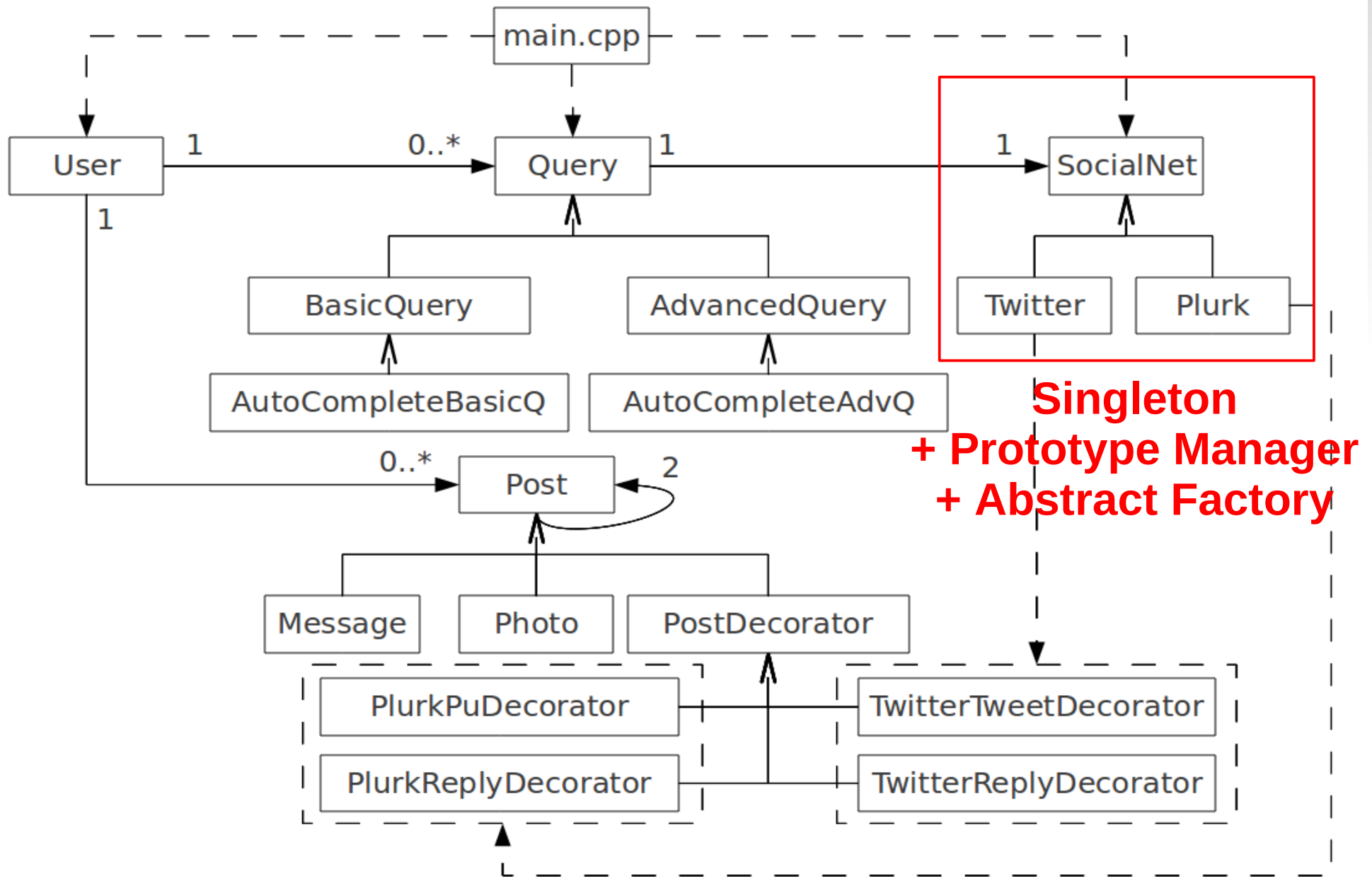# Overall Class Diagram

Overall Class Diagram

User: Singleton

- Instantiate at program startup.
  - Avoid multi-thread problem.

```
              User
  - id
  - pwd
  - friends
  - queryHistory
  - relevantPosts
  - instance                    ←── instance
  ─────────────────────
