Discussion 8

ECE 17

Common A5 questions

istream:

- What is it?
- How to use it?
- How to call it?

Part 1 -- Statistical Analysis

For this part of the assignment, your code will be asked to perform statistical analysis of words in a given file. We run each of these methods separately, and we will measure the time it takes for your code to complete each task. For this section, you'll write a class called `WordAnalyzer` -- that implements the following methods:

```
size_t countWords(std::istream &anInput, std::ostream &anOutput);
size_t getWordPairs(std::istream &anInput, std::ostream &anOutput);
size_t compress(std::istream &anInput, std::ostream &anOutput);
size_t decompress(std::istream &anInput, std::ostream &anOutput);
```

Assume that words break on whitespace or sentence-based punctuation. This input should be ignored, and only full words should be included. Words with embedded apostrophes are considered whole words (e.g. "isn't","don't") and should not be broken apart at the apostrophe. Also, any word wrapped in quotes ("") should have the quotes removed. So `"Hello"` becomes `Hello`.

istream background

istream stands for => Input stream

istream objects can read and interpret input from sequences of characters. Specific members are provided to perform these input operations

How to Use istream?

- This is referring to the functions in WordAnalyzer.cpp
- Many functions here take “istream” as input
- You will parse this input stream(istream) to obtain the words within
- For example (There are only a few, there are other ways):

```
someFunction(std::istream &anInput, std::ostream &anOutput)
        while(anInput){
                std::string currentWord = anInput.get();
                //other code
        }

        //OR:

        std::string tempWord;
        Std::string whole;
anInput => “Hello, how are you”
        while(anInput >> tempWord){
                whole += tempWord;
                //1st: tempWord =”Hello,”
                //2nd: tempWord = “how”
                //3rd: = “are”
                cout << tempWord;
```

How to call it?

- First we need to create a input stream
  - Example in the main.cpp file:
  - **std::ifstream theInput(thePath);**
    - thePath is a string of where the file containing the input words is
- Then we pass it in to the functions:
  - Example:
  - std::stringstream theOutput; //create an output stream as well
  - compress(theInput, theOutput);

Compression

- Basic idea: what if we can represent longer repetitive/common with a shorter place holder
-
- Fun example:

  Spider-man was **happy** to see **happy** and now they're both **happy**

- If we set the word "happy" to "1", we now get:

  Spider-man was **1** to see **1** and now they're both **1**

- In replacing one word, we shaved down 12 characters

Compression ratio = Original size / Compressed Size

Next assignment

- A card game
- Check your assignment 2, make sure all Card, Hand, Deck, Player, Game all works, we will build from that
- If they are not fully functional, please get them working. If it is too hard to debug, it is ok to restart
- Please ask for help if you need to get it up and running

Any Questions?