

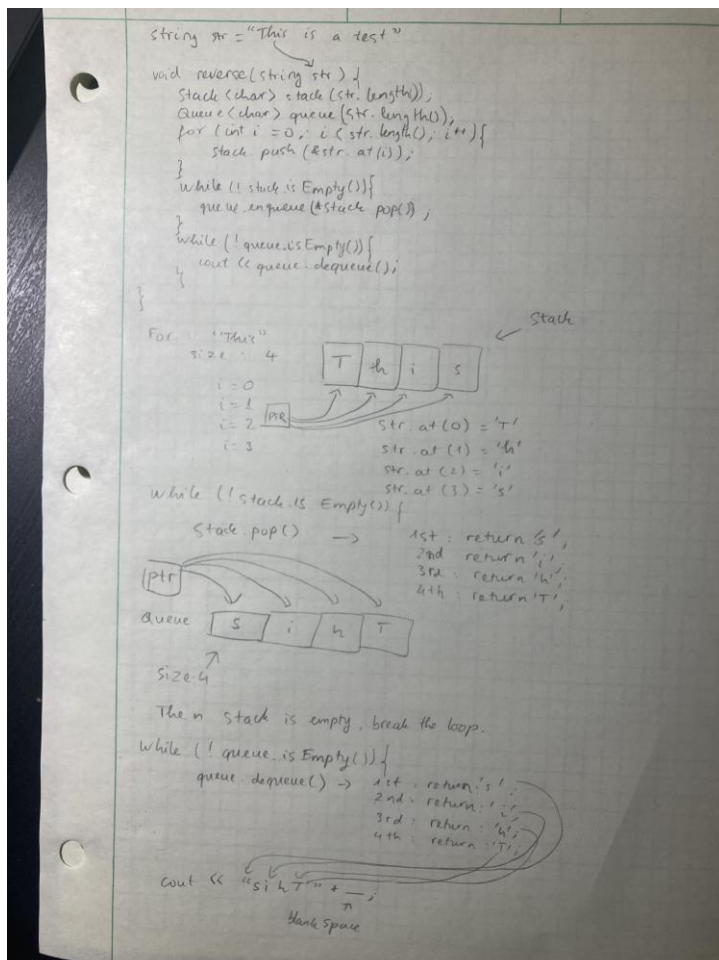
LAB 6

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A description of the objectives/concepts explored in this assignment including why you think they are important to this course and a career in CS and/or Engineering.

The objective of this lab to practice using Stacks and Queues in C++. The lab is implemented based on the famous "Tower of Hanoi" game and modify the rules to be a challenge between 2 players. The application from Stack and Queue are used a lot in the professional world to address the problem in data structure. For some case stack and queue would make the work easier. By practicing and understanding Stack and Queue, the transition to LinkedList would be easier to understand and apply.

Task 3: Include a diagram of what the stack and queue look like in solving the sample above (you may need to show various views of a single stack and queue), include screenshot of output.



So the process was that, we read each word in a sentence, passed each word to the `reverse(string str)` function.

The first word is "This"

Then:

`Stack<char>stack(str.length());` --> declare the size of the stack which is 4 since the length of the word "This" is 4.

`Queue<char>queue(str.length());` --> declare the size of the queue which is 4 since the length of the word "This" is 4.

The for-loop will then iterate through "This", take each letter, change it into characters then pass to stack using `push()` function.

Since stack is first in, last out. When we used `pop()`, it would return the last character first which was 's' then 'i', then 'h', then 'T'. At the same time, we added each return character letter into the queue using `enqueue()`.

Since queue is first in, first out, which we mean no matter what order we put in the first will come out. So when we use `dequeue()` function, it would return 's', then 'i', then 'h', then 'T'. The queue become empty which broke out the while-loop.

The input variable hold 'sihT' as it new value

The cout will print out "sihT" with a space after it.

The logic would apply the same to the rest of the sentence.

```
> make -s
> ./main
Opening file...
```

```
olleH uraH salohciN kcaJ >
```