

WFDF Rules of Ultimate App

Project: Plan and Implement a Terminal Application
Term 1 Assignment 3

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Introduction and purpose



The purpose of this assignment was to design, implement and test a terminal application. We were required to submit an app idea (along the app's features) for approval prior to commencing planning and developing.

The application idea that I submitted and developed was a quiz application, but modelled after a very real quiz website that is used in my sport - Ultimate.

This quiz application would have a range of features, including login and user registration, the quiz itself (which has a random set of questions each time), along with the ability to access previous results.

The user would interact with this app using user input, with the system validating the input and working with csv files.

App Walkthrough



Welcome to the
WFDF Rules of Ultimate 
Accreditation Quiz App!

You can use this app to test your knowledge of the rules of Ultimate and become a certified player.

- The official rules can be viewed here: <https://rules.wfdf.org/>
- Documentation for this app can be found here: <https://github.com/katielock92/CA-T1A3>

Disc in... stalling...

To login or register, please enter your email address:



Login

Walkthrough

After the welcome remarks, the user is asked to enter their email address. This triggers one of three possible workflows:

- If their email is already registered, they will be recognised and ask to enter their password
- If their email is not recognised, they will be asked to set a new password against strength requirements
- If they enter "quit", the application will exit gracefully

Prompts will show if the user enters the incorrect password, or tries to set one with an invalid format, and the loop will recommence until a correct password is entered.



Login

Walkthrough

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Disc in... stalling...

To login or register, please enter your email address: hello@katieelsomlock.com

Welcome back!

Please enter your password: *****

Please enter your password: *****

! Incorrect password, please try again.

Please enter your password: *****

Login successful!

If an existing email is entered, they will see "Welcome Back" and the app will try to validate their password.



Login

Walkthrough

To login or register, please enter your email address: katie@katieelsomlock.com

To sign up, please set your password.

Your password must meet the following conditions:

- Contains at least one lower case letter
- Contains at least one upper case letter
- Contains 10 or more characters

[New password: *****

! Password does not meet required format, please try again.

[New password: *****

Welcome! Your user ID is 49572

If an unrecognised email is entered, they will be asked to set a password. This will be validated against conditions and if these are not met, they will be prompted again until a valid entry is received. They will be assigned a user ID.



Login

Walkthrough

To login or register, please enter your email address:

Welcome back!

Please enter your password: ****

👏 Thank you for using the Rules Accreditation app!

katie@Kties-Air src %

If "quit" is entered to any of these prompts, a graceful system exit will occur.

To login or register, please enter your email address: quit

👏 Thank you for using the Rules Accreditation app!

katie@Kties-Air src %

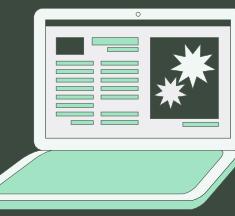
To login or register, please enter your email address:

To sign up, please set your password.
Your password must meet the following conditions:
- Contains at least one lower case letter
- Contains at least one upper case letter
- Contains 10 or more characters

[New password: ****

👏 Thank you for using the Rules Accreditation app!

katie@Kties-Air src %



Main Menu

Walkthrough

Once a user is logged in or registered, they will be presented with the main menu of the application which has 4 options:

- Start a new quiz
- See your previous results
- See certified players
- Exit

WFDF RULES OF ULTIMATE ACCREDITATION APP 

MAIN MENU

1: Begin the Rules Accreditation Quiz
2: See your previous results
3: Access the database of certified players
4: Exit application

Please select an option by entering the menu number: █



Main Menu

Walkthrough

If a user enters an option other than 1-4, a different message is displayed depending on whether their input was an integer or not:

Please select an option by entering the menu number: a

**! That wasn't a number! Please try again.
Here's the menu again for you...**

WFDF RULES OF ULTIMATE ACCREDITATION APP 
MAIN MENU

Please select an option by entering the menu number: 6

**! Invalid menu option selected! Please try again.
Here's the menu again for you...**

WFDF RULES OF ULTIMATE ACCREDITATION APP 
MAIN MENU



Main Menu

Walkthrough

If a user enters 4, the app will exit gracefully:

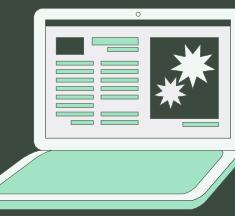
```
4: Exit application
```

```
Please select an option by entering the menu number: 4
```

```
👏 Thank you for using the Rules Accreditation app!
```

```
katie@Katies-Air src %
```

Options 1-3 lead to the features of the app, which will be covered in separate slides.



