TITLE: GCSE (9-1) Computer Science – NEA Task 1

INTRODUCTION:

I am required to make a program that asks the user to sign in or make an account and password and then save it to an external document, I need to allow the user to make a selection of topic and difficulty and then load and setup the correct file which has the answers in, I also need to output the result into another file, and allow Fergus access to these files through his own user profile so he can create reports of each student. The topics I will test with will be Computer Science and

I will need to use abstraction to remove any unnecessary details from the question so there is just the necessary details to complete the question. I will then decompose the question so I know each part of the question and can work on them separately in their own functions and then combine them together in the final program. I also need to make a flow chart that will include all the required steps in the program starting at the beginning sign in all the way to the end where it saves the results of the test. And then, finally I will code the pseudocode so I can fit it all together and then reprogram it in Python.

I am going to use Python to create the program and I will test it with Python's inbuilt debugger for syntax errors, write test tables to check for logic errors, and use destructive testing to try and break my program and see how it copes with each of my tests to make sure it won't have any bugs so it runs as intended.

I will use structured programming to make it easier to debug and code by splitting all the main features into functions. This also makes it easier to read and edit at a later data in case I made any mistakes.

I will reference any third party documentation by stating the documents I used at the end of this document.

SUCCESS CRITERIA:

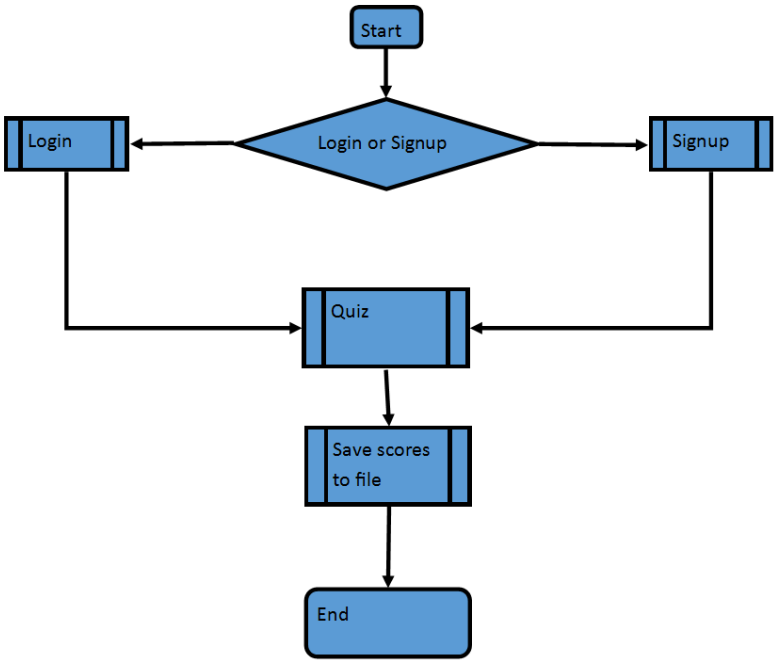
Success Criteria	**Intended Outcome**
Create a unique username and password for each user and store it in an external document.	I will know I have achieved this by checking the document after testing the program a couple times to make sure that there are no data clashes.
Allow the student to pick the topic and difficulty they wish to complete.	I will know I have achieved this by using the program and making sure that the correct test loads and at the correct difficulty.
Load the questions and answers from a file stored externally to the game.	I will know that I have achieved this by using the program and making sure all the questions and answers appear with some test code which I can uncomment to see.
Display the score and grade achieved to the user and saves it to a file.	I will know that I have achieved this by using the program and seeing if this appears and also by checking the file that it will modify.
Allow Fergus access to output all the quizzes that have been taken and create reports for each user.	I will know that I have achieved this by creating an admin account for Fergus and running the commands that will do this and making sure that they create the correct files.

Local Variables	**Data Type**
Login	**Login**
userExists	Boolean
username	String
temp	String
userPassword	String
passCorrect	Boolean
password	String

Signup	**Signup**
name	String
age	String
x	Boolean
year	String
rePassword	String
count	Integer
userProfiles	String
writer	String
Quiz	**Quiz**
topicA	String
diffA	String
ansLoc	Integer
userAns	String
cs	String
question	String
ans	String
fake	Boolean
fake1	Integer
fake2	Integer
fake3	Integer
x	Boolean
Admin	**Admin**
x	Boolean
y	String
z	String
seach	String
file	String
c	Boolean
topScore	Integer
count	Integer
sum	Integer
avg	Real
Main	**Main**
x	Boolean
y	Boolean
Global Variables	**Data Type**
username	String
userIsAdmin	Boolean
score	Integer
topic	String
diff	String

Data validation will be in place to make sure the user enters an acceptable password when creating an account, this is to make sure that their password is strong enough so their account won't be accessed by anyone else. Data validation will also be used when the user is actually completing the quiz to make sure they are only entering a single number that corresponds to their choice so they actually get a mark that corresponds to their ability. Also, it will be used to make sure Fergus uses the function he wants in his admin profile.

PLAN AND DESIGN:



