Assignment 5 – Calc Report Template

Your Name

CSE 13S – Spring 24

Purpose

Audience for this section: Pretend that you are working in industry, and write this paragraph for your boss. You are answering the basic question, "What does this thing do?". This section can be short. A single paragraph is okay.

Do not just copy the assignment PDF to complete this section, use your own words.

Questions

- What benefits do adjacency lists have? What about adjacency matrices? **Adjecency lists are faster on a smaller data set, where theres less items to traverse, becuase they are relatively easy to traverse, but they have to scan the whole list to find the item they want to access, they are also easier to add to as you can just allocate more memory. Matrices on the other hand are faster with large datasets since you can easily acess individual entries, but they are hard to dynamically increase since you have to add to both the rows and collumns of the matrix**
- Which one will you use. Why did we chose that (hint: you use both) **I will use the matrix cause we only need to initialize the graph at the begining and dont need to add to it which will make implementation and accessing the elements easier.**
- If we have found a valid path, do we have to keep looking? Why or why not? **we have to keep looking untill we find the shortest path.**
- If we find 2 paths with the same weights, which one do we choose? **we will use the one we found first because once we find a path that works we'll only replace it with something shorter, ignoring other options with the same or bigger weight.**
- Is the path that is chosen deterministic? Why or why not? **yes it will be deterministic because we will always traverse the matrix in the same order.**
- What type of graph does this assignment use? Describe it as best as you can
- What constraints do the edge weights have (think about this one in context of Alissa)? How could we optimize our dfs further using some of the constraints we have?

Testing

List what you will do to test your code. Make sure this is comprehensive. [1] Be sure to test inputs with delays and a wide range of files/characters.

[1] This question is a whole lot more vague than it has been the last few assignments. Continue to answer it with the same level of detail and thought.

How to Use the Program

Audience: Write this section for the user of your program. You are answering the basic question, "How do I use this thing?". Don't copy the assignment exactly; explain this in your own words. This section will be longer for a more complicated program and shorter for a less complicated program. You should show how to compile and run your program. You should also describe any optional flags or inputs that your program uses, and what they do.

To show "code font" text within a paragraph, you can use `\lstinline{}`, which will look like this: `text`.

For a code block, use `\begin{lstlisting}` and `\end{lstlisting}`, which will look like this:

```
Here is some code in lstlisting.
```

And if you want a box around the code text, then use `\begin{lstlisting}[frame=single]` and `\end{lstlisting}`

which will look like this:

```
Here is some framed code (lstlisting) text.
```

Want to make a footnote? Here's how.[2]

Do you need to cite a reference? You do that by putting the reference in the file `bibtex.bib`, and then you cite your reference like this[**?**][**?**][**?**].

Program Design

Audience: Write this section for someone who will maintain your program. In industry you maintain your own programs, and so your audience could be future you! List the main data structures and the main algorithms. You are answering the basic question, "How is this thing organized so that I can have a chance of fixing it?". This section will be longer for a more complicated program and shorter for a less complicated program.

Pseudocode

Give the reader a top down description of your code! How will you break it down? What features will your code have? How will you implement each function.

Function Descriptions

For each function in your program, you will need to explain your thought process. This means doing the following

- The inputs of every function (even if it's not a parameter)
- The outputs of every function (even if it's not the return value)
- The purpose of each function, a brief description about a sentence long.
- For more complicated functions, include pseudocode that describes how the function works
- For more complicated functions, also include a description of your decision making process; why you chose to use any data structures or control flows that you did.

Do not simply use your code to describe this. This section should be readable to a person with little to no code knowledge. **DO NOT JUST PUT THE FUNCTION SIGNATURES HERE. MORE EXPLANATION IS REQUIRED.**

Results

Follow the instructions on the pdf to do this. In overleaf, you can drag an image straight into your source code to upload it. You can also look at `https://www.overleaf.com/learn/latex/Inserting_Images`

[2] This is my footnote.