Faculty of Engineering and Applied Science

SOFE 3200U Systems Programming

Lab Report 4

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Questions

1. **In <time.h>, there is a function difftime(). Why should we not use this function to time the operation of generate()?**

   If the operation time of generate() were to take some sub-second values to execute (say milliseconds), then using two time_t objects and taking their difference would return 0.0.

   In other words, they are rounded by the compiler in the background to show only the whole integer part and zeroes are put on the right side of the decimal point.

   A better solution is to use clock_t objects which marks a process' CPU time (the process being time for generate() to execute) with the clock() function (defined in time.h). As seen below (and in task1.c)

```
// start time of execution
startTime = clock();

// call method from external file
// (generate random characters and write to text file)
generate(fpt);

// end time of execution
endTime = clock();

// calculate time difference
timeDiff = ((double)(endTime - startTime)) / CLOCKS_PER_SEC;
```

2. **What is the purpose of the generator.h file? Why is it necessary to have it?**

   The header file are needed by the compiler to provide the available variable declarations and function signatures and how to use them. They are necessary for the compiler and since the user might not have access to the sources (.c) files at all.