PSEUDO CODE:

```
IMPORT random //imports the functions that generate random numbers
IMPORT csv //imports the function that allows me to open the csv files that store the info for the program to work
//Defining the global variables
GLOABL score //int
GLOBAL userProfiles //csv
GLOBAL userScores //csv
GLOBAL user //string
GLOBAL userIsAdmin //booliean
GLOBAL compSciQuiz //csv
GLOBAL hisQuiz //csv
GLOBAL topic //int
GLOBAL diff //string
FUNCTION loadFiles()
        //This code will allow the program access to all the external documents
        userProfiles = FILE.OPEN("userProfiles.csv", "append") //Opens 'userProfiles.csv' and sets mode to append
        userScores = FILE.OPEN("userScores.csv", "append") //Opens 'userScores.csv' and sets mode to append
        compSciQuiz = FILE.OPEN("compSci.csv", "readOnly") //Opens 'compSci.csv' and sets mode to read only
        hisQuiz = FILE.OPEN("his.csv", "readOnly") //Open 'his.csv' and sets more to read only
ENDFUNCTION
FUNCTION login()
        //This code will allow the user to sign in to a pre-existing account
        userExists = FALSE
        WHILE userExists = FALSE DO //This makes the next section of code repeat until the user enters a correct username
                OUTPUT "Enter your username"
                user = INPUT
                FOR row IN userProfiles //This goes through the entire csv document and tries to find the user profile
                        //This code makes sure that the user's account actually exists
                        //userPassword is a variable here
                        IF row[0] = user THEN //This checks to see if the user has entered the correct username
                                OUTPUT "Found user profile"
                                userPassword = row[1]
                                userExists = TRUE //This allows the loop to be broken
                                IF row[3] = Admin THEN //This checks to see if the user is an admin so they can see the users'
                                        userIsAdmin = TRUE
                                ELSE THEN
                                        userIsAdmin = FALSE
                                ENDIF
                        ENDIF
                NEXT row
                IF userExists = FALSE THEN
                        OUTPUT "User does not exist, try again"
                ENDIF
        ENDWHILE
        OUTPUT "Please enter your password"
        password = INPUT
```

```
        WHILE password <> userPassword THEN
                //This code makes sure that the user enters the correct password
                OUTPUT "Wrong password, try again"
                password = INPUT
        ENDWHILE
        OUTPUT "Welcome back "+user
ENDFUNTION
FUNCTION signup()
        //This code will allow the user to create a new account so their data is saved
        OUTPUT "Please enter your name"
        name = INPUT
        OUTPUT "Please enter your age"
        age = INPUT
        WHILE age <> NUMERIC THEN
                OUTPUT "Please only enter a number"
                age = INPUT
        ENDWHILE
        OUTPUT "Please enter your password"
        pswdScore = 0
        WHILE pswdScore < 5 THEN
                //This is code to check the password to make sure its strong enough
                //8 characters, a number, an upper and lower, a symbol
        ENDWHILE
ENDFUNTION
FUNCTION quiz()
        //This is the main quiz code, It will allow the user to select a topic and difficulty and complete it
        score = 0
        OUTPUT "Would you like to do computer science (1) or history (2)?"
        topic = INPUT
        WHILE topic <> 1 OR topic <> 2 THEN
                OUPUT "Only enter either 1 or 2"
                topic = INPUT
        ENDWHILE
        OUTPUT "Would you like to play in easy (e), medium (m) or hard (h)?"
        diff = INPUT
        WHILE topic <> e OR topic <> m OR topic <> h THEN
                OUTPUT "Only enter either e, m or h"
                diff = INPUT
        ENDWHILE
        IF topic = 1 THEN
                OUTPUT "Computer Science"
                FOR row IN compSciQuiz DO
                        question = row[0]
                        ans = row[1]
                        IF diff = e THEN
                                OUTPUT question
                                ansLoc = RANDOM.RANDINT(1, 2)
                                IF ansLoc = 1 THEN
                                        OUTPUT "1."+ans
                                        OUTPUT "2."+row[RANDOM.RANDINT(2, 4)]
                                        userAns = ''
                                        WHILE userAns <> 1 OR userAns <> 2 THEN
                                                OUTPUT "Enter the number of your choice"
                                                userAns = INPUT
                                        ENDWHILE
                                ELSE THEN
                                        OUTPUT "1."+row[RANDOM.RANDINT(2, 4)]
                                        OUTPUT "2."+ans
                                        userAns = ''
                                        WHILE userAns <> 1 OR userAns <> 2 THEN
                                                OUTPUT "Enter the number of your choice
                                                userAns = INPUT
                                        ENDWHILE
                                ENDIF
                                IF ansLoc = userAns THEN
                                        score = score + 1
                                        OUTPUT "Correct!"
                                ELSE THEN
                                        OUTPUT "Incorrect"
                                ENDIF
                        ELSEIF diff = m THEN
                                OUTPUT question
                                ansLoc = RANDOM.RANDINT(1, 3)
```

```
                IF ansLoc = 1 THEN
                        OUTPUT "1."+ans
                        OUTPUT "2."+row[2]
                        OUTPUT "3."+row[4]
                        userAns = ''
                        WHILE userAns <> 1 OR userAns <> 2 OR userAns <> 3 THEN
                                OUTPUT "Enter the number of your choice"
                                userAns = INPUT
                        ENDWHILE
                ELSEIF ansLoc = 1 THEN
                        OUTPUT "1."+row[2]
                        OUTPUT "2."+ans
                        OUTPUT "3."+row[4]
                        userAns = ''
                        WHILE userAns <> 1 OR userAns <> 2 OR userAns <> 3 THEN
                                OUTPUT "Enter the number of your choice"
                                userAns = INPUT
                        ENDWHILE
                ELSE THEN
                        OUTPUT "1."+row[2]
                        OUTPUT "2."+row[4]
                        OUTPUT "3."+ans
                        userAns = ''
                        WHILE userAns <> 1 OR userAns <> 2 OR userAns <> 3 THEN
                                OUTPUT "Enter the number of your choice"
                                userAns = INPUT
                        ENDWHILE
                ENDIF
                IF ansLoc = userAns THEN
                        score = score +1
                        OUTPUT "Correct!"
                ELSE THEN
                        OUTPUT "Incorrect"
                ENDIF
        ELSEIF diff = h THEN
                OUTPUT question
                ansLoc = RANDOM.RANDINT(1, 4)
                IF ansLoc = 1 THEN
                        OUTPUT "1."+ans
                        OUTPUT "2."+row[2]
                        OUTPUT "3."+row[4]
                        OUTPUT "4."+row[3]
                        userAns = ''
                        WHILE userAns <> 1 OR " <> 2 OR " <> 3 OR " <> 4 THEN
                                OUTPUT "Enter the number of your choice"
                                userAns = INPUT
                        ENDWHILE
                ELSEIF ansLoc = 2 THEN
                        OUTPUT "1."+row[2]
                        OUTPUT "2."+ans
                        OUTPUT "3."+row[4]
                        OUTPUT "4."+row[3]
                        userAns = ''
                        WHILE userAns <> 1 OR " <> 2 OR " <> 3 OR " <> 4 THEN
                                OUTPUT "Enter the number of your choice"
                                userAns = INPUT
                        ENDWHILE
                ELSEIF ansLoc = 3 THEN
                        OUTPUT "1."+row[2]
                        OUTPUT "2."+row[4]
                        OUTPUT "3."+ans
                        OUTPUT "4."+row[3]
                        userAns = ''
                        WHILE userAns <> 1 OR " <> 2 OR " <> 3 OR " <> 4 THEN
                                OUTPUT "Enter the number of your choice"
                                userAns = INPUT
                        ENDWHILE
                ELSEIF ansLoc = 4 THEN
                        OUTPUT "1."+row[2]
                        OUTPUT "2."+row[4]
                        OUTPUT "3."+row[3]
                        OUTPUT "4."+ans
                        userAns = ''
```

```
                                        WHILE userAns <> 1 OR " <> 2 OR " <> 3 OR " <> 4 THEN
                                                OUTPUT "Enter the number of your choice"
                                                userAns = INPUT
                                        ENDWHILE
                                ENDIF
                                IF ansLoc = userAns THEN
                                        score = score + 1
