Girls' Programming Network

Guess Who!

Extensions

TUTORS ONLY

Part 8: Extension: Smarter guessing!

Task 8.1: Process of elimination

Let's make our computer smarter!

To do this, we're going to work through each of the lists for eye colour, hair and accessories from beginning to end.For example, our hair colours are:

```
hair = ["black","brown","red","blonde"]
```

Imagine if we ask our user if the hair colour is black, and they say no. Then we ask if it's brown, and our user says no.. what colour is the hair?

There's only one color left, so we know the hair colour must be red!

Let's change our code to get rid of `random.choice` and replace it with list indexes. Every time we get a hair colour from the list, we want to get the first option.

Go back and look at part 3 if you need a reminder about how list indexes work.

Task 8.2: We like to .remove() it, .remove() it!

Now we're getting the first item in the hair colour list every time. But, because our list is the same we always choose `"black"`.

To fix this we need to make sure we remove the bad items from the list, so we don't ask about it again.

Task 8.3: No questions asked

Just like the example before, if there's only one choice left or we've already guessed the secret character correctly, we don't need to ask whether it's the right one, we already know!

Change your code so that if there's only hair colour left in the list, we don't ask any more questions about hair colour.

Task 8.4: Off we go again!

Our hair colour guessing is excellent now, but we can definitely make the others better too.

Go back and improve the guessing about eye colour and accessories to make them better as well.

TUTOR TIPS

The code should look like this (no bonuses):

```python
# <the student's name>
import random

print("""
----------------------------------------------------
Welcome to Guess Who!
----------------------------------------------------
Moves: Pick a person, and let the computer guess who you're thinking of.
Type "yes" or "no" to answer the questions.

Good luck!
------------
""")

people = [["Aleisha", "brown", "black", "hat"],
          ["Brittany", "blue", "red", "glasses"],
          ["Charlie", "green", "brown", "glasses"],
          ["Dave", "blue", "red", "glasses"],
          ["Eve", "green", "brown", "glasses"],
          ["Frankie", "hazel", "black", "hat"],
          ["George", "brown", "black", "glasses"],
          ["Hannah", "brown", "black", "glasses"],
```

```python
        ["Isla", "brown", "brown", "none"],
        ["Jackie", "hazel", "blonde", "hat"],
        ["Kevin", "brown", "black", "hat"],
        ["Luka", "blue", "brown", "none"]]

eliminate = []

eye_colours = ["brown", "blue", "green", "hazel"]
hair_colours = ["black", "red", "brown", "blonde"]
accessories = ["hat", "glasses", "none"]

while True:

    if len(eye_colours) != 1:
        eye_guess = eye_colours[0]
        eye_guess_answer = input("Do they have " + eye_guess + " coloured
    eyes? ")
        if eye_guess_answer == "no":
            eye_colours.remove(eye_guess)
        else:
            eye_colours = [eye_guess]

    if len(hair_colours) != 1:
        hair_guess = hair_colours[0]
        hair_guess_answer = input("Do they have " + hair_guess + "
    coloured hair? ")
        if hair_guess_answer == "no":
            hair_colours.remove(hair_guess)
        else:
            hair_colours = [hair_guess]

    if len(accessories) != 1:
        accessory_guess = accessories[0]
        accessory_guess_answer = input("Do they have " + accessory_guess
    + " for an accessory? ")
        if accesory_guess_answer == "no":
            accessories.remove(accessory_guess)
        else:
            accessories = [accessory_guess]

    for person in people:
        person_name = person[0]
        person_eye = person[1]
        person_hair = person[2]
        person_accessory = person[3]

        if eye_guess_answer == "yes" and person_eye != eye_guess:
            print("Eye colour does not match!")
            eliminate.append(person)
        elif eye_guess_answer == "no" and person_eye == eye_guess:
```

```python
            print("Eye colour does not match!")
            eliminate.append(person)
        elif hair_guess_answer == "yes" and person_hair != hair_guess:
            print("Hair colour does not match!")
            eliminate.append(person)
        elif hair_guess_answer == "no" and person_hair == hair_guess:
            print("Hair colour does not match!")
            eliminate.append(person)
        elif accessory_guess_answer == "yes" and person_accessory != accessory_guess:
            print("Accessory does not match!")
            eliminate.append(person)
        elif accessory_guess_answer == "no" and person_accessory == accessory_guess:
            print("Accessory does not match!")
            eliminate.append(person)

for person in eliminate:
    people.remove(person)

eliminate = []

guess = random.choice(people)
guess_name = guess[0]

answer = input("Is their name " + guess_name + "? ")

if answer == "yes":
    print("Well done! You guessed it!")
    break
else:
    people.remove(guess)
    print("Oh no :(")
```

Part 9: Extension: Read it in!

Task 9.1: Where have all the people gone?

