

Concatenation with Python Turtles

Textbook

Concatenation with Python Turtles



[Concatenation](#) is a very long word which means to combine two strings together.

You can also combine a variable and a string together.

You cannot combine a string and a number together.

Concatenation is done with the plus sign `+`. Think of it as adding words together to make a sentence.

Concatenation Examples

Let's see how concatenation works.

```
1 print("Good" + "Morning")
```

This will print out `GoodMorning`

Try this to add a space:

```
1 print("Good" + " " + "Morning")
```

This will print out `Good Morning`

Concatenation with Variables

We can also concatenate with variables that also contain strings. Let's see some examples.

```
1 first = "Jill"
2 full = first + "Johnson"
3
4 print(full)
```

This will print out `JillJohnson` in the console.

Let's explore what's happening in this code.

1. We created a variable named `first` and assigned it to the string `"Jill"`.
2. We then created a variable named `full` and assigned it to the variable named `first` concatenated with the string `"Johnson"`.

Notice how there is not a space in between `Jill` and `Johnson`. Concatenation does not add any spaces. The code below will fix that problem

```
1 first = "Jill"
2 full = first + " Johnson"
3
4 print(full)
```

This will print out `Jill Johnson`. In this example, we added a space before the string like this:

```
" Johnson"
```

Adding a Space Between Two Variables

Let's examine another example.

```
1 first = "Jill"
2 last = "Johnson"
3 full = first + last
4
5 print(full)
```

Here is another example of concatenation. This time, we are concatenating two variable names together `first + last`.

In this scenario, how would we add a space between the first and last name?

You can add a custom space using an empty string.

```
1 first = "Jill"
2 last = "Johnson"
3 full = first + " " + last
4
5 print(full)
```

In this example, while concatenating we inserted a string with a space inside. This will assure a space between the first and last name.

You Cannot Concatenate with an Integer

You can't concatenate with an integer. This is like trying to add words to a number—it's not done. The following code will throw an error.

```
1 print(4 + "Hello")
```

Here's another example.

```
1 age = 10
2 print("Hello! I am " + 10)
```

This will also throw an error. This is because you can't concatenate [strings](#) and integers. We will learn more about these data types in future lessons.

Inputs are Strings

Inputs are automatically accepted as strings, which is why this code runs just fine.

```
1 age = input("How old are you?")
2 print("You are " + age + " years old.")
```

The number you put in for the input is actually accepted as a string, which can be concatenated without a problem.

Checkpoint

Concatenation with Python Turtles

Practice concatenation.

1. Include the necessary code to start up a Python screen. (Import the library and generate a screen.)
2. Create a print statement that concatenates two strings together within the print statement. It should concatenate the string `water` and the string `melon` together. Don't worry about adding a space between them.
3. Create a variable named `fruit`. Assign it to an input that says `Enter a fruit`.

4. On a separate line, create a print statement that concatenates a variable with a string. The variable name should be `fruit` and the string should say `is so yummy!` .

Requirements:

- Include the necessary code to start up a Python screen. (Import the library and generate a screen.)
- Create a print statement that concatenates two strings together within the print statement. It should concatenate the string `water` and the string `melon` together. Don't worry about adding a space between them.
- Create a variable named `fruit` . Assign it to an input that says `Enter a fruit` .
- On a separate line, create a print statement that concatenates a variable with a string. The variable name should be `fruit` and the string should say `is so yummy!` .

Questions (10)

1. What is concatenation?

MULTIPLE CHOICE

Choose the correct answer:

- A. Multiplying strings together.
- B. Combining strings together.
- C. Dividing strings apart.
- D. Importing strings from outside libraries.

2. How is concatenation typically performed in Python?

MULTIPLE CHOICE

Choose the correct answer:

- A. Using the asterisk (*) symbol.
- B. Using the ampersand (&) symbol.
- C. Using the plus (+) sign.
- D. Using the hyphen (-) symbol.

3. True or False: You can concatenate strings and integers together.

MULTIPLE CHOICE

Choose the correct answer:

- A. True
- B. False

4. What would be the output of the following code?

```
print("Good" + " " + "Morning")
```

Choose the correct answer:

- A. GoodMorning
- B. "Good Morning"
- C. Good Morning
- D. Good + Morning

5. How do you add a space between the variables first and last in concatenation?**Choose the correct answer:**

- A. first + last
- B. first - last
- C. first * last
- D. first + " " + last

6. Why does the following code throw an error?

```
print(4 + "Hello")
```

Choose the correct answer:

- A. Mixing data types (integer and string).
- B. Incorrect syntax.
- C. Missing quotation marks.
- D. Invalid variable names.

7. What kind of data type are inputs?**Choose the correct answer:**

- A. string
- B. integer
- C. boolean
- D. float

8. True or False: You cannot concatenate a variable.

MULTIPLE CHOICE

Choose the correct answer:

- A. True
- B. False

9. Debug the following code:

DEBUG CODE

Code to Debug:

```
1 print(Hello" + " there")
```

10. Debug the following code:

DEBUG CODE

Code to Debug:

```
1 first = "Blake"
2 print(first + " Tucker")
```

Challenges (5)

1. First and Last Name

Practice concatenating a first name with a last name.

