Name: Amged Mohamed Ali ID:6712

Name: Adam Essam Mohamed ID:6735

Name: Hazem Mohamed Abdallah ID:6723

Assignment 4 Report

In this report you will find:

1)Class UML diagram for the project.

2)description of the methods used in the project.

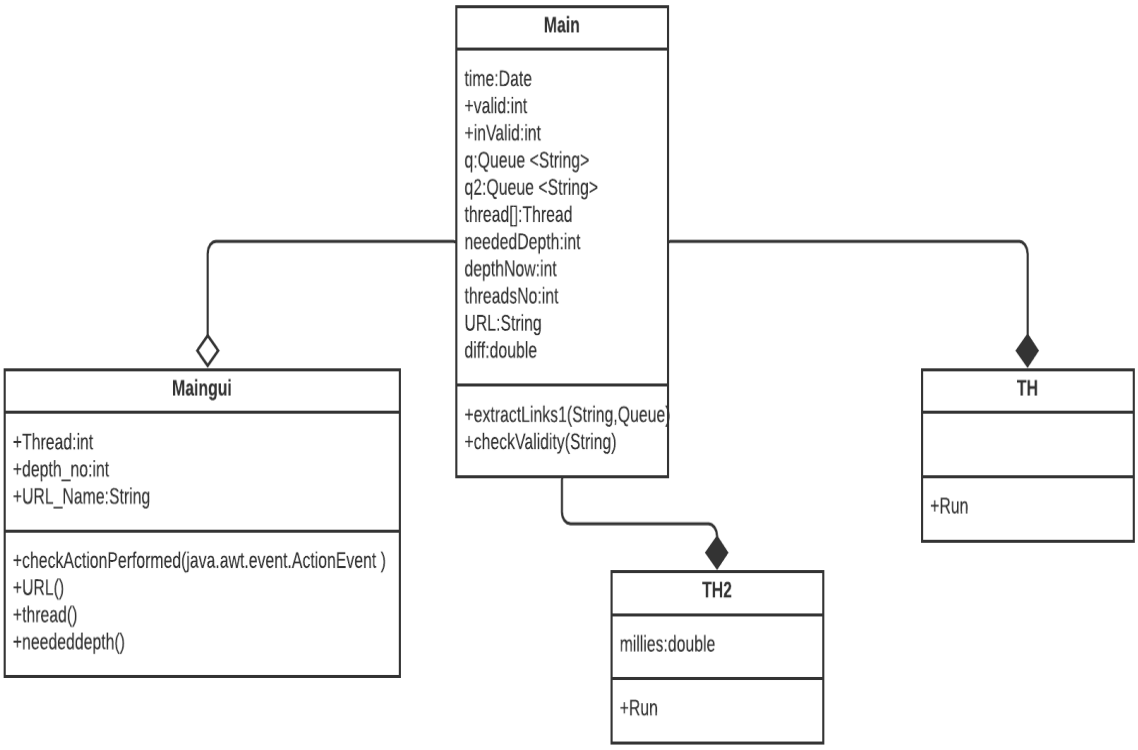
3)Use case UML diagram.

4)Activity UML diagram.

5)Sequence UML diagram.

6)A chart explaining how the project runs faster when increasing the number of threads.

1. Class UML diagram:



2. description of the methods used in the project:

2.1. extractLinks1(String, Queue) in Main class

Using Jsoup we connect to the URL and extract all the links in it and by using a for loop we see if the link starts with https or http then the link will be added to q1 and if not we add the domain to the index first then we add the link to the queue.

2.2. checkValidity(String) in Main class

Using Jsoup we try to connect to the URL if it's connected successfully we increase the value of valid but if we caught any error the invalid will increment.

2.3. The main function in Main class

If the given URL is valid it opens it and extracts the links and put it to a queue then until the depth now euqals the

needed depth we enter a full loop which generates an array of threads of type TH and after this array of threads all of its elements die by using flags and some kind of manual synchronization another thread starts of type TH2.

2.4. The run() method in TH class

It checks if the URL found in the head of the queue is valid and if so it extracts the links in it to q2 and these links will be used in the next depth.

2.5. The run method() in TH2 class

It transfer all the elements found in q2 to q1 so that if theres still any depths it enters the loop again.