                                        OUTPUT "Correct!"
                                ELSE THEN
                                        OUTPUT "Incorrect"
                                ENDIF
                        ENDIF
                NEXT row
        ENDIF
        IF topic = 2 THEN
                OUTPUT "History"
                FOR row IN hisQuiz DO
                        question = row[0]
                        ans = row[1]
                        IF diff = e THEN
                                OUTPUT question
                                ansLoc = RANDOM.RANDINT(1, 2)
                                IF ansLoc = 1 THEN
                                        OUTPUT "1."+ans
                                        OUTPUT "2."+row[RANDOM.RANDINT(2, 4)]
                                        userAns = ''
                                        WHILE userAns <> 1 OR userAns <> 2 THEN
                                                OUTPUT "Enter the number of your choice"
                                                userAns = INPUT
                                        ENDWHILE
                                ELSE THEN
                                        OUTPUT "1."+row[RANDOM.RANDINT(2, 4)]
                                        OUTPUT "2."+ans
                                        userAns = ''
                                        WHILE userAns <> 1 OR userAns <> 2 THEN
                                                OUTPUT "Enter the number of your choice
                                                userAns = INPUT
                                        ENDWHILE
                                ENDIF
                                IF ansLoc = userAns THEN
                                        score = score + 1
                                        OUTPUT "Correct!"
                                ELSE THEN
                                        OUTPUT "Incorrect"
                                ENDIF
                        ELSEIF diff = m THEN
                                OUTPUT question
                                ansLoc = RANDOM.RANDINT(1, 3)
                                IF ansLoc = 1 THEN
                                        OUTPUT "1."+ans
                                        OUTPUT "2."+row[2]
                                        OUTPUT "3."+row[4]
                                        userAns = ''
                                        WHILE userAns <> 1 OR userAns <> 2 OR userAns <> 3 THEN
                                                OUTPUT "Enter the number of your choice"
                                                userAns = INPUT
                                        ENDWHILE
                                ELSEIF ansLoc = 1 THEN
                                        OUTPUT "1."+row[2]
                                        OUTPUT "2."+ans
                                        OUTPUT "3."+row[4]
                                        userAns = ''
                                        WHILE userAns <> 1 OR userAns <> 2 OR userAns <> 3 THEN
                                                OUTPUT "Enter the number of your choice"
                                                userAns = INPUT
                                        ENDWHILE
                                ELSE THEN
                                        OUTPUT "1."+row[2]
                                        OUTPUT "2."+row[4]
                                        OUTPUT "3."+ans
                                        userAns = ''
                                        WHILE userAns <> 1 OR userAns <> 2 OR userAns <> 3 THEN
                                                OUTPUT "Enter the number of your choice"
```

```
                                        userAns = INPUT
                                ENDWHILE
                        ENDIF
                        IF ansLoc = userAns THEN
                                score = score +1
                                OUTPUT "Correct!"
                        ELSE THEN
                                OUTPUT "Incorrect"
                        ENDIF
                ELSEIF diff = h THEN
                        OUTPUT question
                        ansLoc = RANDOM.RANDINT(1, 4)
                        IF ansLoc = 1 THEN
                                OUTPUT "1."+ans
                                OUTPUT "2."+row[2]
                                OUTPUT "3."+row[4]
                                OUTPUT "4."+row[3]
                                userAns = ''
                                WHILE userAns <> 1 OR '' <> 2 OR '' <> 3 OR '' <> 4 THEN
                                        OUTPUT "Enter the number of your choice"
                                        userAns = INPUT
                                ENDWHILE
                        ELSEIF ansLoc = 2 THEN
                                OUTPUT "1."+row[2]
                                OUTPUT "2."+ans
                                OUTPUT "3."+row[4]
                                OUTPUT "4."+row[3]
                                userAns = ''
                                WHILE userAns <> 1 OR '' <> 2 OR '' <> 3 OR '' <> 4 THEN
                                        OUTPUT "Enter the number of your choice"
                                        userAns = INPUT
                                ENDWHILE
                        ELSEIF ansLoc = 3 THEN
                                OUTPUT "1."+row[2]
                                OUTPUT "2."+row[4]
                                OUTPUT "3."+ans
                                OUTPUT "4."+row[3]
                                userAns = ''
                                WHILE userAns <> 1 OR '' <> 2 OR '' <> 3 OR '' <> 4 THEN
                                        OUTPUT "Enter the number of your choice"
                                        userAns = INPUT
                                ENDWHILE
                        ELSEIF ansLoc = 4 THEN
                                OUTPUT "1."+row[2]
                                OUTPUT "2."+row[4]
                                OUTPUT "3."+row[3]
                                OUTPUT "4."+ans
                                userAns = ''
                                WHILE userAns <> 1 OR '' <> 2 OR '' <> 3 OR '' <> 4 THEN
                                        OUTPUT "Enter the number of your choice"
                                        userAns = INPUT
                                ENDWHILE
                        ENDIF
                        IF ansLoc = userAns THEN
                                score = score + 1
                                OUTPUT "Correct!"
                        ELSE THEN
                                OUTPUT "Incorrect"
                        ENDIF
                ENDIF
        NEXT row
    ENDIF
ENDFUNTION
FUNCTION admin()
    //This code will allow Fergus access to the results of each user and allow him to make reports
    x = TRUE
    WHILE x = TRUE DO
        OUTPUT "What do you want to do?"
        OUTPUT "1. Report on a user"
        OUTPUT "2. High scores"
        OUTPUT "3. Averages"
        OUTPUT "4. Exit"
        y = INPUT
```

```
                IF y = 1 THEN
                        OUTPUT "Enter the username of the user you want a report of"
                        z = 1
                        count = 1
                        userSearch = INPUT
                        FOR row IN userScores DO
                                IF row[0] = userSearch THEN
                                        OUTPUT "Quiz"+count
                                        OUTPUT "Topic:"+row[1]
                                        OUTPUT "Difficulty:"+row[2]
                                        OUTPUT "Score:"+row[3]+"/5"
                                        count = count + 1
                                ENDIF
                        NEXT row
                ENDIF
                IF y = 2 THEN
                        OUTPUT "Enter the topic you want high scores from"
                        OUTPUT "1. CompSci"
                        OUTPUT "2. His"
                        topicSearch = INPUT
                        WHILE topicSearch <> 1 OR topicSearch <> 2 DO
                                OUTPUT "Try again"
                                topicSearch = INPUT
                        ENDWHILE
                ENDIF
        ENDWHILE
ENDFUNTION
FUNCTION saveData()
        //This code will save the user's score to a seperate file
        //globalVars user, score, diff, topic
        temp = user+','+topic+','+diff+','+score
        FILE.APPEND(temp)
ENDFUNTION
FUNCTION main()
        //This is the main code that the program will run and it calls all the other functions in the right order
        loadFiles()
        LoginOrSignup = 0
        WHILE LoginOrSignup <> (1 OR 2)
                OUTPUT "Would you like to login (1) or create a new account (2)"
                LoginOrSignup = INPUT
                IF LoginOrSignup = 1 THEN //The user wants to login
                        login()
                ELSEIF LoginOrSignup = 2 THEN //The user wants to make a new account
                        signup()
                ELSE THEN
                        OUTPUT "Please enter either 1 or 2"
                ENDIF
        ENDWHILE
        IF userIsAdmin = FALSE THEN
                quiz()
                saveData()
        ELSE THEN
                admin()
        ENDIF
        OUTPUT "Thank you for completing the quiz"
        FILE.CLOSE(userProfiles)
        FILE.CLOSE(userScores)
        FILE.CLOSE(compSciQuiz)
        FILE.CLOSE(hisQuiz)
ENDFUNTION
main()
INPUT "Press any key to end the program"
```