Previous Results

Walkthrough

If a user presses 2 on the main menu, there are a few options for what will occur:

- If the user has previous quiz results (based on their user ID), these will be output on the screen
- If the user does not have any matching previous results, a message will display saying so

They are then given the option to enter "quit" to exit gracefully, or press any other key to return to the main menu.

```
Please select an option by entering the menu number: 2
```

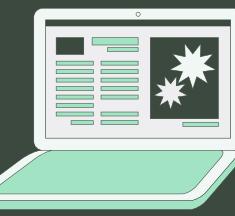
```
{'User ID': '12345', 'Date': '2023-05-05', 'Score': '10', 'Outcome': 'Fail'}  
{'User ID': '12345', 'Date': '2023-05-06', 'Score': '17', 'Outcome': 'Pass'}
```

```
Press any key to go back to the main menu, or "quit" to exit: █
```

```
Please select an option by entering the menu number: 2
```

```
No previous results available.
```

```
Press any key to go back to the main menu, or "quit" to exit: █
```



Certified Players

Walkthrough

If a user presses 3 on the main menu, there are a few options for what will occur:

- The contents of the Certified Players file will be output to the screen.
- If the Certified Players file is missing, they will receive a prompt on screen saying so - this file will be created if the user passes the quiz, though.

They are then given the option to enter "quit" to exit gracefully, or press any other key to return to the main menu.

```
Please select an option by entering the menu number: 3
User ID,Certification Date,Expiry Date
12345,2023-05-06,2024-11-06

Press any key to go back to the main menu, or "quit" to exit: █
```

```
Please select an option by entering the menu number: 3
! No certified players on file - please contact WFDF

Press any key to go back to the main menu, or "quit" to exit: █
```

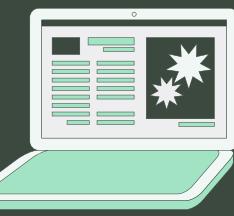


Quiz

Walkthrough

And now our hero feature - the quiz! Things to note about this are:

- The user can enter "quit" at any time to trigger a graceful exit, though if they are part-way through a quiz, they will need to confirm this first as their progress will not be saved.
- The user will be given a random sample of 20 questions from a file containing 92 possible questions.
- Each question only accepts a True or False answer, and is case insensitive.
- If an answer is entered other than True, False or quit, the user will be asked to try again.
- After each question is answered, it will be checked against the actual answer and the score will increase by 1 for each correct answer.
- The user needs to get at least 17/20 to pass the quiz.
- The output and file writing that occurs at the end of the quiz will depend on whether or not the user passes the quiz.



Quiz

Walkthrough

If for any reason the quiz questions csv file is deleted on the user's local machine, they will receive this error when they try to commence the quiz:

Please select an option by entering the menu number: 1

! Error! Quiz questions missing.

Please contact app creator to rectify.

Returning to the main menu...

All other files on this app have a provision to be created by the app if they don't exist, however due to the size of the quiz file, this simply isn't possible.



Quiz

Walkthrough

Please select an option by entering the menu number: 1

Welcome to the WFDF Rules Accreditation Quiz 

You can exit at any time by entering "quit"

For each question, please answer True or False. You will see your total score at the end.

Press any key to continue:

Question 1:

A defender is guarding an offensive player when they are within five meters of that offensive player and are reacting to that offensive player.

Hint: Definitions

Your answer:

Your answer: idk

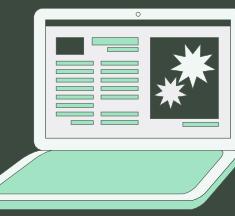
! Invalid answer! Please enter True or False...

Your answer:

Your answer: quit

! Are you sure you want to quit? Your progress will be lost.

