C++ Programming

Inheritance Homework 2

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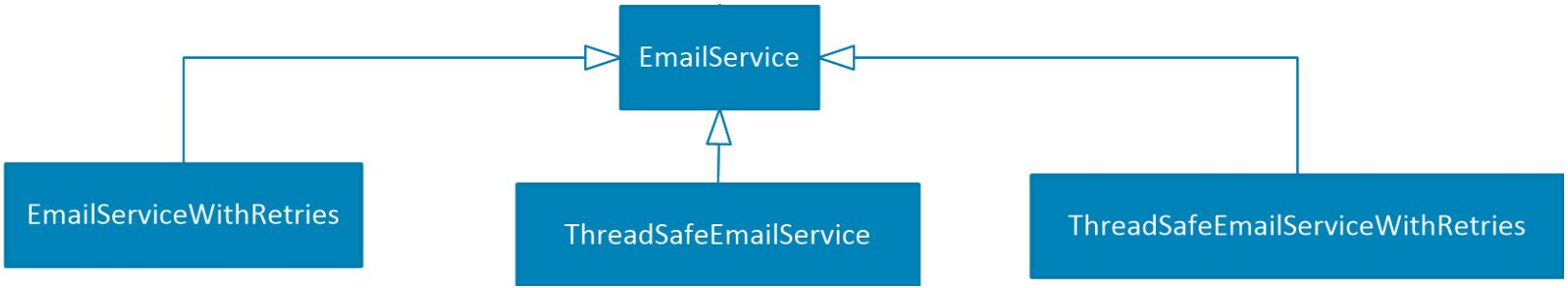
Homework 1: More Features

- Background.
  - When we write some service (e.g. Email service), we might have some **standard features**
  - 1) Pure service, just normal
  - 2) Logging support: means the service log info/issues to some file
  - 3) Caching support: means some information are in memory for fast processing
  - 4) Thread-Safe support: it means several threads access shared resources in proper way
  - There might be some software **guidelines to follow**
  - 1) There is only a single reason to change a class, otherwise split the features somehow
    - E.g. you don’t create a single class with logging + caching + thread-safe support
      - You have now 4 reasons to do a change to this class!
  - 2) Don’t play with others code. Consider it closed. Reuse/Extend what is available

Homework 1: More Features

- When you joined an email service company they had code for the following
  - A basic email service that just sends/downloads email once
  - An extension that support multiple trials if there is failure (using inheritance)
  - An extension that support thread safe
  - An extension that support multiple trials if there is failure + thread safe
  - Note that, there are several cases in the system that make use of any of the 4 classes



Homework 1: More Features

- A new module implemented in the code base: Logger
- A new feature is requested: Logging feature to the overall Email service
- There is a need to able to use the current 4 classes:
  - Without logging feature (directly use available ones)
  - E.g. someone may need: basic service + retrials (no logging or thread safe)
  - E.g. someone may need: basic service + logging (no retrials or thread safe)
  - E.g. someone may need: basic service + logging + retrials + thread safe
- Draw the new class diagram that supports logging feature
  - Remember, you shouldn't modify the current classes, but reuse them

Homework 2: More Features

- After a few month, there is a need to also support caching feature
- There is a need to able to use the current classes (without caching):
  - E.g. with or without logging
- Now classes should support with or without caching
  - E.g. someone may need: basic service + caching + retrials (no logging or thread safe)
  - E.g. someone may need: basic service + retrials + logging + caching (no thread safe)
- Design a new UML
  - Use my solution for previous homework and modify it
  - There is a critical concern you should notice at the moment. What is it?

"Acquire knowledge and impart it to the people."

"Seek knowledge from the Cradle to the Grave."