In the login section, username and password need to be tested. This could be done with correct and incorrect data and the data of another user. Then in the signup, age, year and password need to be tested. This can be done the same as before. Then in the quiz, the topic, difficulty and answers can all be tested the same. And the admin selection can be tested the same as well.

DEVELOPMENT:

PYTHON CODE:

```
#Python code for NEA
```

```
import random #imports the random class
import csv #imports the csv class
import os #imports the os class

#setting the global variables
username = '' #The variable that will store the user's username
userIsAdmin = False #This is used in main, it is used to give access to the admin commands
score = 0 #This is the score variable
topic = '' #This saves what topic the user is currently doing
diff = '' #This saves what Difficulty the user is currently doing

def login():
    #This code allows the user to login to a pre-existing account
    global username #Calling the golbal variables to edit
    global userIsAdmin
    print("Login")
    userExists = False #This variable is used to stop the while loop
    while userExists == False:
        print("Enter your username")
        username = input()
        with open('userProfiles.csv', 'r') as csvfile: #Opens the file that stores the user data
            cs = csv.reader(csvfile, delimiter = ',')
            for row in cs:                      #for every row in the file
                if username == row[0]:              #it checks to see if the username
                    print("User Found")             #the user entered matches an
                    userExists = True               #existing user
                    userPassword = row[1]
                    if row[3] == 'Admin': #This checks to see if the user is an admin or not and changes the value accordingly
                        userIsAdmin = True
        if userExists == False: #This code gets ran if it cannot find the user in the file
            print("User does not exist, try again")
    passCorrect = False #This cariable is used to stop the while loop
    while passCorrect != True:
        print("Enter your password")
        password = input()
        if password == userPassword: #This checks to see if the password the user entered matches the one on the file
            print("Correct Password")
            passCorrect = True
        else:
            print("Incorrect Password, Try again")
    print("Welcome back", username)

def signup(): #This is ran to setup a user profile
    global username #Calls the global variable
    print("Signup")
    print("Enter your name")
    name = input() #Asks for their name to make the username from
    print("Enter your age")
    age = input() #Asks for their age to make the username from
    x = True #This variable is used to stop the while loop
    while x == True:
        if age.isnumeric(): #This stops the loop when the user only enters a number and nothing else
            x = False
        else:
            print("Only enter a number") #data validation
            print("Enter your age") #This makes sure the value will have the right format
            age = input()
    x = True #This variable is used to stop the while loop
    while x == True:
        print("Enter your year number (e.g. '10' or '11')")
        year = input()
        if age.isnumeric(): #data validation
            x = False
        else:
            print("Only enter a number") #Makes sure the year is imputted correctly
    x = True #This variable is used to stop the while loop
    while x == True:
        print("Enter your password")
        password = input()
        print("Re-Enter your password")
        rePassword = input()
        if password == rePassword: #data validation
            print("The passwords match") #Checks to make sure the user entered the correct password
```

```
            x = False
        else:
            print("The passwords do not match")
    count = 0 #This is used to make sure the right number of characters are in the username
    for i in name:
        if count < 3:
            username = username + i #This adds the letters to the username
        count = count + 1 #Increases the count so the right number of characters are in the username
    username = username + age #Adds the age to the username so it is properly formatted eg Kie14
    print("Your username is: ", username)
    with open('userProfiles.csv', 'a', newline = '') as csvfile: #Opens the csv file to save the new user profile
        writer = csv.writer(csvfile, delimiter = ',')
        writer.writerow([username, password, name, year, age]) #Writes all the required data to the file

def quiz():
    global score #Calls all the globals
    global topic
    global diff
    print("Would you like to do computer science (1) or history (2)?")
    topicA = True #This variable is used to stop the while loop
    while topicA == True: #data validation
        topic = input()
        if topic == '1':
            topic = 'CompSci' #Sets the topic variable to the right value for later on in hte program
            topicA = False
        elif topic == '2':
            topic = 'His'
            topicA = False
        else:
            print("Only enter 1 or 2")
            topic = input()
    print("Would you like to play in easy (1), medium (2) or hard (3)?")
    diffA = True #This variable is used to stop the while loop
    while diffA == True:
        diff = input() #Sets the difficulty the user wants to take the quiz in
        if diff == '1':
            diffA = False
        elif diff == '2':
            diffA = False
        elif diff == '3':
            diffA = False
        else:
            print("Only enter 1, 2 or 3")
            diff = input()
    ansLoc = 0 #The answer location variable is defined here as python didn't like it getting defined later on in the program
    userAns = '' #The saame problem as the last one
    if topic == 'CompSci': #This is ran if the user wants to do the computer science quiz
        print("Computer Science")
        with open('compSci.csv', 'r') as csvfile: #Opens the quiz file
            cs = csv.reader(csvfile, delimiter = ',')
            for row in cs: #The loop for the quiz
                question = row[0] #This sets the question to a variable because question is easier to remember than 'row[0]'
                ans = row[1] #This was for the same reason but with 'row[1]'
                if diff == '1': #This code is ran if the user wants to do the quiz on the easiest difficulty
                    print(question)
                    ansLoc = random.randint(1, 2) #This randomly places the answer in so the answer list is unique almost every time
                    fake = True #This variable is used to stop the while loop
                    while fake == True:
                        fake1 = random.randint(2, 4) #This code randomly sets the position of the fake answers
                        fake2 = random.randint(2, 4)