  + ~User()
  + InitUser()
  + Login()
  + WantContinue()
  + Search()
  + GetFriends()
  + GetQueryHistory()
  + AddQueryHistory()
  + InteractWithPosts()
  + Logout()
  + Instance()
  # User()
```
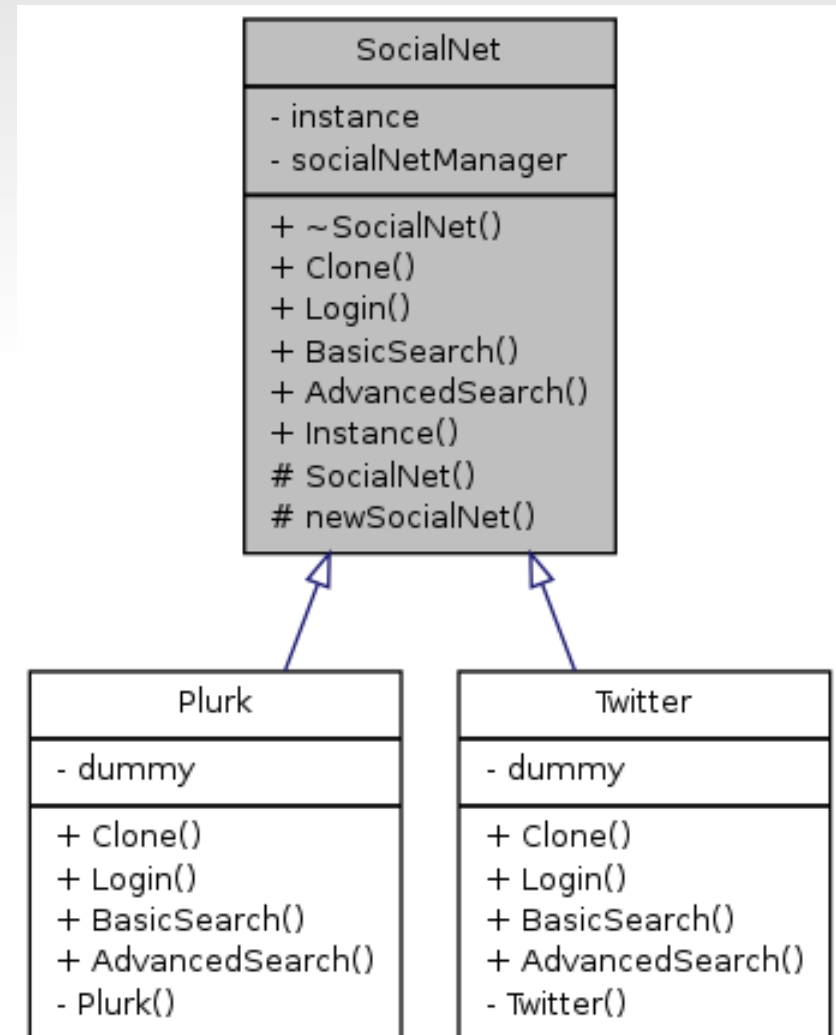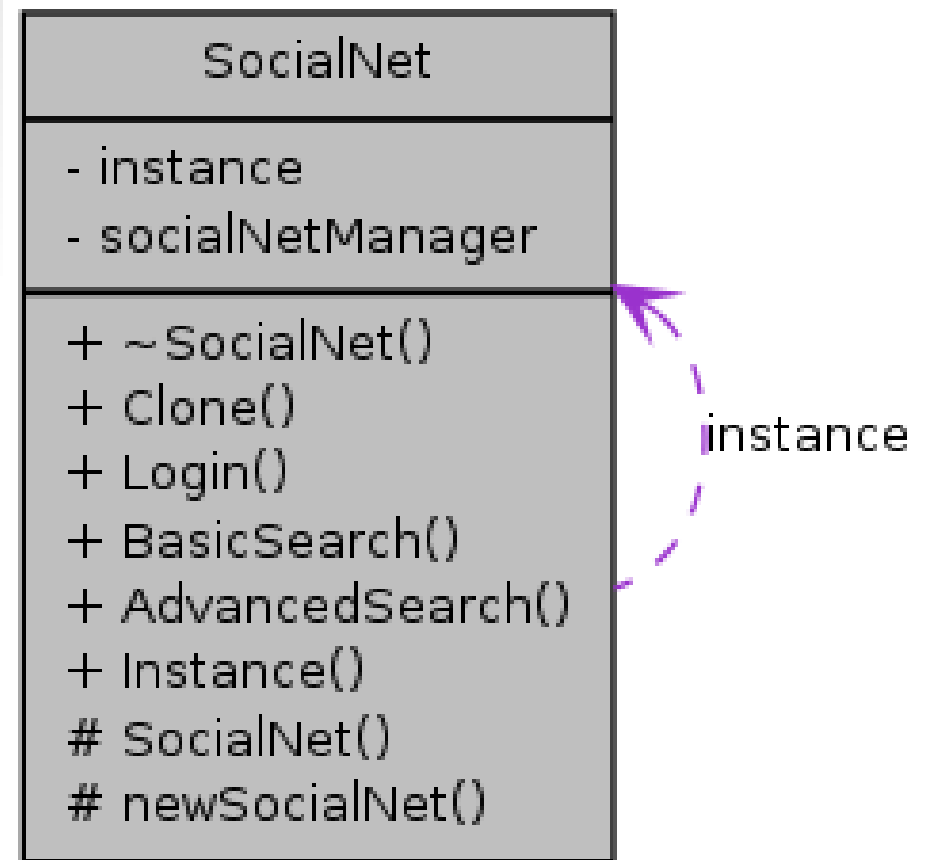
Overall Class Diagram

