Solutions - Chapter 5

5-3: Alien Colors #1

Imagine an alien was just shot down in a game. Create a variable called alien\_color and assign it a value of 'green', 'yellow', or 'red'.

* Write an if statement to test whether the alien’s color is green. If it is, print a message that the player just earned 5 points.
* Write one version of this program that passes the if test and another tha fails. (The version that fails will have no output.)

Passing version:

alien\_color **=** 'green'

**if** alien\_color **==** 'green':

**print**("You just earned 5 points!")

Output:

You just earned 5 points!

Failing version:

alien\_color **=** 'red'

**if** alien\_color **==** 'green':

**print**("You just earned 5 points!")

(no output)

5-4: Alien Colors #2

Choose a color for an alien as you did in Exercise 5-3, and write an if-else chain.

* If the alien’s color is green, print a statement that the player just earned 5 points for shooting the alien.
* If the alien’s coor isn’t green, print a statement that the player just earned 10 points.
* Write one version of this program that runs the if block and another that runs the elseblock.

if block runs:

alien\_color **=** 'green'

**if** alien\_color **==** 'green':

**print**("You just earned 5 points!")

**else**:

**print**("You just earned 10 points!")

Output:

You just earned 5 points!

else block runs:

alien\_color **=** 'yellow'

**if** alien\_color **==** 'green':

**print**("You just earned 5 points!")

**else**:

**print**("You just earned 10 points!")

Output:

You just earned 10 points!

5-5: Alien Colors #3

Turn your if-else chain from Exercise 5-4 into an if-elif-else cahin.

* If the alien is green, print a message that the player earned 5 points.
* If the alien is yellow, print a message that the player earned 10 points.
* If the alien is red, print a message that the player earned 15 points.
* Write three versions of this program, making sure each message is printed for the appropriate color alien.

alien\_color **=** 'red'

**if** alien\_color **==** 'green':

**print**("You just earned 5 points!")

**elif** alien\_color **==** 'yellow':

**print**("You just earned 10 points!")

**else**:

**print**("You just earned 15 points!")

Output for 'red' alien:

You just earned 15 points!

5-6: Stages of Life

Write an if-elif-else cahin that determines a person’s stage of life. Set a value for the variableage, and then:

* If the person is less than 2 years old, print a message that the person is a baby.
* If the person is at least 2 years old but less than 4, print a message that the person is a toddler.
* If the person is at least 4 years old but less than 13, print a message that the person is a toddler.
* If the person is at least 13 years old but less than 20, print a message that the person is a toddler.
* If the person is at least 20 years old but less than 65, print a message that the person is a toddler.
* If the person is age 65 or older, print a message that the person is an elder.

age **=** 17

**if** age **<** 2:

**print**("You're a baby!")

**elif** age **<** 4:

**print**("You're a toddler!")

**elif** age **<** 13:

**print**("You're a kid!")

**elif** age **<** 20:

**print**("You're a teenager!")

**elif** age **<** 65:

**print**("You're an adult!")

**else**:

**print**("You're an elder!")

Output:

You're a teenager!

5-7: Favorite Fruit

Make a list of your favorite fruits, and then write a series of independent if statements that check for certain fruits in your list.

* Make a list of your three favorite fruits and call it favorite\_fruits.
* Write five if statements. Each should check whether a certain kind of fruit is in your list. If the fruit is in your list, the if block should print a statement, such as *You really like bananas!*

favorite\_fruits **=** ['blueberries', 'salmonberries', 'peaches']

**if** 'bananas' **in** favorite\_fruits:

**print**("You really like bananas!")

**if** 'apples' **in** favorite\_fruits:

**print**("You really like apples!")

**if** 'blueberries' **in** favorite\_fruits:

**print**("You really like blueberries!")

**if** 'kiwis' **in** favorite\_fruits:

**print**("You really like kiwis!")

**if** 'peaches' **in** favorite\_fruits:

**print**("You really like peaches!")

Output:

You really like blueberries!

You really like peaches!

5-8: Hello Admin

Make a list of five or more usernnames, including the name 'admin'. Imagine you are writing code that will print a greeting to each user after they log in to a website. Loop through the list, and print a greeting to each user:

* If the username is 'admin', print a special greeting, such as *Hello admin, would you like to see a status report?*
* Otherwise, print a generic greeting, such as *Hello Eric, thank you for loggin in again.*

usernames **=** ['eric', 'willie', 'admin', 'erin', 'ever']

**for** username **in** usernames:

**if** username **==** 'admin':

**print**("Hello admin, would you like to see a status report?")

**else**:

**print**("Hello " **+** username **+** ", thank you for logging in again!")

Output:

Hello eric, thank you for logging in again!

Hello willie, thank you for logging in again!

Hello admin, would you like to see a status report?

Hello erin, thank you for logging in again!

Hello ever, thank you for logging in again!

5-9: No Users

Add an if test to *hello\_admin.py* to make sure the list of users is not empty.

* If the list is emtpy, print the message *We need to find some users!*
* Remove all of the usernames from your list, and make sure the correct message is printed.

usernames **=** []

**if** usernames:

**for** username **in** usernames:

**if** username **==** 'admin':

**print**("Hello admin, would you like to see a status report?")

**else**:

**print**("Hello " **+** username **+** ", thank you for logging in again!")

**else**:

**print**("We need to find some users!")

Output:

We need to find some users!

5-10: Checking Usernames

Do the following to create a program that simulates how websites ensure that everyone has a unique username.

* Make a list of five or more usernames called current\_users. Make another list of five usernames called new\_users. Make sure one or two of the new usernames are also in thecurrent\_users list.
* Loop through the new\_users list to see if each new username has already been used. If it has, print a message that the person will need to enter a new username. If a username has not been used, print a message saying that the username is available.
* Make sure your comparison is case insensitive. If 'John' has been used, 'JOHN' should not be accepted.

current\_users **=** ['eric', 'willie', 'admin', 'erin', 'Ever']

new\_users **=** ['sarah', 'Willie', 'PHIL', 'ever', 'Iona']

current\_users\_lower **=** [user**.**lower() **for** user **in** current\_users]

**for** new\_user **in** new\_users:

**if** new\_user**.**lower() **in** current\_users\_lower:

**print**("Sorry " **+** new\_user **+** ", that name is taken.")

**else**:

**print**("Great, " **+** new\_user **+** " is still available.")

Output:

Great, sarah is still available.

Sorry Willie, that name is taken.

Great, PHIL is still available.

Sorry ever, that name is taken.

Great, Iona is still available.

Note: If you’re not comfortable with list comprehensions yet, the list current\_users\_lower can be generated using a loop:

current\_users\_lower **=** []

**for** user **in** current\_users:

current\_users\_lower**.**append(user**.**lower())

5-11: Ordinal Numbers

Ordinal numbers indicate their position in a list, such as *1st* or *2nd*. Most ordinal numbers end in*th*, except 1, 2, and 3.

* Store the numbers 1 through 9 in a list.
* Loop through the list.
* Use an if-elif-else chain inside the loop to print the proper ordinal ending for each number. Your output should read "1st 2nd 3rd 4th 5th 6th 7th 8th 9th", and each result should be on a separate line.

numbers **=** list(range(1,10))

**for** number **in** numbers:

**if** number **==** 1:

**print**("1st")

**elif** number **==** 2:

**print**("2nd")

**elif** number **==** 3:

**print**("3rd")

**else**:

**print**(str(number) **+** "th")

Output:

1st

2nd

3rd

4th

5th

6th

7th

8th

9th