Clayton Warstler

7 March 2023

Programming Challenges

Assignment 3

Pattern Find - Standard Functions:

For this program, I decided to use just one function. The main function loops through the entire program depending on how many test cases there are. After the program gets the string and the substring it wants to search with, the program then goes through the string with the substring. I used GitHub Copilot to help me with the if statement on line 16. What this does is check if the substring of the string from position j to length of the pattern matches pattern. The time complexity of this program is O(T\*(N\*M)).  


Pattern Find - KMP or Boyer-Moore:

For this program, I used the KMP algorithm from the slides. The only changes from the slides was I changed the variables to be “char[]” and I had to change pps to pps[]. The time complexity of this program is O(T\*(N+M)).  


Ada and Jobs:

For this program I decided to use a hashmap with two functions. I had the main function and then a search function. The checkSubstring function just loops through a for loop to search if the substring is found in the hashmap. If the function returns true, then the program outputs yes, else it prints no. The time complexity of this program is O(M\*N).