SocialNet: Singleton + Prototype Manager + Abstract Factory

- All its derived classes (also singletons) instantiate themselves at program startup, and register to the prototype manager.
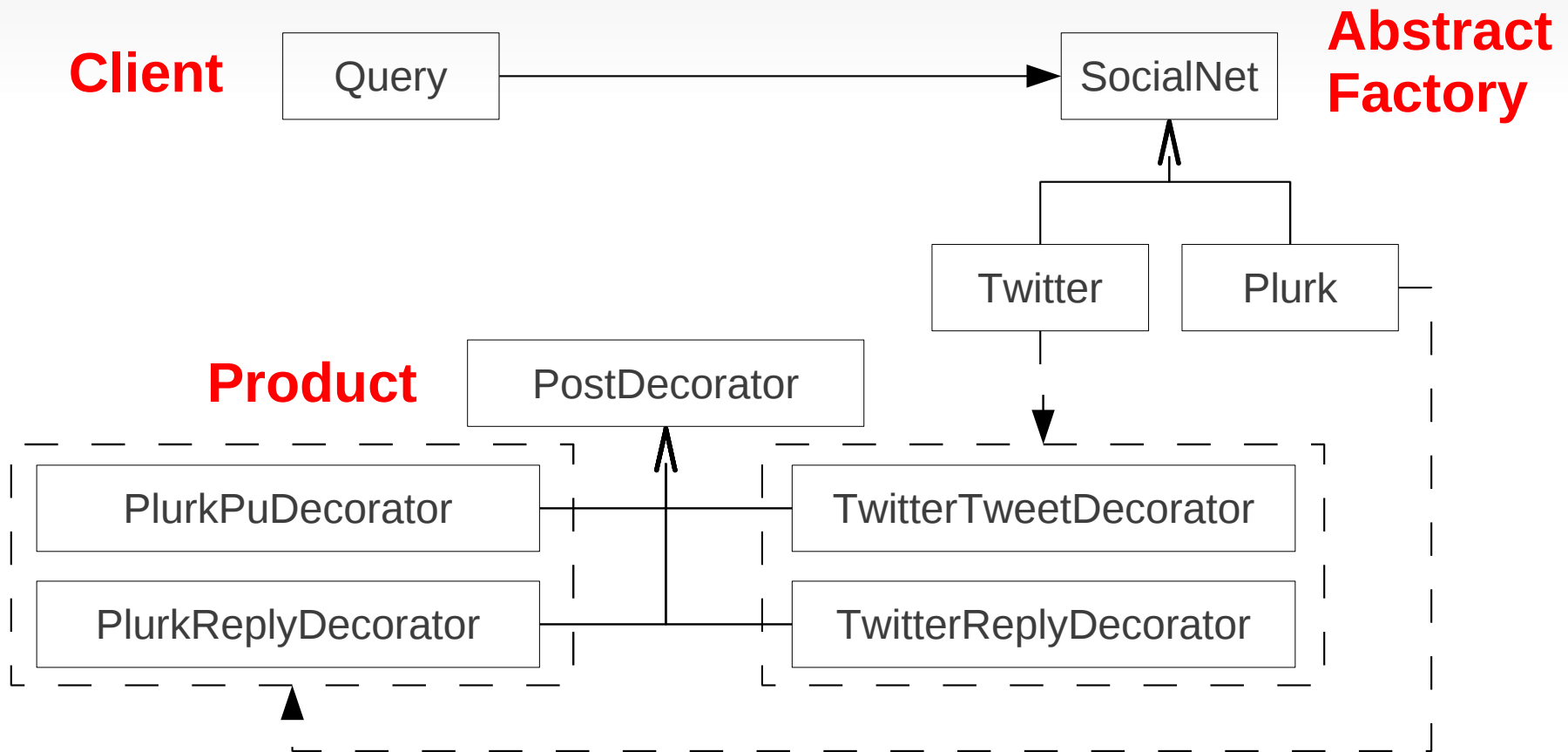
SocialNet: Singleton + Prototype Manager + Abstract Factory

