**Assignment-1**

This assignment is for 10 points of final course credit.

In this assignment, you will need to crack 100 custom passwords. Each password is in our course flag format: “4621\_ctf{X}” where X is a word that is generated by the method mentioned in the first row of this XKCD comic: <https://xkcd.com/936/>

Here are the rules that were used to generate X:

1. A random English word was chosen (with more than 10 characters)
2. The first character was **sometimes** captialized
3. A few common leetspeak substitutions were made **sometimes**. The following are the substitutions:

{'s':'$', 'a': '4', 'l': '1', 'e': '3', 't': '7', 'i': '1', 'o': '0', 'b': '8', 'g': '9'}

1. At the end of the word, a symbol and a digit get appended. **Sometimes**, it a symbol followed by a digit while other times it’s a digit followed by a symbol. The following are the symbols used:

! @ # $ % ^ & \* ( ) { } | : ; [ ] ? > <

After the password flag is generated, a salt is appended to it. The salt is your Student ID (for example, say 2525252). After this, the resulting string is hashed with the SHA256 algorithm. All such 100 hashes are stored in a file which is available for download at a URL as below :   
<http://unoprivateers.xyz/classes/F20/4621/Q1/2525252.txt>

How many of these 100 flags can you get? Please try to use your own code instead of password crackers such as hashcat. You will need to submit both your code and a file with cracked passwords in Moodle.

Note that it’s not really necessary to crack all 100 passwords to get full points. But, you will be required to crack at least some of them