Create Task 2a-2d

2a.

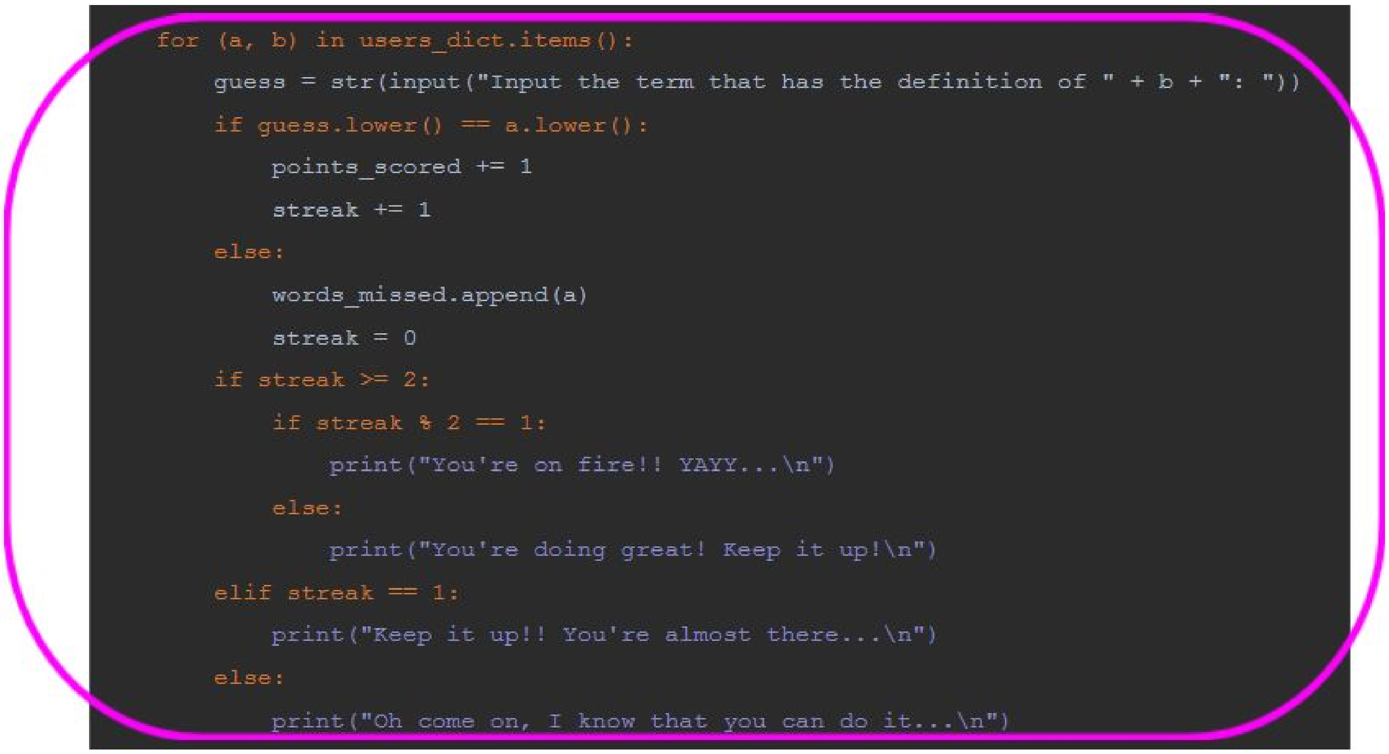
I made **QUIZlet 2.0**, a word memorizer tool, using **Python 3.6.2**. This program's **purpose is to help users memorize terms and their definitions more effectively**. The program fulfills this purpose by *first* letting users enter in term-definition pairs. The program *then* lets the user study those pairs until they are ready for a quiz. Then, the program quizzes the user about those terms, and finishes up by printing information about how the user did on the quiz, as well as the terms the user messed up on. This **video illustrates** the **above features by showing how** the **program** first **asks** the **user to enter** in **terms and** their **definitions** and allows the user "study" until they are ready, **then quizzes** the **user**, **then** finally **prints out** how many terms the user answered correctly as well as **terms** which the **user messed up on**.

2b.