- SocialNet::Instance() by cloning from prototype manager, not newing!
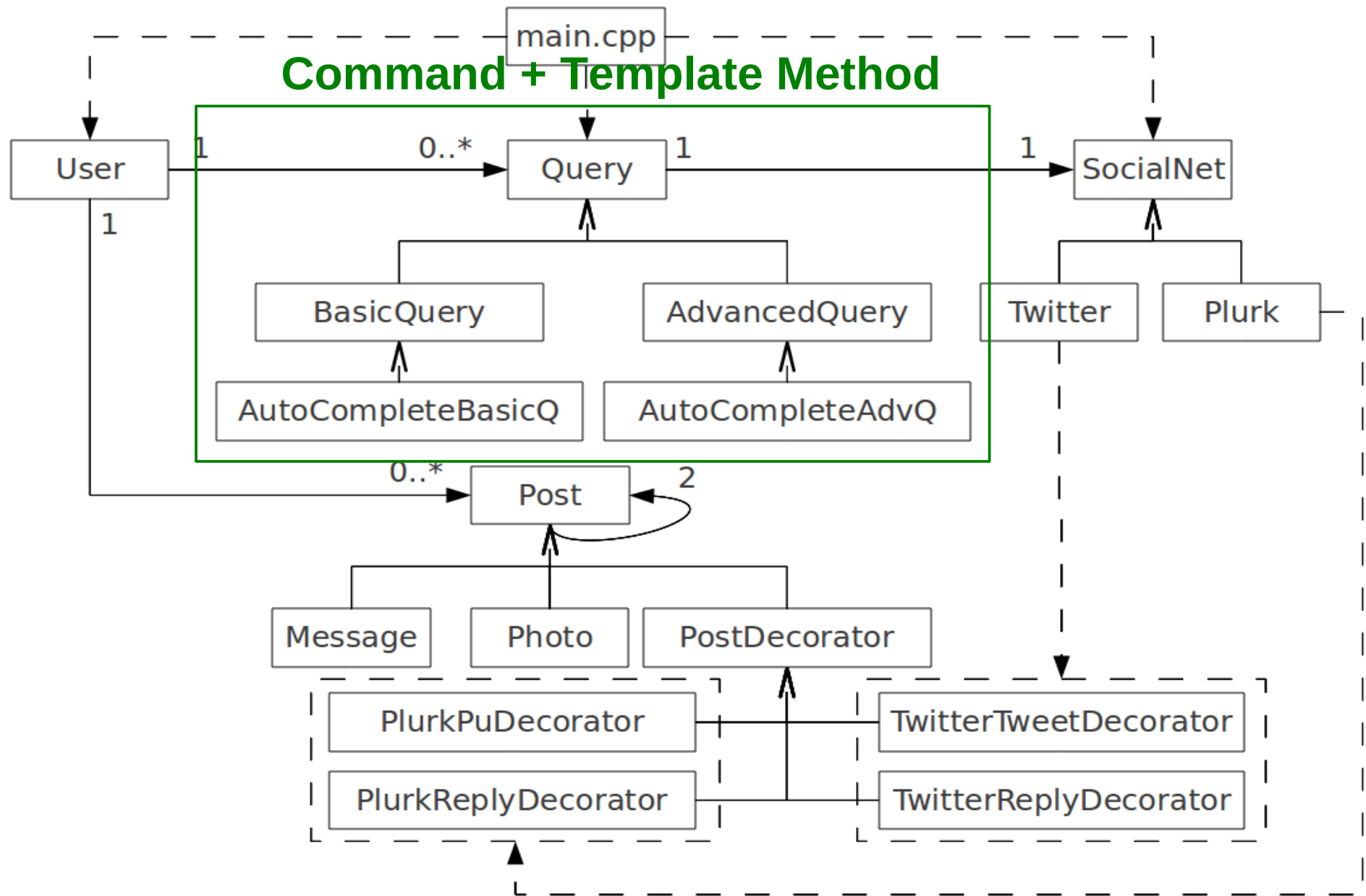
  - Avoid multi-thread problem.

