Lab 6: Software Engineering

Overview

The objective of this lab is to understand the purpose and usefulness of version control. Your will work as a group of two. You will write a simplified password encoder/decoder program and practice the functions of version control systems to develop familiarity with them.

Specification

1) You will be designing a simple encoder/decoder program in this lab. The program will provide a looping menu that prompts the user to choose from a menu with encoder and decoder options.
2) You will finish the main function and the encode( ) function, you will push the program up to your GitHub repository.
3) You will work as a group of two in lab 6. You can find your partner information in “People” -> “Lab 6 Group”. Please contact them either via slack or via canvas message.
4) Add your partner as a collaborator of your GitHub repository.
5) You will clone your partner’s encoder program from their GitHub repository and create a decode( ) function to add to the solution. You will then update your partner’s GitHub repository with the final python file, including your partner’s main and encoder function, and your decoder function.

Encoder

The password encoder should take in an 8-digit password in string format containing only integers. After passing the password into the encoder, the encoder stores the encoded password to a new variable, with each digit being shifted up by 3 numbers.

Examples:

“12345555” will become “45678888” after encoding.

“00009962” will become “33332295” after encoding.

Decoder

The password decoder takes in the encoded password and returns the original password. “45678888” needs to be decoded back to “12345555” after decoding.

Version Control

1) Install Git for your OS if necessary. (You can download Git here: https://git-scm.com/downloads)
2) Create a GitHub educational account: https://education.github.com/pack/join

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3) Complete these exercises to practice using GitBash and Version Control concepts or follow along with one of the tutorial video:
    a. Git Intro Video (Windows): https://tinyurl.com/4yecxban
    b. Git Intro Video (Mac): https://tinyurl.com/2ub4ea64
    c. Git exercises: https://tinyurl.com/mpueps4r
4) Create an empty public repository on GitHub (no license, README, or other files) using the Version Control Exercise Document or Git Intro Videos listed above as a reference to upload your main function and encoder.
5) Add, commit, and push your code, including the main function and the encoder, to the GitHub repository (hint: clone first!)
6) Add your partner as collaborators to your repository. **Please note that you should write your name in the comment at the beginning of the .py file that contains encode( ) function.**
7) Clone your partner's repository.
8) Create a program to decode the password and add the decoder program to your partner's cloned repository.
9) Make sure that the decode( ) function works with the main function implemented by your partner and push this change to their GitHub repository.
10) Pull the changes that your partner made to your local repository and make sure that the decode( ) function they added functions properly.
11) Submit your completed GitHub repository Link.

GitHub Collaboration Tutorial Video: https://youtu.be/ecyvDcyToyA

Criteria	Ratings	Ratings	Points
Make your GitHub repo public https://docs.github.com/en/enterprise-server@3.1/repositories/managing-your-repositorys-settings-and-features/managing-repository-settings/setting-repository-visibility	2 pts Full Marks	0 pts No Marks	2 pts
Push Code to GitHub 1. Add, commit, and push your code to GitHub 2. Make some changes on your code and push the changes to GitHub 3. Add your pair programming partner as collaborator	4 pts Full Marks	0 pts No Marks	4 pts
Contribute to other's GitHub Repository 1. Clone your partner's repo. 2. Add the decoder function to your cloned partner's repo and push the change to their GitHub repo. 3. Pull the changes from the GitHub made by your partner and make a screenshot.	4 pts Full Marks	0 pts No Marks	4 pts

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Submissions

Note: You will submit your lab 6 as a group. Submit a report with name <Report_team_number>.pdf where number is your assigned group number in "People" -> "Lab 6 Group". Please ensure that your report submission includes the following information:

1. Your team number and the names of all team members.
2. Two public Github repository links, specifying which repository belongs to each team member.
3. Two screenshots of the changes mades by partner pulled from your repo to your local files, specifying which screenshoot belongs to each team member.

Method: Submit on Canvas.

Sample Output

```
Menu
-------------
1. Encode
2. Decode
3. Quit

Please enter an option: 1
Please enter your password to encode: 12345555
Your password has been encoded and stored!

Menu
-------------
1. Encode
2. Decode
3. Quit

Please enter an option: 2
The encoded password is 45678888, and the original password is 12345555.
```

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```
Menu
-------------
1. Encode
2. Decode
3. Quit

Please enter an option: 3
```