An **incremental process** was when I **drew a flowchart detailing the flow of the program**, including how the program has three functions `collect_dict(), study(), quiz()`, that collects term-definition-pairs, helps user study, and quizzes the user, respectively, and a fourth function `run_quiz()` that calls the three former functions in the correct order. Another **incremental process** incorporated into the code is a **for loop** that prints blank lines until the counter reaches 100. An **iterative process was** when I **decide**d **to improve** the **program by** using the `lower()` method to **make it non-case-sensitive** for users. Both these processes were done **independently**. A **difficulty encountered was** when my tester found that the **program** always **calculate**s the user's quiz-**scores 1-digit higher** than it actually is. I **resolved** this **by assigning `points_scored` to 0**. **Another difficulty** was **encountered when** my tester noticed that the quiz feature was printed directly below the "study" feature and **users taking** the **quiz can cheat off the answers displayed in the study section**. I **resolved this by printing** 300 **blank lines** between the "study" and "quiz" portions. These 2 difficulties were **resolved by collaborating** with a classmate.

2c.

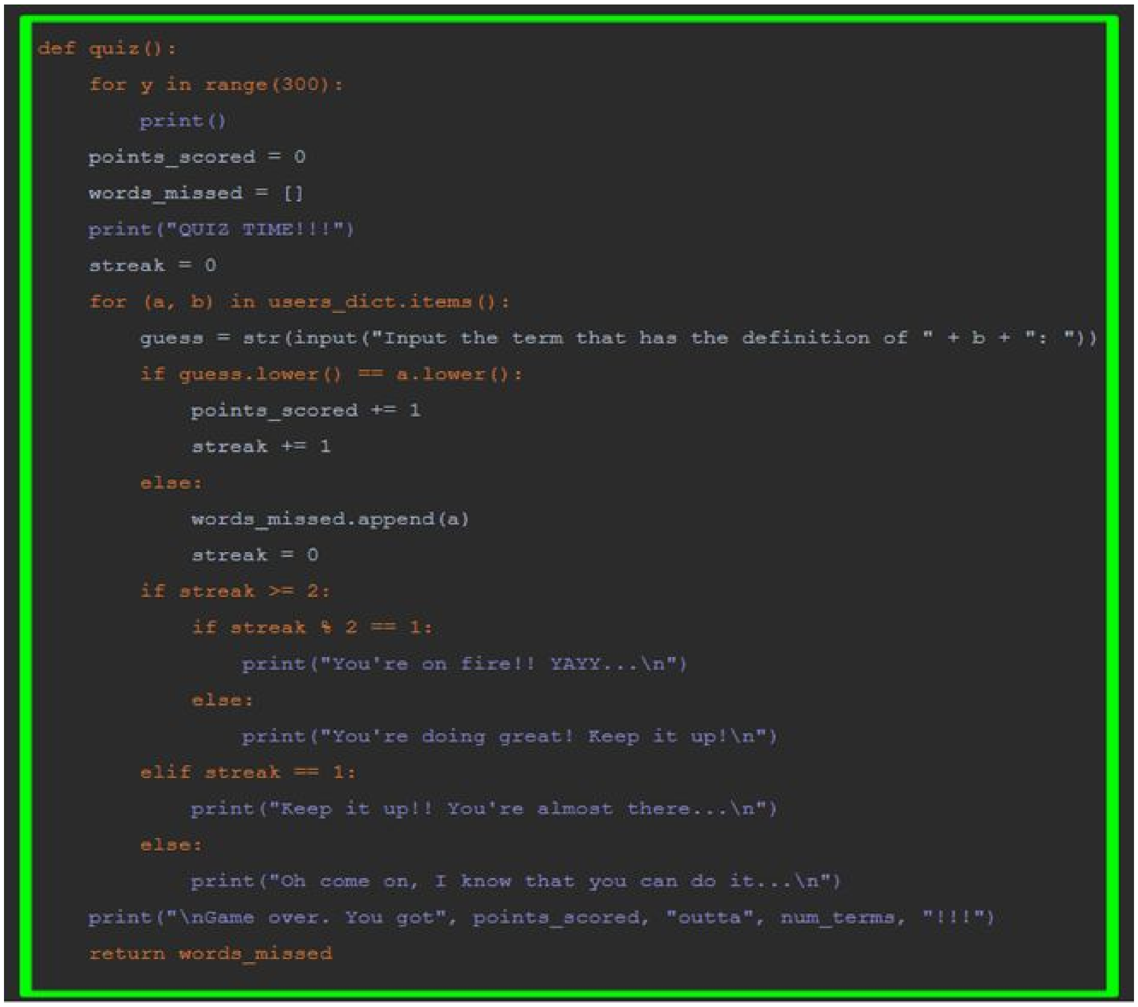
An **algorithm** in my program **is** a **for-loop** that **includes 3 sets of if**-else **statements**. The **for-loop** iterates over each item in the dictionary and **asks** the **user to enter the term which corresponds to** a given **definition**. The **1st set** of if-else-statements functions by **add**ing **1** each **to** user's **score and streak-point if** the user's **answer = key of the dictionary-item**. Else, it resets streak to 0. This demonstrates **use** of **logical concepts since if-statements use Booleans.** The **2nd set of if**-else-**statements determine which** motivational-**message to print based on** their **streak**-points. If the streak-point >= 2, it runs the algorithm's **3rd set of if**-else-**statements**, which **uses modulus**—a **math**ematical **concept**—**to determine which** motivational **message to display** by using modulus 2 to determine the parity of the streak-score. Additionally, if streak-point < 2, the algorithm prints out a message that tells the user to try harder. All in all, this **entire algorithm helps to achieve** intended **purpose of the program by quizzing** the **user**, and the 3 smaller algorithms (the if-else-statements) included within the algorithm determines the score and streak-points of the user **and** uses that information to **print** adequate **motivational messages**. This entire algorithm's **developed independently**.



```
for (a, b) in users_dict.items():
    guess = str(input("Input the term that has the definition of " + b + ": "))
    if guess.lower() == a.lower():
        points_scored += 1
        streak += 1
    else:
        words_missed.append(a)
        streak = 0
    if streak >= 2:
        if streak % 2 == 1:
            print("You're on fire!! YAYY...\n")
        else:
            print("You're doing great! Keep it up!\n")
    elif streak == 1:
        print("Keep it up!! You're almost there...\n")
    else:
        print("Oh come on, I know that you can do it...\n")
```