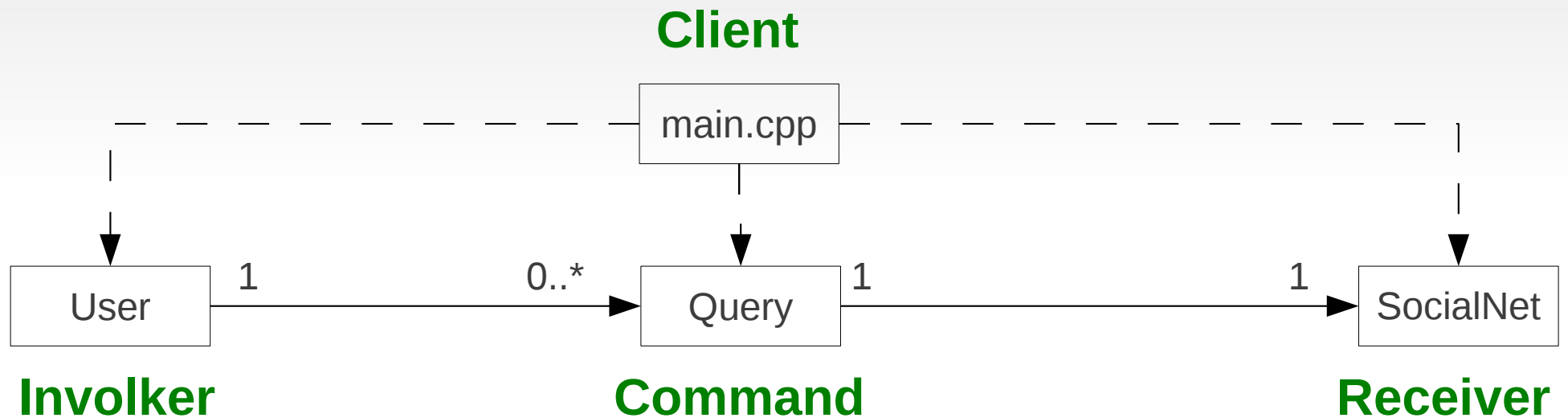# SocialNet: Singleton + Prototype Manager + Abstract Factory

