CS 3415 MID TERM EXAMINATION

Oct. 25, 2007

Duration: One and half hours

Name:

Student Number:

Note: There are total 6 pages in this exam set. Please check the page numbers before you start to solve questions. This is a close-book exam.

Problem 1

Fill `Y/N` in each of the brackets to indicate the statement is correct or incorrect.

1. In use case analysis, different end users of the system should use different use cases. ( )

2. In use case analysis, one actor can have several different cases. ( )

3. Frequently, engineers have to produce several requirement documents for one software system. ( )

4. A domain requirement analysis of a system can speed up the development of the software. ( )

5. A three-tier system is one of the thin-client systems. ( )

6. Any software consists of both functional requirements and non-functional requirements. ( )

7. A constraint of a system is a requirement of the system. ( )

8. A horizontal framework will have a more complete implementation than a vertical framework. ( )

9. UML is a standard graphical language for all software. ( )

10. Stakeholders for a computer system mean the all potential end users of the system. ( )

Problem 2

You are asked to develop a client system for an on-line book store system using the following framework. Give a brief description of your design of the system.

AbstractClient
≪control≫
openConnection()
sendToServer()
closeConnection()
≪hook≫
connectionEstablished()
connectionClosed()
connectionException()
≪slot≫
handleMessageFromServer()
≪accessor≫
isConnected()
getPort()
setPort()
getHost()
setHost()
getInetAddress()

Problem 3

Describe in detail the following use case in a library system.

Use case: Check out an item for a borrower
Actors: Checkout clerk (regularly), chief librarian (occasionally)
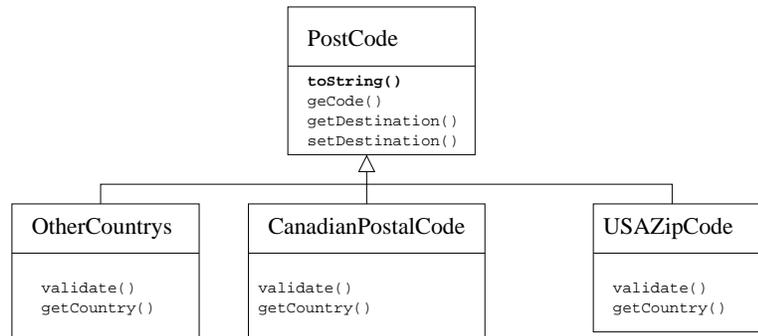**Goals:**

Preconditions:

Steps:

Postconditions:

Problem 4

The following diagram is about classes of postal codes for different countrys. Do you think it is fine or something is wrong? If something is wrong, then indicate how to collect it. If it is fine, then describe what is the operation `validate()` for.

```
                        ┌──────────────────────┐
                        │ PostCode             │
                        ├──────────────────────┤
                        │ toString()           │
                        │ geCode()             │
                        │ getDestination()     │
                        │ setDestination()     │
                        └──────────────────────┘
                                 △
              ┌──────────────────┼──────────────────┐
    ┌──────────────────┐ ┌──────────────────┐ ┌──────────────────┐
    │ OtherCountrys    │ │ CanadianPostalCode│ │ USAZipCode       │
    ├──────────────────┤ ├──────────────────┤ ├──────────────────┤
    │ validate()       │ │ validate()       │ │ validate()       │
    │ getCountry()     │ │ getCountry()     │ │ getCountry()     │
    └──────────────────┘ └──────────────────┘ └──────────────────┘
```

Problem 5

The following figure describes some requirements of an airticket booking system using UML.

1. Write down all the information you have got from the figure.

2. Validate the association between `PersonRole` and `Person`.