1. Include the necessary code to start up a Python screen. (Import the library and generate a screen.)
2. Create a variable named `first_name` . Assign it to an input that says `What is your first name?` .
3. Create a variable named `last_name` . Assign it to an input that says `What is your last name?` .
4. On a separate line, create a print statement that concatenates the variable `first_name` with the variable `last_name` . Add a space between the two variables using `" "` .

Requirements:

- Include the necessary code to start up a Python screen. (Import the library and generate a screen.)
- Create a variable named `first_name` . Assign it to an input that says `What is your first name?` .
- Create a variable named `last_name` . Assign it to an input that says `What is your last name?` .
- On a separate line, create a print statement that concatenates the variable `first_name` with the variable `last_name` . Add a space between the two variables using `" "` .

2. Dinosaurs!

Practice concatenating with dinosaurs!

1. Include the necessary code to start up a Python screen. (Import the library and generate a screen.)
2. Create a print statement that concatenates two strings together within the print statement. It should concatenate the string `blue` and the string `dinosaur` together. Make sure there is a space between them by adding a space in the string `dinosaur` .
3. Create a variable named `dino` . Assign it to an input that says `What is your favorite dinosaur?` .
4. On a separate line, create a print statement that concatenates a string with a variable. The string should say `My favorite dinosaur is the` and the variable name should be `dino` .

Requirements:

- Include the necessary code to start up a Python screen. (Import the library and generate a screen.)
- Create a print statement that concatenates two strings together within the print statement. It should concatenate the string `blue` and the string `dinosaur` together. Make sure there is a space between them by adding a space in the string `dinosaur` .
- Create a variable named `dino` . Assign it to an input that says `What is your favorite dinosaur?` .
- On a separate line, create a print statement that concatenates a string with a variable. The string should say `My favorite dinosaur is the` and the variable name should be `dino` .

3. Turtle Name Continued

From a previous checkpoint, we gave the turtle a custom name from the user by using the following code.

```
turtle_name = input("What is the turtle's name?")

import turtle

turtle.getscreen()

print(turtle_name)
```

Now that we know how to concatenate, add some concatenation to this code! When we take previous projects and improve on them, that's called iteration. By iterating, we can take code and make it better when we learn more skills!

1. Copy the code from the previous checkpoint and paste it into your code editor.
2. In the print statement, adjust the code that it will print out the string `Hello my name is` concatenated with the variable named `turtle_name` . Add the space at the end of the string in the print statement.

Requirements:

- Copy the code from the previous checkpoint and paste it into your code editor.
- In the print statement, adjust the code that it will print out the string `Hello my name is` concatenated with the variable named `turtle_name` . Add the space at the end of the string in the print statement.

4. Dream Vacation

What would your dream vacation be like? Where would you go? What would you do? What would you eat? Explore these ideas while you practice concatenation.

Practice concatenating 3 variables into one print statement.

1. Include the necessary code to start up a Python screen. (Import the library and generate a screen.)
2. Create a variable named `place` and assign it to a string of a place you'd like to go.
3. Create a variable named `activity` and assign it to a string of an activity you'd like to do.
4. Create a variable named `food` and assign it to a string of a food you'd like to eat.
5. In a print statement, concatenate the 3 variables together with some strings. Do it in a way that the final sentence would look like the following if the variables were the `beach` , `ziplining` , and `seafood` respectively:

```
My dream vacation would be a trip to the beach, where we would go ziplining and eat seafood.
```

Hint: Make sure to add spaces where they need to go on your string so the spacing is correct.

Requirements:

- Include the necessary code to start up a Python screen. (Import the library and generate a screen.)
- Create a variable named `place` and assign it to a string of a place you'd like to go.
- Create a variable named `activity` and assign it to a string of an activity you'd like to do.
- Create a variable named `food` and assign it to a string of a food you'd like to eat.
- In a print statement, concatenate the 3 variables together with some strings. (Make sure to match the string in the instructions above).

5. Mad Lib

Create a mad lib using input statements and concatenation!

1. Include the necessary code to start up a Python screen. (Import the library and generate a screen.)
2. Create a variable named `noun` . Assign it to an input that says `Enter a noun` .
3. Create a variable named `place` . Assign it to an input that says `Enter a place` .
4. Create a variable named `adj` . Assign it to an input that says `Enter an adjective` .
5. Create a single print statement that will concatenate the 3 variables into a sentence that matches the example below.

```
I was walking my pet brick to the park. He's a very shiny pet!
```

Replace the word `brick` with the `noun` variable. Replace the word `park` with the `place` variable. Replace the word `shiny` with the `adj` variable. Use concatenation.