                        fake3 = random.randint(2, 4)
                        if fake1 != fake2 and fake1 != fake3 and fake2 != fake3: #This makes sure that all the fake answers are unique positions
                            fake = False
                    if ansLoc == 1: #This is ran if the answer is in the first position
                        print("1. ", ans)
                        print("2. ", row[fake1])
                        x = True #This variable is used to stop the while loop
                        while x == True:
                            print("Enter the number of your choice")
                            userAns = input()
                            if userAns == '1': #data validation
                                x = False
                            elif userAns == '2':
```

```
            x = False
        else:
            print("Only enter the number of your choice")
    elif ansLoc == 2: #This is ran if the answer is in the second position
        print("1. ", row[fake1])
        print("2. ", ans)
        x = True
        while x == True:
            print("Enter the number of your choice")
            userAns = input()
            if userAns == '1':
                x = False
            elif userAns == '2':
                x = False
            else:
                print("Only enter the number of your choice")
    ansLoc = str(ansLoc) #This changes the answer location to a string so it is comparable to
    if ansLoc == userAns: #the user answer variable because you can't compare an int to a string
        score = score+1 #If the user was correct it increments the score
        print("Correct")
    else:
        print("Incorrect")
elif diff == '2': #This is the code ran for the medium difficulty, refer to the first section as its all the same
    print(question)
    ansLoc = random.randint(1, 3)
    fake = True
    while fake == True:
        fake1 = random.randint(2, 4)
        fake2 = random.randint(2, 4)
        fake3 = random.randint(2, 4)
        if fake1 != fake2 and fake1 != fake3 and fake2 != fake3:
            fake = False
    if ansLoc == 1:
        print("1. ", ans)
        print("2. ", row[fake1])
        print("3. ", row[fake2])
        x = True
        while x == True:
            print("Enter the number of your choice")
            userAns = input()
            if userAns == '1':
                x = False
            elif userAns == '2':
                x = False
            elif userAns == '3':
                x = False
            else:
                print("Only enter the number of your choice")
    elif ansLoc == 2:
        print("1. ", row[fake1])
        print("2. ", ans)
        print("3. ", row[fake2])
        x = True
        while x == True:
            print("Enter the number of your choice")
            userAns = input()
            if userAns == '1':
                x = False
            elif userAns == '2':
                x = False
            elif userAns == '3':
                x = False
            else:
                print("Only enter the number of your choice")
    elif ansLoc == 3:
        print("1. ", row[fake1])
        print("2. ", row[fake2])
        print("3. ", ans)
        x = True
        while x == True:
            print("Enter the number of your choice")
            userAns = input()
            if userAns == '1':
```

```
            x = False
        elif userAns == '2':
            x = False
        elif userAns == '3':
            x = False
        else:
            print("Only enter the number of your choice")
    ansLoc = str(ansLoc)
    if ansLoc == userAns:
        score = score+1
        print("Correct")
    else:
        print("Incorrect")
elif diff == '3':
    print(question)
    ansLoc = random.randint(1, 4)
    fake = True
    while fake == True:
        fake1 = random.randint(2, 4)
        fake2 = random.randint(2, 4)
        fake3 = random.randint(2, 4)
        if fake1 != fake2 and fake1 != fake3 and fake2 != fake3:
            fake = False
    if ansLoc == 1:
        print("1. ", ans)
        print("2. ", row[fake1])
        print("3. ", row[fake2])
        print("4. ", row[fake3])
        x = True
        while x == True:
            print("Enter the number of your choice")
            userAns = input()
            if userAns == '1':
                x = False
            elif userAns == '2':
                x = False
            elif userAns == '3':
                x = False
            elif userAns == '4':
                x = False
            else:
                print("Only enter the number of your choice")
    elif ansLoc == 2:
        print("1. ", row[fake1])
        print("2. ", ans)
        print("3. ", row[fake2])
        print("4. ", row[fake3])
        x = True
        while x == True:
            print("Enter the number of your choice")
            userAns = input()
            if userAns == '1':
                x = False
            elif userAns == '2':
                x = False
            elif userAns == '3':
                x = False
            elif userAns == '4':
                x = False
            else:
                print("Only enter the number of your choice")
    elif ansLoc == 3:
        print("1. ", row[fake1])
        print("2. ", row[fake2])
        print("3. ", ans)
        print("4. ", row[fake3])
        x = True
        while x == True:
            print("Enter the number of your choice")
            userAns = input()
            if userAns == '1':
                x = False
            elif userAns == '2':
```

```
                    x = False
                elif userAns == '3':
                    x = False
                elif userAns == '4':
                    x = False
                else:
                    print("Only enter the number of your choice")
            elif ansLoc == 4:
                print("1. ", row[fake1])
                print("2. ", row[fake2])
                print("3. ", row[fake3])
                print("4. ", ans)
                x = True
                while x == True:
                    print("Enter the number of your choice")
                    userAns = input()
                    if userAns == '1':
                        x = False
                    elif userAns == '2':
                        x = False
                    elif userAns == '3':
                        x = False
                    elif userAns == '4':
                        x = False
                    else:
                        print("Only enter the number of your choice")
            ansLoc = str(ansLoc)
            if ansLoc == userAns:
                score = score+1
                print("Correct")
            else:
                print("Incorrect")
    elif topic == 'His': #This is ran if the user wants to take the history quiz
        print("History")
        with open('his.csv', 'r') as csvfile: #This opens the history quiz file
            cs = csv.reader(csvfile, delimiter = ',') #refer to the first section as its all the same