Enter Y to proceed with exiting the application:



Quiz

Walkthrough

If a user fails the quiz, they will receive this output and asked if they want to try the quiz again. This will generate a new set of questions. Their fail result is added to the Previous Results file.

Sorry, you didn't pass this time.

Your score was 7/20 and a score of at least 85% is required to pass.

Would you like to try the quiz again? Enter Y for Yes:

If a user passes the quiz, they will receive this output and asked if they want to return to the main menu or quit. Their pass result is added to the Previous Results file, and they are added to the Certified Players file.

Congratulations! You passed the quiz.

Your score was 17/20

You are now certified until 2024-11-07

Press any key to go back to the main menu, or "quit" to exit:

Development Process



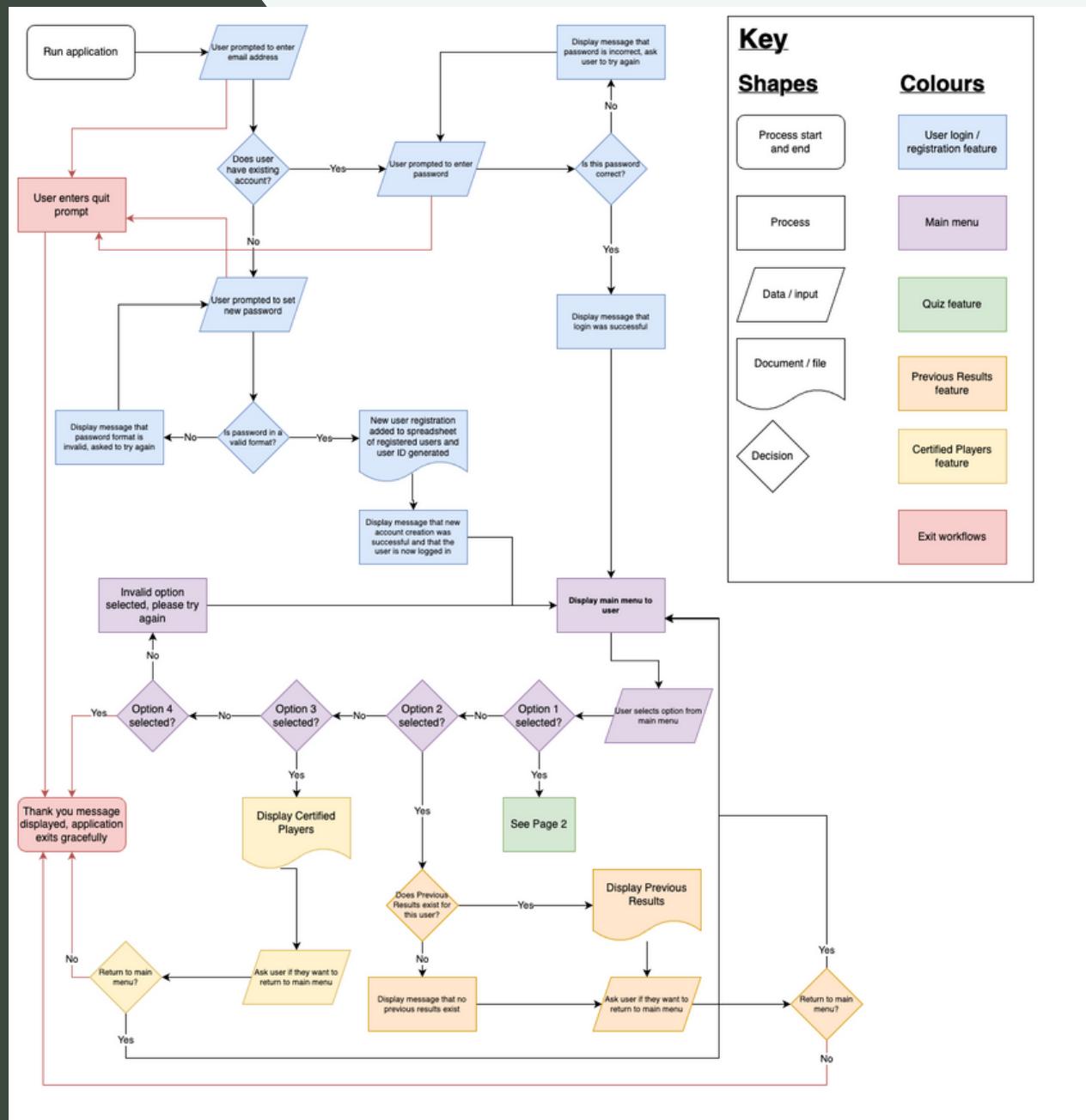
Tech stack



For this project, I worked with the following tools, technologies and languages:

