

# CPSC 335 Project 3 - Cuckoo Hashing

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## Project Description

In this project we will design, implement, and analyze one algorithm for the hashing problem. The algorithm is called Cuckoo Hashing, presented in class.. For this problem, we will design and implement one algorithm in C++, test it on various inputs and complete a hash table with a given input. Presented below is one of the testing input text files for the hashing algorithm.

Text file, "in6.txt", contains the following string in order:

*Algorithm Engineering*

*California State University*

*Fullerton*

*College of Engineering and Computer Science*

*School of Computer Science*

*Greedy pattern*

*Monge properties*

*String matching*

*Matrix searching*

*Optimal tree construction*

*Online algorithms*

*emphasis on*

*Server Problem*

*Some related problem*

*Self-Stabilization*

*one of the greatest mysteries*

*in science*

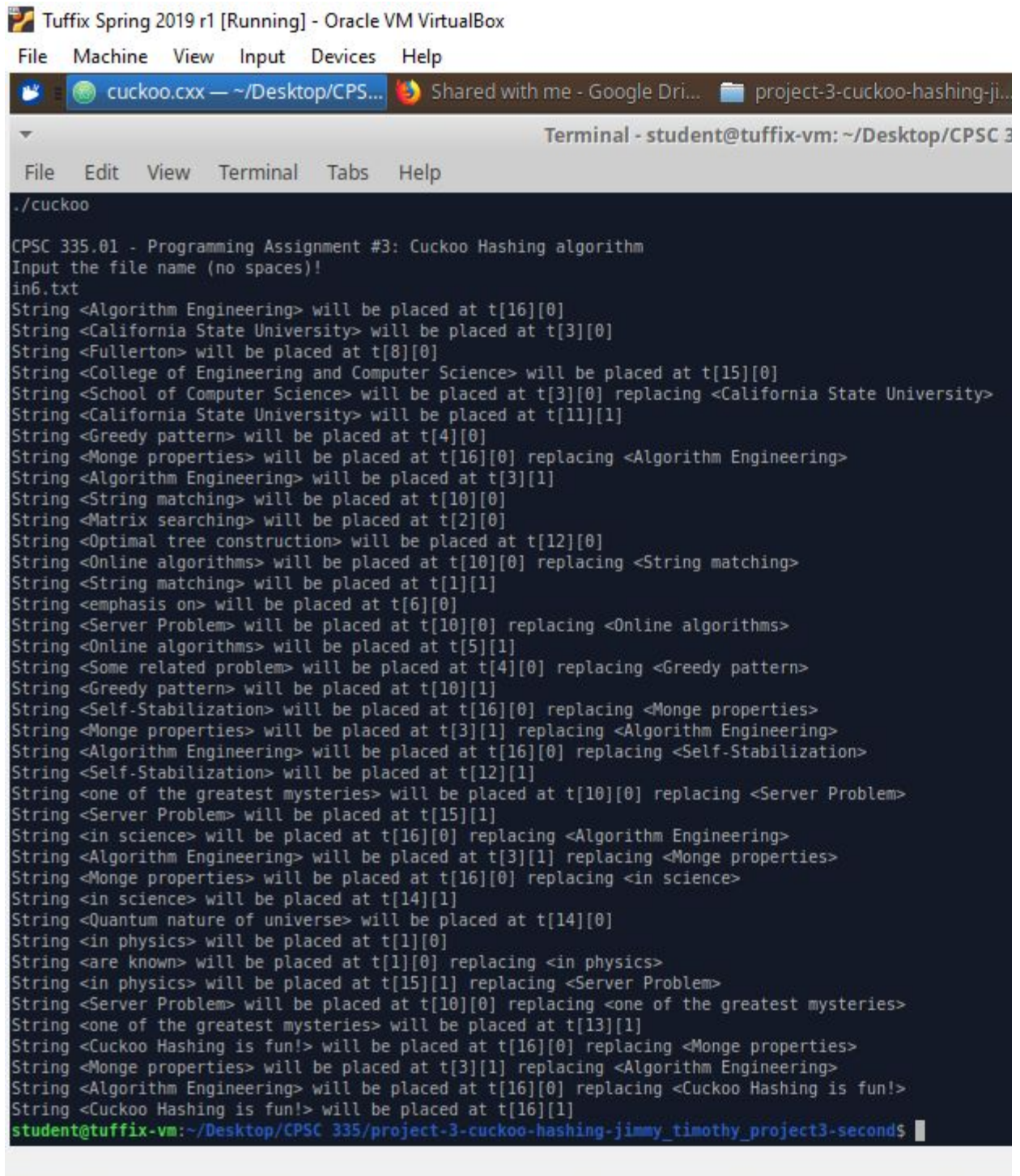
*Quantum nature of universe*

*in physics*

*are known*

*Cuckoo Hashing is fun!*

## Screenshot of terminal output



```
Tuffix Spring 2019 r1 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
cuckoo.cxx — ~/Desktop/CPS... Shared with me - Google Dri... project-3-cuckoo-hashing-jim...
Terminal - student@tuffix-vm: ~/Desktop/CPSC 335

./cuckoo

CPSC 335.01 - Programming Assignment #3: Cuckoo Hashing algorithm
Input the file name (no spaces)!
in6.txt
String <Algorithm Engineering> will be placed at t[16][0]
String <California State University> will be placed at t[3][0]
String <Fullerton> will be placed at t[8][0]
String <College of Engineering and Computer Science> will be placed at t[15][0]
String <School of Computer Science> will be placed at t[3][0] replacing <California State University>
String <California State University> will be placed at t[11][1]
String <Greedy pattern> will be placed at t[4][0]
String <Monge properties> will be placed at t[16][0] replacing <Algorithm Engineering>
String <Algorithm Engineering> will be placed at t[3][1]
String <String matching> will be placed at t[10][0]
String <Matrix searching> will be placed at t[2][0]
String <Optimal tree construction> will be placed at t[12][0]
String <Online algorithms> will be placed at t[10][0] replacing <String matching>
String <String matching> will be placed at t[1][1]
String <emphasis on> will be placed at t[6][0]
