

- 1.) I created “encryption” and “decryption” functions in order to encrypt the sensitive employee information. I began implementing it but still need to work on some debugging. The encryption and decryption functions simply take a string and run it through a for loop that is equivalent to the size of the string. In the for loop, the string is changed letter-by-letter for each iteration of the for loop.

```
std::string encrypt(std::string s, int n) {
    int index = s.size();
    for (int i = 0; i < index; i++) {
        s[i] = s[i] + n;
    }
    return s;
}

std::string decrypt(std::string s, int n) {
    int index = s.size();
    for (int i = 0; i < index; i++) {
        s[i] = s[i] - n;
    }
    return s;
}
```

- 2.) Added the encryption to the auditing. The code that writes info to the auditing file has been changed to be encrypted. Therefore, only people with the key can read sensitive information on the auditing file.

```
if(permLvl_3){
    file << encrypt(ui->lineEdit->text().toStdString(), key) << "\n";
    audit << "Changed " << eName << " to " << ui->lineEdit->text().toStdString() << "\n";
    file << encrypt(ui->lineEdit_2->text().toStdString(), key) << "\n";
    audit << "Changed " << eSalary << " to " << ui->lineEdit_2->text().toStdString() << "\n";
    file << encrypt(ui->lineEdit_3->text().toStdString(), key) << "\n";
    audit << "Changed " << eBonus << " to " << ui->lineEdit_3->text().toStdString() << "\n";
    file << encrypt(ui->lineEdit_4->text().toStdString(), key) << "\n";
    audit << "Changed " << eBuilding << " to " << ui->lineEdit_4->text().toStdString() << "\n";
    file << encrypt(ui->lineEdit_5->text().toStdString(), key) << "\n";
    audit << "Changed " << eOffice << " to " << ui->lineEdit_5->text().toStdString() << "\n";
    file << encrypt(ui->lineEdit_6->text().toStdString(), key) << "\n";
    audit << "Changed " << eJob << " to " << ui->lineEdit_6->text().toStdString() << "\n";
    QMessageBox::information(this, "Admin", "Data updated successfully.");
    return;
}
```

The next 4 things I would like to work on (in order) are:

- 1.) Fixing the encryption so that it works properly with the code.
- 2.) Making my computer itself more secure
- 3.) Adjusting the encryption process to prevent any form of injection.

4.) Implement some sort of backup.