- VS Code - IDE for writing code
- Markdown - for writing README.md
- Python - for all operations and logic on the app
- Terminal (MacOS) - committing and pushing local files to Github and running the program
- GitHub - version control and hosting

Approach to development



Before beginning any coding for this application, my first step was to create a flowchart to break down the logical flow of the features and to aid in putting some structure in place for what my coding requirements would be.

After the flowchart was created, within my implementation plan I listed each feature and its logic using pseudocode.

Armed with my pseudocode, my next step was to start thinking about the coding of the application itself.

Approach to development



I did review whether I could start with writing my tests as part of a TDD process - however, ultimately I found that given my main app logic was in relation to input/output and file handling, there wasn't a clearly obvious set of sets that I could write before I even knew exactly what my code would look like.

Therefore I noted down some ideas for particular functions or features I would want to test, but waited until my core code was written before commencing to write any tests.

The first feature that I wrote was the main menu, given that most of the features (except the login flow) looped off this and it was otherwise quite simple. I was able to put some placeholder output statements to validate when a menu option was selected, until that option's feature was developed.

Approach to development



After the main menu skeleton was in place, I then moved onto the login flow. The initial build did not validate the email address format, or have password requirements besides length. My primary focus was to work out how to validate to different columns in a single row, and I found that the pandas module was able to handle this easier than the built-in csv module.

Once a user was able to login, my next challenge was the quiz itself. When looking into the best way to approach this, I found the ability to create a random sample and save that as a tuple, which ultimately adjusted my original logic as I didn't need to check how many iterations there had been - as I could use "for i in questions"

Approach to development



When the core functionality of my features had been created and I was getting more comfortable with Python, I could begin to enhance the experience and depth of features.

This included:

- using regular expressions to validate email format and password strength
- using the maskpass module to hide the user input of passwords
- adding more variables into my user class
- tweaking the Previous Results feature to filter by User ID
- create a wider range of error handling methods for different scenarios

Testing



As mentioned before, I opted to start building my tests later in the process. There were pros and cons to this, such as:

- by the time I was writing tests, I knew exactly how my code was operating and what I expected
- I had to refactor my code quite significantly to get meaningful tests that would pass
- by the time I was writing tests, I felt quite removed from the content we had covered in class about testing

In the end I was able to create tests for 7 different areas of my app, most with multiple test cases. The process of writing tests ultimately made my code better and gave me a better understanding of how Python works.

The rewarding aspects

While I did find this project far more challenging than the last, overall it was possibly even more rewarding because I was able to build something tangible from scratch in a language that I only began learning 6 weeks ago!

Some of the most rewarding aspects were:

- being able to deliver on my original app idea, despite it being far more complex than required
- having a tangible app that I can show to my peers in my sporting community with pride
- when I was able to get a function or a test to work after spending a long time trying to figure out the best approach
- growing my knowledge and competency in Python
- knowing the correct thing to Google when I was stuck!



Challenges



As mentioned previously I did find this project to be the most challenging I have encountered so far.

A few of my key challenges included...

- not feeling comfortable or confident enough in Python before starting the project, as my life was quite busy in the last few weeks of term
- not implementing my chosen style guide straight away, and then needing to refactor my code to meet it
- testing! particularly trying to understand the best way to test a function, and ultimately needing to significantly refactor my code in order to create meaningful tests without confusing errors
- trying to troubleshoot and understand the errors I received in pytest when they could have SO many different meanings, and having to fight my pride with utilising the Coder Academy educators for help

THAT'S ALL, FOLKS!

Thank you for your time in watching

