IIT

Memo

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| To: | Virgil Bistriceanu |
| From: | Nicholas Hatzisavas |
| cc: | Li Zhang |
| Date: | November 22, 2022 |
| Re: | CS330 Programming assignment memo |

In this project, I have implemented a security device that utilizes a finite-state machine. As instructed, unbuffered input was used so that a buffer overflow issue is circumvented. The InputStreamReader class in java was used, as it allows for unbuffered input and reading character by character. I had not used this class before, but I quickly learned how as it is not very complicated. I used two classes, a program called SecurityInstallation which contained the main method, and a class called Keypad which I used for the FSM. I also wrote unit tests, which is something I had not done before. I learned much about what they are and how to use them, as well as unit test coverage. I used Gradle to build an executable jar file, run unit tests, and generate a jacoco unit test coverage report. I have never used Gradle before this project, in fact I have never had to build an executable jar file or write unit tests for a class before this one. I feel that this is very practical knowledge and that I learned valuable skills pertaining to these tasks. I created a repository on GitHub for this project. This is not my first time using GitHub, but I do not have much experience with that or with git. I was able to practice skills I started working on with git and GitHub. I find that this is an extremely useful thing to be able to do, as during this project I utilized the features of git to go back to a previous version of my program after messing something up. In part 2 of this project, I discovered how easily a code such as the one used in this project can be broken if there is no limiting factor to the speed of the input. Note, all necessary information for part 2 can be found in the part 2 folder of this repo, in the readme and part 2.docx files contained in that folder. As for the FA I have implemented, its language is {\*832001, \*832004}. The regular expression corresponding to this language is \*83200(1+4). The FA state transition diagram is attached to the second page of this document.

![Diagram

Description automatically generated]()