CISC324: Operating Systems

-------Lab 2-------

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Exercise 1.

I. Thread-2 is able to crack the password, “virus”. To identify which thread accomplished cracking the password, “this.getName()” is used when printing the cracked password to the user. Output: “The password is: ‘virus’, cracked by: Thread-2”.

II. Using three threads allows for the password to be cracked practically instantaneously. The threads allow the attacker to divide up work in an equal fashion and accelerate the process compared to that of a single thread which needs to do the loop three times sequentially. Each thread is creating a possible response and verifying if there is a match, if there is, all threads stop and the password has been cracked.

III.

```
run:
-------Multi-Threaded Process-------
The password is: 'virus', cracked by: Thread-2
Time taken : 0.0011691 seconds

-------Single-Threaded Process-------
The password is: 'virus', cracked by: Thread-3
Time taken : 0.1738629 seconds
BUILD SUCCESSFUL (total time: 2 seconds)
```

Figure 1: Output of multi vs single threaded process

As demonstrated by *Figure 1*, the total run time for both the single and multi-threaded processes to be able to crack the password is practically instantaneous. However there is a definite decrease in the time it takes to crack the password for a multi-threaded process, it is 149 times faster. At a larger scale this difference will have a significant impact on processing time, favoring multi-threaded.