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The first step to completing this assignment was to unlock the zip folders. Though I did not know the passwords at first, I was able to find them quickly due to knowing the hash value of the passwords and knowing that they consisted of five lowercase letters. I wrote a program (“password_cracker.py”) to iterate over all possible 5 letter combinations and compare their hash values to the provided hash values. If they matched, I printed the letter combination and wrote the password to a file named “passwords.txt” along with the corresponding zip folder name.

Each folder, once unzipped, contained some files. “Jkirk.zip” contained useless text. “Lmccoy.zip” contained a single picture, and “Cchapel.zip” contained two pictures. Information in the “READ ME.txt” files and the assignment suggested that there was information contained in these files, hidden using LSB insertion. The program I created, “message_extractor.py”, initializes a string of bits, selects a color, then scans each pixel for that R, G, or B value. If the value found is odd, the LSB is 1, so it appends a 1 to the string of bits. Else, it appends a 0. The program then writes the resulting data, translated into ASCII, to a file. This file will be named “(filename)Decode?” where “?” is replaced with the RGB value decoded for that file (0 for red, 1 for green, 2 for blue). I found a watermark in “DCIM_2837.png” and some song lyrics in “mountain (copy).png”. Here are the results (they are repeated throughout the file):

In “DCIM_2837Decode1”:

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In “mountain (copy)Decode0”:

-- THE FRAY --

Lost and insecure

You found me, you found me

Lyin' on the floor

Surrounded, surrounded

Why'd you have to wait?

Where were you? Where were you?

Just a little late

You found me, you found me

According to the filenames, the watermark was hidden with the green values, and the message was hidden with the red values.