2d.

An **<u>abstraction developed individually</u> is** `quiz()`, which is used in the function `run_quiz()`. **`quiz()` quizzes the user**, records terms the user messes up on, calculates total points_scored and streak-points, and gives the user motivational messages based on their streak-points. Example of using a **<u>mathematical concept</u> is using modulus-2 to determine the parity of** the user's **streak-points**. Example of a **<u>logical concept</u> is an if-else statement that determines if the user answered correctly.** My function does this **by returning a Boolean** value (`True or False`) which describes whether the user's answer equals correct answer, and using that value to determine whether or not to run **add 1** each to points_scored and streak-points. Having this **<u>abstraction helped manage the complexity</u>** of this program **by** one, **improving readability**, **and** two, **making debugging easier**. Firstly, since all the code regarding the quiz is in a function, running the quiz itself only requires `quiz()`. Second, this abstraction **made debugging significantly easier**. An example of this is when I found out that the quiz was not functioning the way I had expected it to, so I immediately started **looking for errors in the `quiz()`** function **rather than having to look through** my **entire program** for the error.



```python
def quiz():
    for y in range(300):
        print()
    points_scored = 0
    words_missed = []
    print("QUIZ TIME!!!")
    streak = 0
    for (a, b) in users_dict.items():
        guess = str(input("Input the term that has the definition of " + b + ": "))
        if guess.lower() == a.lower():
            points_scored += 1
            streak += 1
        else:
            words_missed.append(a)
            streak = 0
        if streak >= 2:
            if streak % 2 == 1:
                print("You're on fire!! YAYY...\n")
            else:
                print("You're doing great! Keep it up!\n")
        elif streak == 1:
            print("Keep it up!! You're almost there...\n")
        else:
            print("Oh come on, I know that you can do it...\n")
    print("\nGame over. You got", points_scored, "outta", num_terms, "!!!")
    return words_missed
```