Assignment 1

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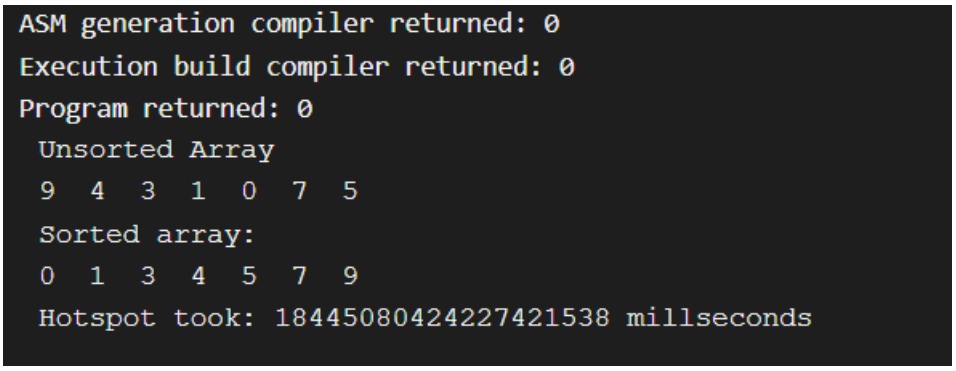
GitHub repository: https://github.com/uit-inf-2200-f22/Assigment1

The Quicksort algorithm was selected to be the main program for this project. The Quicksort algorithm works by choosing from the array a 'pivot' element and partitioning the other elements in the array into two sub-arrays, depending on whether their value is lower than or higher than the pivot.

In this project we are going to benchmark the implementation of partition in Quicksort using both C and assembly to compare how much time it takes to execute that hotspot.

The computer used to implement this is a HP Pavilion laptop with an intel core i5 9th Gen CPU. An exact time function is used to register start and end time of the partitioning function, then subtract the end time from the start time to find the amount of time used for the function to be implemented.

The results were surprising the time taken to implement the partition function in assembly was a lot higher than the time used to implement it in C, this lead me to the conclusion that the C compiler does not turn C code into assembly language instead it turns it directly to machine code



Execution output in assembly

Execution output from the C code