- SocialNet can also be seen as Abstract Factory pattern:
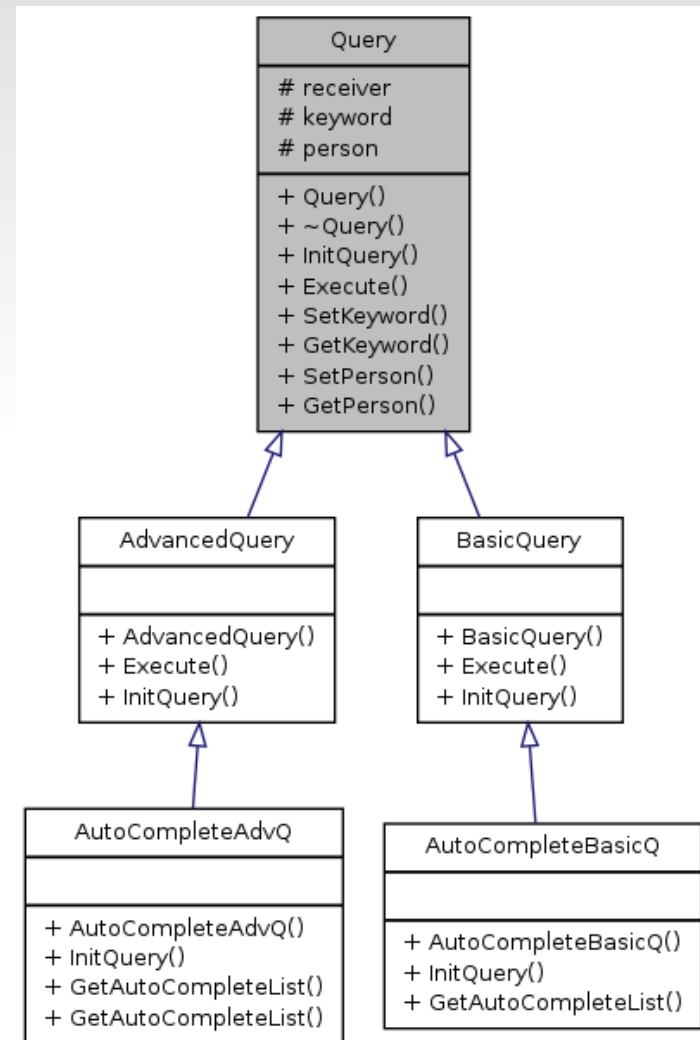
Overall Class Diagram