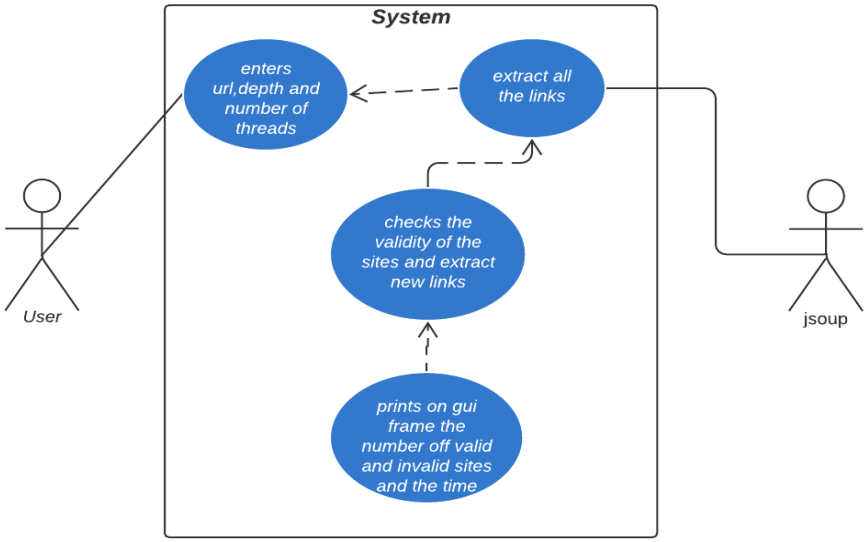
2.6. Min(double) method in Main class

We enter to it a time and if it's less than the min_time, then min_time=time

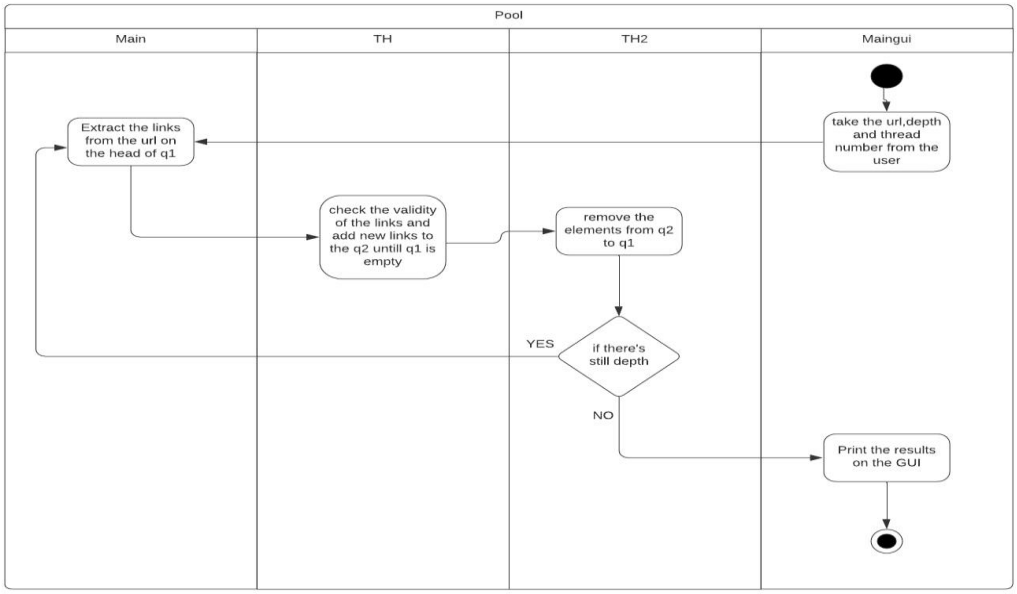
2.7. isNumeric(String) Maingui class

we enter it a string and it checks if this string is a number or not.

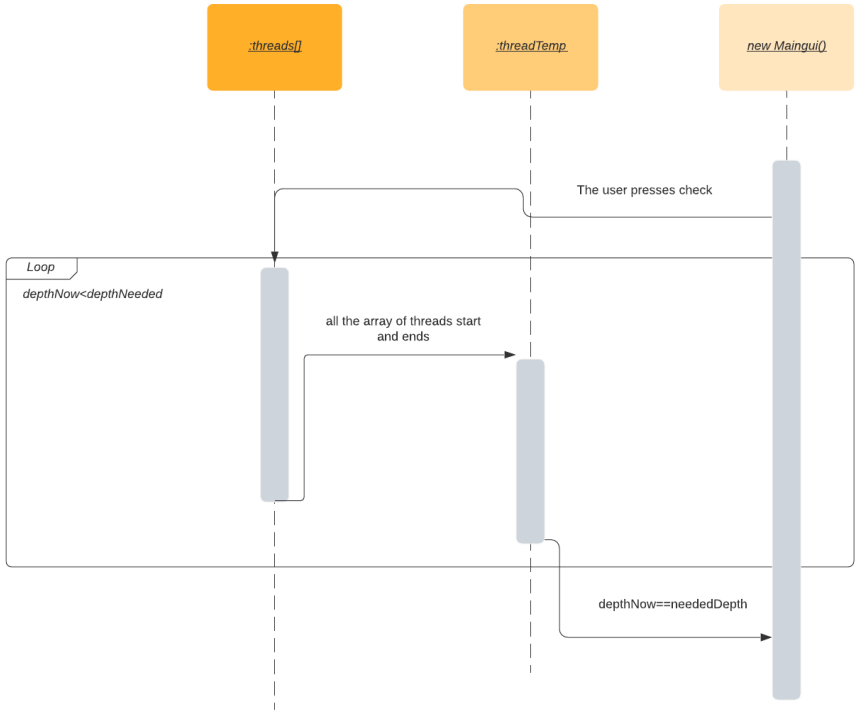
3. Use case UML diagram



4. Activity UML diagram



5. Sequence UML diagram



6. Charts to represent the efficiency of threads