**Settings:**

**Processor:** Intel(R) Core(TM) i5-7300HQ CPU @ 2.50GHz, 2501 Mhz, 4 Core(s), 4 Logical Processor(s)

**OS:** Windows 10 Home - Version 10.0.16299 Build 16299

**IDE:**Microsoft Visual Studio Community 2017

Version 15.3.5

VisualStudio.15.Release/15.3.5+26730.16

Visual C++ 2017 00369-60000-00001-AA581

**Programming Language:** C++

**Simulation parameters:**

**N**: 18(number of sentences)

**n**: 3(number of correct sentences)

**p**=n/N;

The first extraction has a probability of 3/18 of success. If a success is met to both N and n is subtracted 1, if not then only N is decreased. After three successes the test is over, and the number of extractions is counted.

The simulation runs this test for 1000 times and then compute the average. These 1000 tests are repeated 1000 times, calculating a final estimated expected value.

**Total number of tests**: 1000x1000 = 1000000;

Function utilized to simulate the extraction:

int **random = rand() % N + 1;**

rand() function initialized only at the beginning using the following line(complete source code at the end)

**srand(time(NULL));**

Results:

The test has been executed ten times with the following results:

|  |  |
| --- | --- |
| 1 | 13,996 |
| 2 | 13,995 |
| 3 | 13,992 |
| 4 | 13,993 |
| 5 | 13,987 |
| 6 | 13,988 |
| 7 | 13,991 |
| 8 | 13,992 |
| 9 | 13,992 |
| 10 | 13,997 |

So we can safely assume that the average number of attempts needed to guess all three sentences randomly is 14.