String <Server Problem> will be placed at t[10][0] replacing <Online algorithms>
String <Online algorithms> will be placed at t[5][1]
String <Some related problem> will be placed at t[4][0] replacing <Greedy pattern>
String <Greedy pattern> will be placed at t[10][1]
String <Self-Stabilization> will be placed at t[16][0] replacing <Monge properties>
String <Monge properties> will be placed at t[3][1] replacing <Algorithm Engineering>
String <Algorithm Engineering> will be placed at t[16][0] replacing <Self-Stabilization>
String <Self-Stabilization> will be placed at t[12][1]
String <one of the greatest mysteries> will be placed at t[10][0] replacing <Server Problem>
String <Server Problem> will be placed at t[15][1]
String <in science> will be placed at t[16][0] replacing <Algorithm Engineering>
String <Algorithm Engineering> will be placed at t[3][1] replacing <Monge properties>
String <Monge properties> will be placed at t[16][0] replacing <in science>
String <in science> will be placed at t[14][1]
String <Quantum nature of universe> will be placed at t[14][0]
String <in physics> will be placed at t[1][0]
String <are known> will be placed at t[1][0] replacing <in physics>
String <in physics> will be placed at t[15][1] replacing <Server Problem>
String <Server Problem> will be placed at t[10][0] replacing <one of the greatest mysteries>
String <one of the greatest mysteries> will be placed at t[13][1]
String <Cuckoo Hashing is fun!> will be placed at t[16][0] replacing <Monge properties>
String <Monge properties> will be placed at t[3][1] replacing <Algorithm Engineering>
String <Algorithm Engineering> will be placed at t[16][0] replacing <Cuckoo Hashing is fun!>
String <Cuckoo Hashing is fun!> will be placed at t[16][1]
student@tuffix-vm:~/Desktop/CPSC 335/project-3-cuckoo-hashing-jimmy_timothy_project3-seconds$
```

**Hashing table for “in6.txt”**

	Table $T_1(0)$	Table $T_2(1)$
[0]		
[1]	are known	String matching
[2]	Matrix searching	
[3]	California State University	Monge properties
[4]	Some related problem	
[5]		Online algorithms
[6]	emphasis on	
[7]		
[8]	Fullerton	
[9]		
[10]	Server Problem	Greedy pattern
[11]		California State University
[12]	Optimal tree construction	Self-Stabilization
[13]		one of the greatest mysteries
[14]	Quantum nature of universe	in science
[15]	School of Computer Science	in physics
[16]	Algorithm Engineering	Cuckoo Hashing is fun!