

Homework #4 - Guess Who

In this homework you will write code for a guess who game. In a guess who game there are characters with different attributes like wears a backpack, wears glasses, wears a hat, and has piercings. The player will pick an attribute like wears a backpack and guess T (for True) or F (for False). The game will tell you if the guess is correct or not for that attribute. If you guess all 4 attributes correctly you win!

There are two classes: Character and Game. You will write one method of the Character class and most of the Game class. The starter code is in guesswho.py.

Character Class

Each character has a name which is a string and several Boolean (True/False) values: backpack, glasses, hat, and piercing.

1. Write the `__str__` method of the Character class. This method will return a string with the character's name and the value for each of the attributes: backpack, glasses, hat, and piercing.

Game Class

The game has a list of characters in the game, the character that you have to guess (picked at random from the list of characters), a Boolean variable that says if the game is done, and a count of the number of correct guesses. The player wins when s/he has 4 correct guesses.

1. Finish the `__init__` method
 - a. Create the 8 characters in the game. Each should have a unique name and a unique combination of the 4 attributes (like TTTT, TTTF, TFTF, FFFF, etc)
 - b. Set `self.picked` to a random character from the `self.char_list`
 - c. Set `self.done` to false
 - d. Initialize the number of correct guesses to 0
2. Finish the `play` method
 - a. Print all the characters in the game
 - b. Write the while loop - play while the game is not done
 - c. If the return value from the picked character's `get_match_result` method was True tell the player that the guess was correct
 - i. Increment the number of correct guesses
 - ii. If the number of correct guesses is 4 then the player won - notify the player and stop game play
 - d. Otherwise tell the player that the guess was not correct - continue game play

Grading Rubric:

5 points for correct `__str__` method in the Character class

5 points for correctly creating 8 characters in the game `__init__` (each must have a unique combination of the 4 attributes)

5 points for picking a character at random from the `self.char_list` in `__init__`

5 points for setting `done` to `False` in `__init__`

5 points for setting the number of correct guesses to 0 in `__init__`

5 points for printing each character's information in `play`

5 points for a correct while the game isn't done in `play`

5 points for telling the player if the guess was correct in `play`

5 points for incrementing the number of correct guesses in `play`

5 points for telling the player if s/he won correctly in `play`

5 points for stopping the game if the player won in `play`

5 points for telling the player if the guess was not correct in `play`

Sample Output:

```
You guessed it! The picked character was Grace
(base) m-fvfx513fj1wv:206 barbarer$ /Users/barbarer/anaconda3/bin/python /Users/barbarer/Downloads/guesswho-final.py
Lucas has backpack: True has glasses: False has hat: True has piercing: False
Tina has backpack: False has glasses: False has hat: True has piercing: True
Grace has backpack: True has glasses: True has hat: True has piercing: True
Alex has backpack: True has glasses: True has hat: True has piercing: False
Josh has backpack: True has glasses: True has hat: False has piercing: False
Liz has backpack: False has glasses: False has hat: False has piercing: True
Percy has backpack: False has glasses: False has hat: False has piercing: False
Jen has backpack: False has glasses: True has hat: False has piercing: True
What attribute do you want to guess on? Enter b (backpack), g (glasses), h (hat), or p (piercing): b
For that attribute guess T for True or F for False: T
No, the picked character does not have T for b
What attribute do you want to guess on? Enter b (backpack), g (glasses), h (hat), or p (piercing): b
For that attribute guess T for True or F for False: F
Yes, the picked character has F for b
What attribute do you want to guess on? Enter b (backpack), g (glasses), h (hat), or p (piercing): g
For that attribute guess T for True or F for False: T
No, the picked character does not have T for g
What attribute do you want to guess on? Enter b (backpack), g (glasses), h (hat), or p (piercing): g
For that attribute guess T for True or F for False: F
Yes, the picked character has F for g
What attribute do you want to guess on? Enter b (backpack), g (glasses), h (hat), or p (piercing): h
For that attribute guess T for True or F for False: F
Yes, the picked character has F for h
What attribute do you want to guess on? Enter b (backpack), g (glasses), h (hat), or p (piercing): p
For that attribute guess T for True or F for False: T
Yes, the picked character has T for p
You guessed it! The picked character was Liz
```

Extra Credit:

3 points

Limit the number of guesses. If the player exceeds that limit then the player loses and play stops.

3 points

Keep a list of the characters that match the correct guesses and print the remaining characters after each correct guess.