Query: Command + Template Method

Client

```
main.cpp
```

Involker

```
User
```

1   0..*

Command

```
Query
```

1

Receiver
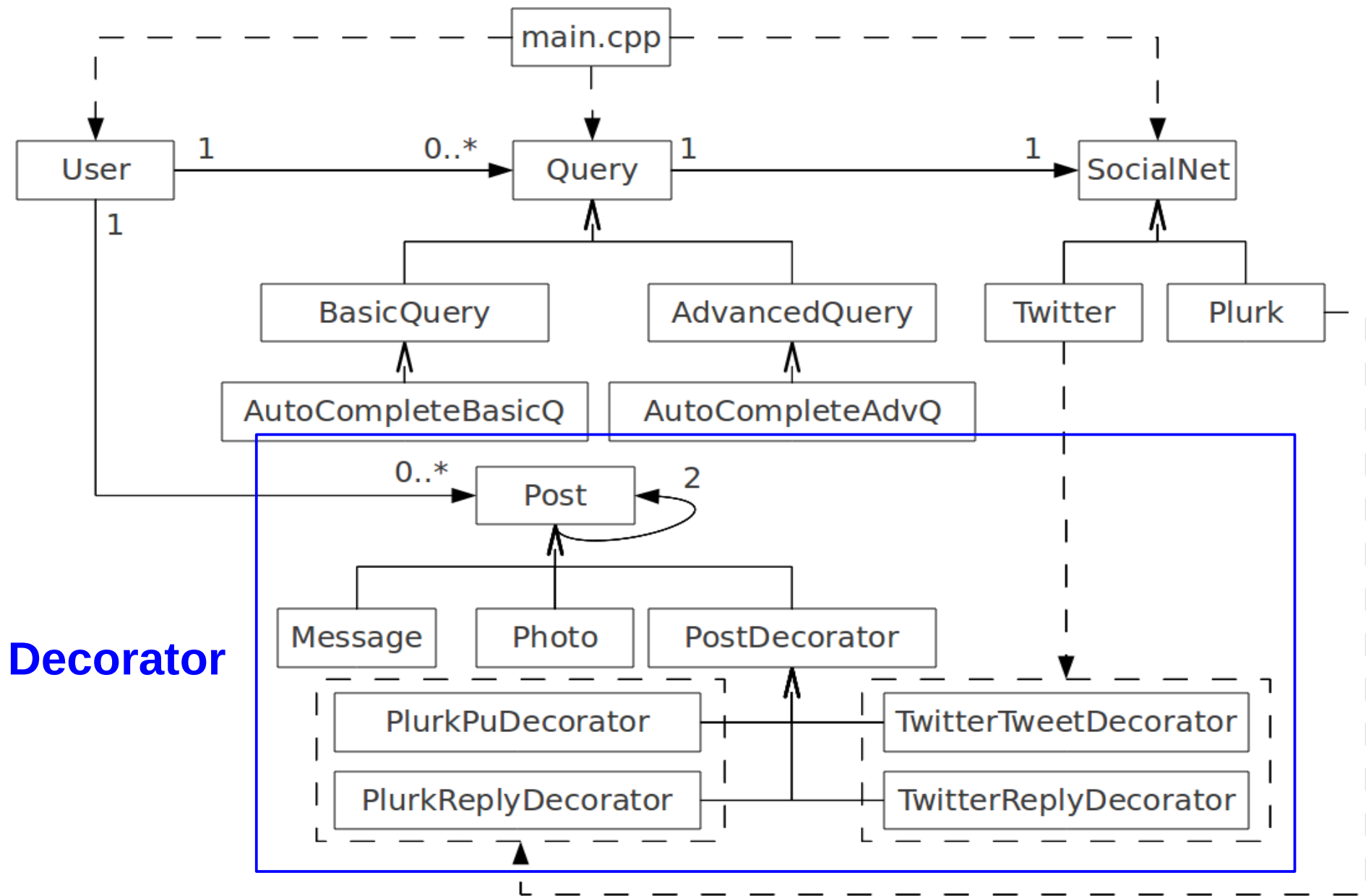
```
SocialNet
```

1

Query: Command + Template Method

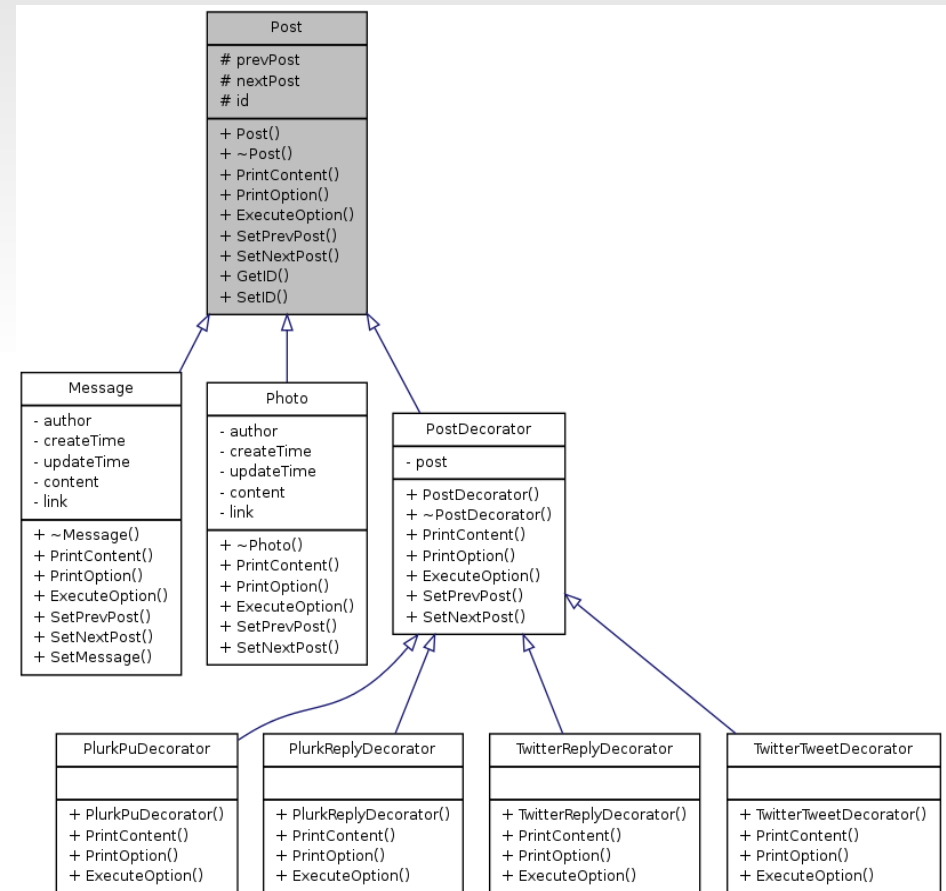- Use Template Method to override InitQuery() to auto-complete.

