Password Validator

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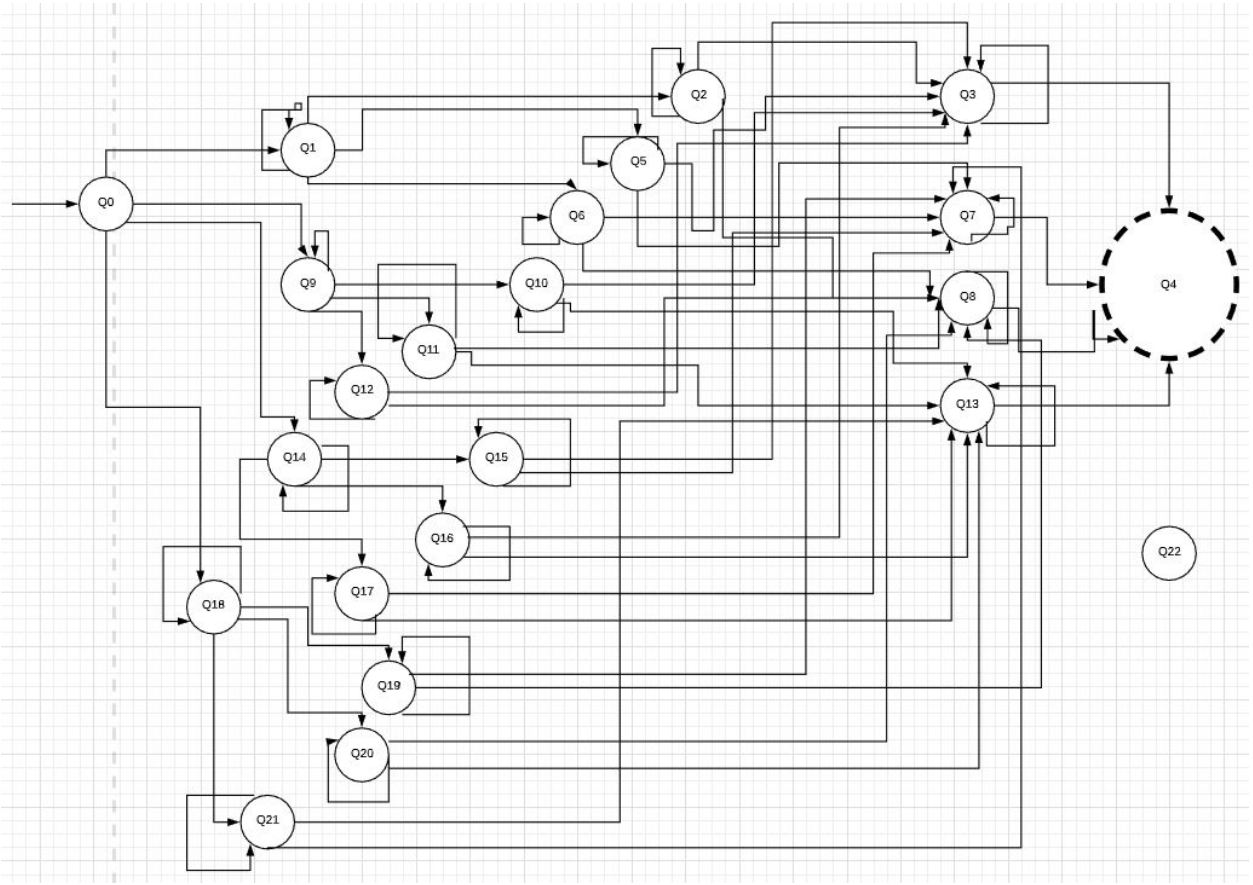
DFA


Q0
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
Q13
Q14
Q15
Q16
Q17
Q18
Q19
Q20
Q21
Q22

Transition Table

CurrentState	UpperCase	LowerCase	Digit	SpecialChar	Anything else
Q0 - Start State	Q1	Q9	Q14	Q19	Q22
Q1	Q1	Q2	Q5	Q6	Q22
Q2	Q2	Q2	Q3	Q8	Q22
Q3	Q3	Q3	Q3	Q4	Q22
Q4 - Goal State	Q4	Q4	Q4	Q4	Q22
Q5	Q5	Q3	Q5	Q7	Q22
Q6	Q6	Q8	Q7	Q6	Q22
Q7	Q7	Q4	Q7	Q7	Q22
Q8	Q8	Q8	Q4	Q8	Q22
Q9	Q12	Q9	Q10	Q11	Q22
Q10	Q3	Q10	Q10	Q13	Q22
Q11	Q8	Q11	Q13	Q11	Q22
Q12	Q12	Q12	Q3	Q8	Q22
Q13	Q4	Q13	Q13	Q13	Q22
Q14	Q15	Q16	Q14	Q17	Q22
Q15	Q15	Q3	Q15	Q7	Q22
Q16	Q3	Q16	Q16	Q13	Q22
Q17	Q7	Q13	Q17	Q17	Q22
Q18	Q19	Q20	Q21	Q18	Q22
Q19	Q19	Q8	Q7	Q19	Q22
Q20	Q8	Q20	Q13	Q20	Q22
Q21	Q7	Q13	Q21	Q21	Q22
Q22 - Error State	Q22	Q22	Q22	Q22	Q22

Abstract

I have developed a program that takes input from the user and decides whether or not the given string is a strong enough password that meets standard password best practices. In each password, there must be at least 1 uppercase letter, 1 lowercase letter, 1 digit, and 1 special character (!, @, #, $, %, ^, &, *, (,)). The program is an easy to use and easy to learn application that enables users to choose the best password when it comes to personal security.

Introduction

Internet security and privacy is of vital importance in the technological age. As a Computer Science student with a minor in cybersecurity, I have learned that very few people actually know how to protect their personal credentials. My hope is to develop a program that will make it easier for people to know exactly what makes a password strong.I plan to accomplish this by not hiding the methods that are used to decide if a users' input is weak or strong.

Requirements

The user must have a computer with access to the internet in order to download the program. The computer does not need to be connected to the internet in order to run the program. The users computer must have a version of java installed on it in order to run the java file. Once downloaded the user can access the program by opening a terminal window, switching directories to where the downloaded program is saved, and running it by using the "java password_validator" command.

Literature Study

For password validators, nothing else exists out there that uses a DFA to discern how strong the users' password is. In terms of the portion of the program that will randomly generate a password, there are plenty of online programs that will do that for you. I felt that if my program offered both validation and generation it would be more flexible and complete. To construct a DFA that would be useable as a password validator that

includes the aforementioned elements and checks for the length of the given input in one DFA is not a simple task, as receiving multiple of any capital, lowercase, digit, or special character immediately

Currently, there is a javascript library that acts as a password validator, but does not use a DFA to function. (1)

User Manual

The program is easy to learn and easy to use as the main goal of it is to be operated by users who may not be as tech savvy as the average person. Users need only input a string that consists of alphabetical, numerical, and special (!,@,#,$,%,^,&,*,(,)) characters. To use the program, users must first download the zip file of the repository from https://github.com/MichaelCummins/CMPT440Cummins. Then they can extract the files to wherever they wish. From there they must open a terminal window, and navigate to where they stored the files using the “cd ?” command. Lastly, run the program using the command “java Password_Generator”.

Conclusion

In conclusion I believe that this program is a necessity in order for the general population to be informed as to how they can better protect their personal information.

References

1) https://www.npmjs.com/package/password-validator