1. Create an empty list of `people`.

You can `comment` out your list of `people` from earlier or delete it, whichever you prefer.

Task 9.2: Here they are!

1. Download the file `people.txt` from http://bit.ly/gpn-2018-4!
2. Make sure you save it in the same directory as your python file.

Task 9.3: Open sesame!

Use Python's *with open* to open the the text file.

Use this line just after you create your empty list to open your people file and read what it says.

```python
with open('x.txt') as f:
    DO SOMETHING
```

Task 9.4: Let's loop again

So we can open the file, but how do we get the people out?

We make another loop of course!
Use the code below inside your open statement to help you read in each of the lines in the file, one by one.

```python
for line in f:
    line = line.strip()
    parts = line.split(",")
    print(parts)
```

Hint

`with open` and the `for` loop both need to be indented. So if you're getting an error, make sure to check that your code is indented like below.

```python
for blah in something:
    THIS IS INDENTED
    for loop in loop:
        THIS IS REALLY REALLY INDENTED
```

Task 9.5: Append your people!

Now we have each of the people in the file, we want to add them to our `people` list. Try to do this using `append()`.

Task 9.6: Find your features!

As we're reading in from a text file, we might find people with different features. For example, we might get someone with pink hair, or grey eyes, or they might have a bracelet! These options aren't in our current feature lists eye_colours, hair_colours and accessories.

Create a **for** loop for so you can create the list `eye_colours`. Go through each **person** in the `people` list, and **if** their eye colour isn't in the list `eye_colours`, add it!

Then do the same for `hair_colours` and `accessories`!

☑ CHECKPOINT ☑

If you can tick all of these off, you have finished!

☐ You are using "with open" to open a file

☐ You use a loop to read each line in the file

☐ All of the people are appended to your people list

☐ The lists eye_colours, hair_colours and accessories are created from the people list.

☐ Your code runs without any problems

TUTOR TIPS

The code should look like this (no bonuses):

```
# <the student's name>
import random

print("""
----------------------------------------------------
Welcome to Guess Who!
----------------------------------------------------
Moves: Pick a person, and let the computer guess who you're thinking of. Type
```

```python
"yes" or "no" to answer the questions.

Good luck!
------------
""")

people = []

eliminate = []

with open("people.txt") as f:
        for line in f:
                line = line.strip()
                person = line.split(",")
                print(person)
                people.append(person)

eye_colours = []
hair_colours = []
accessories = []

for person in people:
        if person[1] not in eye_colours:
                eye_colours.append(person[1])

        if person[2] not in hair_colours:
                hair_colours.append(person[2])

        if person[3] not in accessories:
                accessories.append(person[3])

while True:

        if len(eye_colours) != 1:
            eye_guess = eye_colours[0]
            eye_guess_answer = input("Do they have " + eye_guess + " coloured
        eyes? ")
            if eye_guess_answer == "no":
                eye_colours.remove(eye_guess)
            else:
                eye_colours = [eye_guess]

        if len(hair_colours) != 1:
            hair_guess = hair_colours[0]
            hair_guess_answer = input("Do they have " + hair_guess + "
        coloured hair? ")
            if hair_guess_answer == "no":
                hair_colours.remove(hair_guess)
            else:
                hair_colours = [hair_guess]

        if len(accessories) != 1:
            accessory_guess = accessories[0]
            accessory_guess_answer = input("Do they have " + accessory_guess + "
```

```python
        for an accessory? ")
            if accesory_guess_answer == "no":
                accessories.remove(accessory_guess)
            else:
                accessories = [accessory_guess]

    for person in people:
            person_name = person[0]
            person_eye = person[1]
            person_hair = person[2]
            person_accessory = person[3]

            if eye_guess_answer == "yes" and person_eye != eye_guess:
                print("Eye colour does not match!")
                eliminate.append(person)
            elif eye_guess_answer == "no" and person_eye == eye_guess:
                print("Eye colour does not match!")
                eliminate.append(person)
            elif hair_guess_answer == "yes" and person_hair != hair_guess:
                print("Hair colour does not match!")
                eliminate.append(person)
            elif hair_guess_answer == "no" and person_hair == hair_guess:
                print("Hair colour does not match!")
                eliminate.append(person)
            elif accessory_guess_answer == "yes" and person_accessory != 
            accessory_guess:
                print("Accessory does not match!")
                eliminate.append(person)
            elif accessory_guess_answer == "no" and person_accessory == 
            accessory_guess:
                print("Accessory does not match!")
                eliminate.append(person)

    for person in eliminate:
        people.remove(person)

    eliminate = []

    guess = random.choice(people)
    guess_name = guess[0]

    answer = input("Is their name " + guess_name + "? ")

    if answer == "yes":
        print("Well done! You guessed it!")
        break
    else:
        people.remove(guess)
        print("Oh no :(")
```