Requirements:

- Include the necessary code to start up a Python screen. (Import the library and generate a screen.)
- Create a variable named `noun` . Assign it to an input that says `Enter a noun` .
- Create a variable named `place` . Assign it to an input that says `Enter a place` .
- Create a variable named `adj` . Assign it to an input that says `Enter an adjective` .
- Create a single print statement that will concatenate the 3 variables into a sentence that matches the example above.

Answer Keys & Solutions

Checkpoint Solutions

Concatenation with Python Turtles

```
1 import turtle
2 turtle.getscreen()
3
4 print("water" + "melon")
5
6 fruit = input("Enter a fruit")
7
8 print(fruit + " is so yummy!")
```

Questions

1. What is concatenation?

MULTIPLE CHOICE

Correct Answer:

- A. Multiplying strings together. ✗ Incorrect
- B. Combining strings together. ✓ Correct
- C. Dividing strings apart. ✗ Incorrect
- D. Importing strings from outside libraries. ✗ Incorrect

Explanation:

Concatenation is just adding strings together.

2. How is concatenation typically performed in Python?

MULTIPLE CHOICE

Correct Answer:

- A. Using the asterisk (*) symbol. ✗ Incorrect
- B. Using the ampersand (&) symbol. ✗ Incorrect
- C. Using the plus (+) sign. ✓ Correct
- D. Using the hyphen (-) symbol. ✗ Incorrect

Explanation:

Concatenation is a lot like "adding" strings together.

3. True or False: You can concatenate strings and integers together.

MULTIPLE CHOICE

Correct Answer:

- A. True ✗ Incorrect
- B. False ✓ Correct

Explanation:

Only strings can be concatenated together.

4. What would be the output of the following code?

MULTIPLE CHOICE

Correct Answer:

- A. GoodMorning ✗ Incorrect
- B. "Good Morning" ✗ Incorrect
- C. Good Morning ✓ Correct
- D. Good + Morning ✗ Incorrect

5. How do you add a space between the variables first and last in concatenation?

MULTIPLE CHOICE

Correct Answer:

- A. first + last ✗ Incorrect
- B. first - last ✗ Incorrect
- C. first * last ✗ Incorrect
- D. first + " " + last ✓ Correct

Explanation:

This is an example of an empty space in a string. " "

6. Why does the following code throw an error?

MULTIPLE CHOICE

Correct Answer:

- A. Mixing data types (integer and string). ✓ Correct
- B. Incorrect syntax. ✗ Incorrect
- C. Missing quotation marks. ✗ Incorrect
- D. Invalid variable names. ✗ Incorrect

Explanation:

You cannot concatenate an integer

7. What kind of data type are inputs?

MULTIPLE CHOICE

Correct Answer:

- A. string ✓ Correct
- B. integer ✗ Incorrect
- C. boolean ✗ Incorrect
- D. float ✗ Incorrect

Explanation:

Inputs are strings.

8. True or False: You cannot concatenate a variable.

MULTIPLE CHOICE

Correct Answer:

- A. True ✗ Incorrect
- B. False ✓ Correct

Explanation:

As long as the variable holds a string, it can be concatenated.

9. Debug the following code:

DEBUG CODE

Incorrect Code:

```
1 print(Hello" + " there")
```

Correct Solution:

```
1 print("Hello" + " there")
```

Explanation:

This code is missing a quotation mark

10. Debug the following code:

DEBUG CODE

Incorrect Code:

```
1 first = "Blake"  
2 print(first + " Tucker"
```

Correct Solution:

```
1 first = "Blake"  
2 print(first + " Tucker")
```

Explanation:

This code is missing a parenthesis

Challenges**1. First and Last Name****Solution:**

```
1 import turtle  
2 turtle.getscreen()  
3  
4 first_name = input("What is your first name?")  
5  
6 last_name = input("What is your last name?")  
7
```

```
8 print(first_name + " " + last_name)
```

2. Dinosaurs!

Solution:

```
1 import turtle
2 turtle.getscreen()
3
4 print("blue" + " dinosaur")
5
6 dino = input("What is your favorite dinosaur?")
7
8 print("My favorite dinosaur is the " + dino)
```

3. Turtle Name Continued

Solution:

```
1 turtle_name = input("What is the turtle's name?")
2
3 import turtle
4 turtle.getscreen()
5
6 print("Hello my name is " + turtle_name)
```

4. Dream Vacation

Solution:

```
1 import turtle
2 turtle.getscreen()
3
4 place = "the beach"
5
6 activity = "ziplining"
7
8 food = "seafood"
9
10
11 print("My dream vacation would be to " + place + " and we would go " + activity + "
    and eat " + food + ".")
```

5. Mad Lib

Solution:

```
1 import turtle
2 turtle.getscreen()
```

```
3
4 noun = input("Enter a noun")
5
6 place = input("Enter a place")
7
8 adj = input("Enter an adjective")
9
10
11 print("I was walking my pet " + noun + " to the " + place + ". He's a very " + adj +
    " pet!")
```