Overall Class Diagram

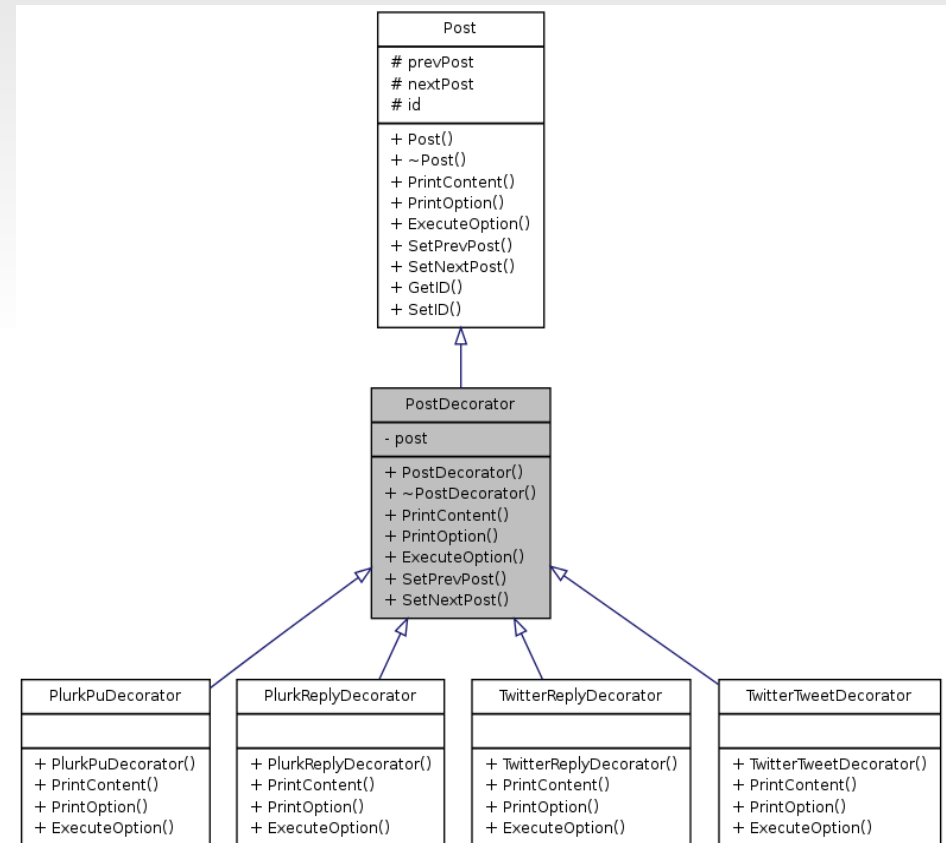# Post: Decorator

- Post:
  - Message
  - Photo
  - …...etc.
- Responsibilities of Post (without decorator):
  - Go to previous
  - Go to next
  - Quit browsing
  - …...etc.

Post: Decorator

- PostDecorator:
  - Like
  - Reply
  - …...etc.
- Different decorators used by different social networks.

Other special features

- Password masking
  - Enter password, show ”*".

- Auto-complete
  - Keyword: from log of query history
    - Save the latest 100 queries when terminate
    - Load log when startup
  - Person: from friend list

Open for extension

1. Add new social network

   - Must also add new PostDecorator

2. Add new kinds of posts (e.g. shared link)

3. Add new type of query

   - Must update/add the search method of receiver of Query i.e. SocialNet

Questions?