CS2105 - Introduction to Computer Networks

Programming Assignment 1 (P1)

Due: 22/09/2013, 23:59
Late Penalty: 10% per day
FAQ: Updates will be posted on http://www.comp.nus.edu.sg/~chanmc/p1/faq
Grade: 70 Marks (7% of Total Marks)

1. Overview

In this assignment, you will implement a simple http client that fetches the content of a given URL. You must submit your program according to the instructions given.

All the work in this assignment is to be completed **individually**. You can study sample code provided in the tutorials or elsewhere (perhaps on the Internet) but you have to write your own code for this assignment.

Sample code shown in the lecture can be found in cs2105-z.comp.nus.edu.sg, under /tmp/code. You can ssh to this host using your SoC login and password.

Any query regarding to this assignment should be forwarded to chanmc@comp.nus.edu.sg, subject: CS2105-P1.

A good starting point for Java API reference is http://docs.oracle.com/javase/7/docs/api.

2. Assignment Description

The goal of this assignment is to write a http client that fetches the content of a given URL and writes the content to a file. Your program should be written in Java and the java class should be named DownloadURL and accepts 2 arguments. The first argument is the name of the URL to be fetched (e.g. www.comp.nus.edu.sg/~chanmc/p1/text1). The second argument is the name of the file you should write the content of this URL to. To run your program, you type

```
$ java DownloadURL URL1 outfile
```

After the program terminates, the content of URL1 should be stored in outfile. We will use the UNIX command cmp to check whether the contents of URL1 and outfile are the same.

You are only required to fetch the base HTML document. There is no need to fetch additional contents referenced by the embedded URLs in the base document, if any. However, you need to handle the following cases:

i. 1. The contents of the file can be text, images or binaries.
ii. 2. You need to handle/catch common scenarios such as redirection (302), page not found (404) etc.
iii. 3. Your program should not crash. If there is an error, print an error message and exit gracefully.

In cases where the HTTP response codes are not 200 and no content can be fetched, write the 3 digit response code into outfile instead. The size of outfile should be exactly 3 bytes. For an example, see www.comp.nus.edu.sg/~chanmc/p1/404.

3. Submission Instructions

- You are required to write your program in Java.
- For submission, log on (ssh) to cs2105-z.comp.nus.edu.sg using your SoC login and password. In your home directory, create a new directory called P1. Name your file P1.java and your Java class DownloadURL. For example, if your SoC login is xyz, your submission file will be **/home/x/xyz/P1/P1.java** or **~xyz/P1/P1.java**. We will compile your code to generate a Java class file name DownloadURL.class. There is no need to submit the java class file.
- No external documentation is required for this assignment. However, you are expected to have a reasonable amount of inline code documentation (to help yourself and the TAs read your code). You may lose marks if your code is unreadable.
- Submission time is the time of last modification of the file P1.java.

4. Grading (70 Marks)

Your program will be graded on cs2105-z.comp.nus.edu.sg. The grading scheme is as follow:

- 15 Marks for submitting a program according to the instructions given.
- 10 Marks for submitting a Java program that compiles without error.
- 5 Marks for passing public test case 1 (www.comp.nus.edu.sg/~chanmc/p1/text1)
- 5 Marks for passing public test case 2 (www.comp.nus.edu.sg/~chanmc/p1/html2)
- 5 Marks for passing public test case 3 (www.comp.nus.edu.sg/~chanmc/p1/jpeg3)
- 5 Marks for passing public test case 4 (www.comp.nus.edu.sg/~chanmc/p1/binary4)
- 25 marks for “5 hidden test cases”