CSC 4222/6222 – Spring 2020
Assignment #2: Password Salt System Implementation and Brutal Force Cracker
Due: Tuesday, February 18th, 11:59 pm
Late deadline: Sunday, February 23rd, 11:59 pm

In this assignment you will implement a password salt verification system and brute force attack. You will be given a UID and Hash text files which include 101 user ids with corresponding hash values. The hash values are computed by concatenating the password value, which ranges from [0000, 1000], with the salt value, which range from [000, 100], using MD5 hashing.

1. Your first task is to verify the following user id, salt value, password value, and hash value: User id = 001, password = 0599, salt value = 054, and hash value = 4a1d6f102cd95fac33853e4d72fe1dc5. Create a function that can take a password value and a salt value and compute the MD5 value. NOTE: while concatenating 0599054, DO NOT omit the leading 0 otherwise the hash value will be different.
   a. When performing the MD5 hash use the encode format "utf-8" as shown below:

   b.
```
def computeMD5hash(my_string):
    m = hashlib.md5()
    m.update(my_string.encode('utf-8'))
    return m.hexdigest()
```

2. Your second task is to determine all the user id's salt and password value that correspond to the hash value by means of a brute force method. The result should be displayed in a formatted manner as such but for all the users

   a.
```
[ UID              Hashed Password          Password  Salt]
['001', '4a1d6f102cd95fac33853e4d72fe1dc5', '0599', '054']
```

3. Your final task is to prompt user to enter a user id and password and determine if it valid or not like so:

   a.
```
Please enter Username: 001
Please enter Password: asd
001 asd
The input password and salt does not match the hash value in the database
```

   b.
```
Please enter Username: 001
Please enter Password: 0599
001 0599
The input password and salt matches the hash value in the database
```

Grad and Honor Students:
Go to the following link and give a 1-page summary of the article. Attach summary to the end of the PDF file you submit.
https://scholarworks.boisestate.edu/cgi/viewcontent.cgi?article=1207&context=cs_facpubs

Deliverables:

- PDF should include the following:
  - 1 Page report of how you accomplished the assignment, i.e. how your program works
  - Screen shot of verification of task 1
  - Screen shot of final result of task 2
  - Screen shot of task 4
- Separate file which has your source code.