SSC (Concurrency and multithreaded programming) Assignment 1: multithreaded file downloader (5% of your finally mark)

Deadline	You must have submitted your code to Canvas for this exercise by Thursday 26th November 2015, at 10:00am. No submissions will be accepted after this date, except in cases where we have explicit permission to grant an extension from the welfare team - Students with extensions granted should also notify the course lecturer by email. Vivas will take place in the lab sessions on Thursday 26th, Friday 27th and Monday 30th November (LG04). Vivas will be scheduled by a timetable, which will be published on the module web page. The viva must demonstrate your code working on the lab machines or on your laptops.
Marking scheme	This exercise is worth 5% of your total mark for SSC. Your mark will be determined by the amount of the exercise you have completed and the quality of your solution.
Marking format	Marks will be awarded by viva and may be altered by supplementary tests, including plagiarism detection, which we perform on your electronic submission. You must submit your code electronically before your viva. You should also fill out a viva form before your viva so as not to delay the demonstration. The code that you demonstrate in your viva must be the code that you submitted electronically.

Introduction

In this exercise, you are required to implement a multithreaded file downloader which automatically downloads and saves files specified by the user from a webpage.

Requirements:

The multithreaded file downloader should implement the following features:

1. User can specify the URL to the webpage from which the files will be downloaded, and the location for saving the files
2. User can specify the filter for the some types of files using a specified set of extensions
3. User can specify the number of threads for downloading file
4. Parsing the webpage and extract the links to the specified files in the webpage according to the user's input
5. Putting those file links in a queue for download and executing multiple threads (number specified by the user in 3) to download the file in the queue
6. Displaying the progress of download, e.g., for each file in the queue, the downloader will show whether it is still in the queue or started or completed.
7. A Graphic User Interface (GUI) for all the appropriate features listed above. The GUI should be responsive and thread safe using multi-threaded programming (if you are using Swing please refer to my Concurrency in Swing lecture notes).

The code you will write should be as readable as possible, e.g., informative and concise comments, etc.

Marking scheme (Detailed marking scheme will be available in the viva form):

Readability (total 30%):

15% for quality of code, e.g., program is generally readable and well organised

15% Informative and concise comments

Function (total 70%):

70% for implementing all the features as specified in the requirements

Some suggestions:

1. You can take a look at these software for some inspiration to improve your software in your spare time:

   http://bulkimagedownloader.com/

   https://www.httrack.com/page/20/en/index.html