Final Project Memo

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| CS 330 |

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| To: | Professor Bistriceanu and Professor Zhang |
| From: | Jon Gloria |
| CC: | Professor Bistriceanu |
| Date: | 11/22/2022 |
| Re: | Description and my findings for the security device project |
| Comments: | Using Python 3.9 on Windows 10, I created a security device which takes a string as an input and, depending on the characters of the string, will either print "unlocked", "locked", or will do nothing. The unlock code is 986071, the lock code is 987064. The security device starts in state 0 and will immediately return to state 0 if an illegal character is entered (any character besides 0-9). Once the number 9 is inputted, the security device will switch to state 1. If an 8 is then entered, the device will go to state 2. Any other character besides 8 will result in the device to return to the initial state, state 0. Using the same logic, 7 must be entered next in order to reach state 3, 0 must be entered after 7 to reach state 4, and 6 must be entered after 0 to reach state 5. Once in state 5, if a 1 is entered, the program will print "unlocked" and then return to state 0. If a 4 is entered, the program will print "locked" and then return to state 0. |

State Transition Diagram:

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **State** | **Inputs** | | | | | | | | | | **Output** |
| **0** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** |
| **Start** | **0** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | Nothing |
| **get\_9** | **1** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | Nothing |
| **get\_8** | **2** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | Nothing |
| **get\_7** | **3** | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Nothing |
| **get\_0** | **4** | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | Nothing |
| **get\_6** | **5** | 0 | 6 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | Nothing |
| **get\_1** | **6** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Unlocked |
| **get\_4** | **6** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Locked |