            for row in cs:
                question = row[0]
                ans = row[1]
                if diff == '1':
                    print(question)
                    ansLoc = random.randint(1, 2)
                    fake = True
                    while fake == True:
                        fake1 = random.randint(2, 4)
                        fake2 = random.randint(2, 4)
                        fake3 = random.randint(2, 4)
                        if fake1 != fake2 and fake1 != fake3 and fake2 != fake3:
                            fake = False
                    if ansLoc == 1:
                        print("1. ", ans)
                        print("2. ", row[fake1])
                        x = True
                        while x == True:
                            print("Enter the number of your choice")
                            userAns = input()
                            if userAns == '1':
                                x = False
                            elif userAns == '2':
                                x = False
                            else:
                                print("Only enter the number of your choice")
                    elif ansLoc == 2:
                        print("1. ", row[fake1])
                        print("2. ", ans)
                        x = True
                        while x == True:
                            print("Enter the number of your choice")
                            userAns = input()
                            if userAns == '1':
                                x = False
                            elif userAns == '2':
                                x = False
```

```
            else:
                print("Only enter the number of your choice")
        ansLoc = str(ansLoc)
        if ansLoc == userAns:
            score = score+1
            print("Correct")
        else:
            print("Incorrect")
    elif diff == '2':
        print(question)
        ansLoc = random.randint(1, 3)
        fake = True
        while fake == True:
            fake1 = random.randint(2, 4)
            fake2 = random.randint(2, 4)
            fake3 = random.randint(2, 4)
            if fake1 != fake2 and fake1 != fake3 and fake2 != fake3:
                fake = False
        if ansLoc == 1:
            print("1. ", ans)
            print("2. ", row[fake1])
            print("3. ", row[fake2])
            x = True
            while x == True:
                print("Enter the number of your choice")
                userAns = input()
                if userAns == '1':
                    x = False
                elif userAns == '2':
                    x = False
                elif userAns == '3':
                    x = False
                else:
                    print("Only enter the number of your choice")
        elif ansLoc == 2:
            print("1. ", row[fake1])
            print("2. ", ans)
            print("3. ", row[fake2])
            x = True
            while x == True:
                print("Enter the number of your choice")
                userAns = input()
                if userAns == '1':
                    x = False
                elif userAns == '2':
                    x = False
                elif userAns == '3':
                    x = False
                else:
                    print("Only enter the number of your choice")
        elif ansLoc == 3:
            print("1. ", row[fake1])
            print("2. ", row[fake2])
            print("3. ", ans)
            x = True
            while x == True:
                print("Enter the number of your choice")
                userAns = input()
                if userAns == '1':
                    x = False
                elif userAns == '2':
                    x = False
                elif userAns == '3':
                    x = False
                else:
                    print("Only enter the number of your choice")
        ansLoc = str(ansLoc)
        if ansLoc == userAns:
            score = score+1
            print("Correct")
        else:
            print("Incorrect")
    elif diff == '3':
```

```
print(question)
ansLoc = random.randint(1, 4)
fake = True
while fake == True:
    fake1 = random.randint(2, 4)
    fake2 = random.randint(2, 4)
    fake3 = random.randint(2, 4)
    if fake1 != fake2 and fake1 != fake3 and fake2 != fake3:
        fake = False
if ansLoc == 1:
    print("1. ", ans)
    print("2. ", row[fake1])
    print("3. ", row[fake2])
    print("4. ", row[fake3])
    x = True
    while x == True:
        print("Enter the number of your choice")
        userAns = input()
        if userAns == '1':
            x = False
        elif userAns == '2':
            x = False
        elif userAns == '3':
            x = False
        elif userAns == '4':
            x = False
        else:
            print("Only enter the number of your choice")
elif ansLoc == 2:
    print("1. ", row[fake1])
    print("2. ", ans)
    print("3. ", row[fake2])
    print("4. ", row[fake3])
    x = True
    while x == True:
        print("Enter the number of your choice")
        userAns = input()
        if userAns == '1':
            x = False
        elif userAns == '2':
            x = False
        elif userAns == '3':
            x = False
        elif userAns == '4':
            x = False
        else:
            print("Only enter the number of your choice")
elif ansLoc == 3:
    print("1. ", row[fake1])
    print("2. ", row[fake2])
    print("3. ", ans)
    print("4. ", row[fake3])
    x = True
    while x == True:
        print("Enter the number of your choice")
        userAns = input()
        if userAns == '1':
            x = False
        elif userAns == '2':
            x = False
        elif userAns == '3':
            x = False
        elif userAns == '4':
            x = False
        else:
            print("Only enter the number of your choice")
elif ansLoc == 4:
    print("1. ", row[fake1])
    print("2. ", row[fake2])
    print("3. ", row[fake3])
    print("4. ", ans)
    x = True
    while x == True:
```

```
                print("Enter the number of your choice")
                userAns = input()
                if userAns == '1':
                    x = False
                elif userAns == '2':
                    x = False
                elif userAns == '3':
                    x = False
                elif userAns == '4':
                    x = False
                else:
                    print("Only enter the number of your choice")
            ansLoc = str(ansLoc)
            if ansLoc == userAns:
                score = score+1
                print("Correct")
            else:
                print("Incorrect")
    print("You scored ",score,"/5") #This prints the score so the user can see how well they did
    percent = score/5
    percent = percent*100
    print("Your percentage was ",percent,"%")
    if score == 5:
        print("You got an A")
    elif score == 4:
        print("You got a B")
    elif score == 3:
        print("You got a C")
    elif score == 2:
        print("You got a D")
    elif score == 1:
        print("You got an F")
    if diff == '1': #This changes the difficulty variable for later use in the program
        diff = 'Easy'
    elif diff == '2':
        diff = 'Medium'
    elif diff == '3':
        diff = 'Hard'

def admin(): #This code is ran when Fergus goes on his account
    x = True
    while x == True:
        print("""Would you like to:
        1. Create a report for a student
        2. Find the best mark for a topic
        3. Find the average for a topic
        4. Exit
Enter the number of your choice""")
        y = input()
        while y.isnumeric() == False: #data validation
            print("Only enter the number of your choice")
            y = input()
        if y == '1':
            print("Enter the name of the student you want a report of") #This allows Fergus to make reports on any student
            z = input()
            with open('userScores.csv', 'r') as csvfile:
                search = csv.reader(csvfile, delimiter = ',')
                os.remove(z+'.txt') #This deletes any previous files that were made for that student so it doesnt create duplicata data
                for row in search: #This scans the file for any results by the student he wishes to search for
                    if row[0] == z:
                        print("Found Test Results")
                        print("Writing To File")
                        file = open(z+'.txt', 'a') #Opens the file
                        file.write("Topic: "+row[1]) #Writes the topic
                        file.write("\nDifficulty: "+row[2]) #Writes the difficulty
                        file.write("\nScore: "+row[3]+"/5\n\n") #Writes the score
                        file.close() #Closes the file
                        print("Finished Writing, Continuing Search")
            print("File Creation Complete")
            print("Check "+z+".txt for the report")
        elif y == '2': #This is used if Fergus wants the top scorers for a set topic and difficulty
            print("1. Computer Science")
            print("2. History")
```

```
    print("Enter the number of your choice")
    topic = input() #Asks for the input for the topic
    while topic.isnumeric() == False: #data validation
        print("Only enter the number of your choice")
        topic = input()
    if topic == '1': #Changes the topic number so it works better later on in the code
        topic = 'CompSci'
    elif topic == '2':
        topic = 'His'
    print("1. Easy")
    print("2. Medium")
    print("3. Hard")
    print("Enter the number of your choice")
    diff = input()
    while diff.isnumeric() == False: #data validation
        print("Only enter the number of your choice")
        diff = input()
    if diff == '1': #Changes the difficulty number so it works better later on in the code
        diff = 'Easy'
    elif diff == '2':
        diff = 'Medium'
    elif diff == '3':
        diff = 'Hard'
    count = 0
    topScore = 5
    c = True #This variable is used to stop the while loop
    while c == True:
        with open('userScores.csv', 'r') as csvfile: #Opens the file to search
            search = csv.reader(csvfile, delimiter = ',')
            for row in search:
                if row[2] == diff:
                    if int(row[3]) == topScore: #If the result is of the correct difficulty and topic it will print the username of the user
                        print("\nName: "+row[0])
                        print("Score: "+row[3])
                        count = count+1
            if topScore == 0: #If none were found it runs this code
                print("No Results Found")
                c = False #Breaks the while loop
            elif count == 0:
                topScore = topScore - 1
            else:
                c = False
    print("\n")
elif y == '3': #This code get the average score
    print("1. Computer Science")
    print("2. History")
    print("Enter the number of your choice")
    topic = input()
    while topic.isnumeric() == False: #data validation
        print("Only enter the number of your choice")
        topic = input()
    if topic == '1': #Changes the topic number so it works better later on in the code
        topic = 'CompSci'
    elif topic == '2':
        topic = 'His'
    print("1. Easy")
    print("2. Medium")
    print("3. Hard")
    print("Enter the number of your choice")
    diff = input()
    while diff.isnumeric() == False: #data validation
        print("Only enter the number of your choice")
        diff = input()
    if diff == '1': #Changes the difficulty number so it works better later on in the code
        diff = 'Easy'
    elif diff == '2':
        diff = 'Medium'
    elif diff == '3':
        diff = 'Hard'
    with open('userScores.csv', 'r') as csvfile: #Opens 'userScores.csv'
        search = csv.reader(csvfile, delimiter = ',')
        sum = 0
        count = 0
```

```
            for row in search:
                if topic == row[1]:
                    if diff == row[2]:
                        sum = sum + int(row[3]) #This scans through the file and adds the scores to the sum variable
                        count = count + 1 #Every time the criteria are met, the count increments so the average can be calculated at the end
            avg = sum/count #This calculates the average from the sum and count from the previous bit
            print("The average score is: ",avg)
        elif y == '4': #This code stops the program
            print("Exiting")
            x = False #Breaks the while loop
        else:
            print("Only enter the number you want")

def saveData(): #This saves the quiz data
    with open('userScores.csv', 'a', newline = '') as csvfile: #This opens the file
        cs = csv.writer(csvfile, delimiter = ',')
        cs.writerow([username, topic, diff, score, '']) #This saves the results

def main(): #The main code
    print("Quiz")
    print("Do you want to login (1) or signup (2)?")
    x = True #This variable is used to stop the while loop
    while x == True: #data validation
        y = input()
        if y == '1' or y == '2': #Asks if they want to signup or login and data validation
            x = False #Breaks the while loop
        else:
            print("Only enter the number that corresponds to your choice")
    if y == '1': #Based on the input of the previous section, the correct code is ran
        login() #Runs the login
    else:
        signup() #Runs the signup
    if userIsAdmin == True: #This runs if Fergus is signed in
        admin() #Runs the admin code
    else:
        quiz() #Runs the quiz
        saveData() #Saves the data
    print("Thank you for using this program")

main() #Runs the main code
input("\nPress any key to end the program\n") #Stops the program from abruptly closing if in the command prompt/terminal window is open
```

NOTEPAD FILES:

userProfiles.csv

```
Fer1,Apple1,Fergus,Admin,1
Kie14,Password123,Kieran Everett,10,14
Ell16,MiniTeddyBubbles1066,Ellie Smith,11,16
Ale9,DogsAreCool,Alex Wilson,5,9
```

userScores.csv

```
Kie14,CompSci,Hard,4
Ell16,His,Medium,5
Kie14,His,Easy,3
Ale9,His,Hard,1
Ell16,CompSci,Easy,5
Ale9,CompSci,Hard,4
Ell16,His,Hard,3
Kie14,CompSci,Hard,5
```

his.csv

```
"What was the name of the agreement of 1941 of Britain, the USA and USSR to unite against Hitler?",The Grand Alliance,Friends Reunited,The Triple Alliance,The Great
What was the political ideology followed by USSR?,Communist,Capitalist,Fascist,Nationalist
What was the political ideology followed by the west (USA and Britain)?,Capitalist,Communist,Fascist,Socialist
"What was the name of the area where the US, Britain and France merged their zones in Germany in 1948?",Trizonia,Bizonia,West Germany,Quadzonia
Which country attempted unsuccessfully to break away from Soviet influence in 1956?,Hungary,Poland,Russia,Britan
```

compSci.csv

```
What is the CPU?,The 'Brain' of the computer,The bit that does the things,The thing that does the graphics,The storage for the computer
What is the cycle the CPU does?,Fetch-Decode-Execute,Execute-Fetch-Decode,Decode-Execute-Fetch,Decode-Fetc-Execute
What is the CPU clock speed measured in?,Hertz (Hz),Meters (M),Seconds (S),Joules (J)
What does RAM stand for?,Random Access Memory,Rectified Access Memory,Random Accumulative Memory,Random Access Manager
What type of memory is volatile?,RAM,ROM,REM,CPU
```

TESTING AND REMEDIAL ACTION:

```
Do you want to login (1) or signup (2)?
no
Only enter the number that corresponds to your choice
-1
Only enter the number that corresponds to your choice
1
Login
Enter your username
no
User does not exist, try again
Enter your username
1
User does not exist, try again
Enter your username
Kie
User does not exist, try again
Enter your username
Kie14
User Found
Enter your password
no
Incorrect Password, Try again
Enter your password
-1
Incorrect Password, Try again
Enter your password
1
Incorrect Password, Try again
Enter your password
Password
Incorrect Password, Try again
Enter your password
Password213
Incorrect Password, Try again
Enter your password
Password123
Correct Password
Welcome back Kie14
Would you like to do computer science (1) or history (2)?
no
Only enter 1 or 2
-1
Only enter 1 or 2
1
Would you like to play in easy (1), medium (2) or hard (3)?
no
Only enter 1, 2 or 3
-1
Only enter 1, 2 or 3
1
Computer Science
What is the CPU?
1.  The 'Brain' of the computer
2.  The bit that does the things
Enter the number of your choice
no
Only enter the number of your choice
Enter the number of your choice
-1
Only enter the number of your choice
Enter the number of your choice
3
Only enter the number of your choice
Enter the number of your choice
1
Correct
What is the cycle the CPU does?
1.  Decode-Execute-Fetch
2.  Fetch-Decode-Execute
Enter the number of your choice
1
Incorrect
What is the CPU clock speed measured in?
```

```
1. Hertz (Hz)
2. Meters (M)
Enter the number of your choice
1
Correct
What does RAM stand for?
1. Random Accumulative Memory
2. Random Access Memory
Enter the number of your choice
1
Incorrect
What type of memory is volatile?
1. RAM
2. REM
Enter the number of your choice
1
Correct
You scored  3 /5
Your percentage was  60.0 %
You got a C
Thank you for using this program
Press any key to end the program
```

EVALUATION:

My program has met all the original success criteria. I think my approach to the task worked quite well. However, if I was to do it again I would focus on the main code sooner as I left it to the very end to complete which didn't leave me much time to do it all. Also, I would try to make the code smaller as it is very long. My Biggest challenge was probably trying to edit the csv files as this was the first time I used csv files, however, it was easy to learn with stack overflow and the python documents. Another challenge I had was trying to make the quiz random as I felt it would be too easy to complete if the quiz was the same every time so I made it randomly place the answers in so the answers would almost always be different (on the hardest difficulty, there are 4^4^4 combinations of answers so the students have to actually learn the answers).

REFRENCES:

Stack Overflow
Python Docs
Python for beginners