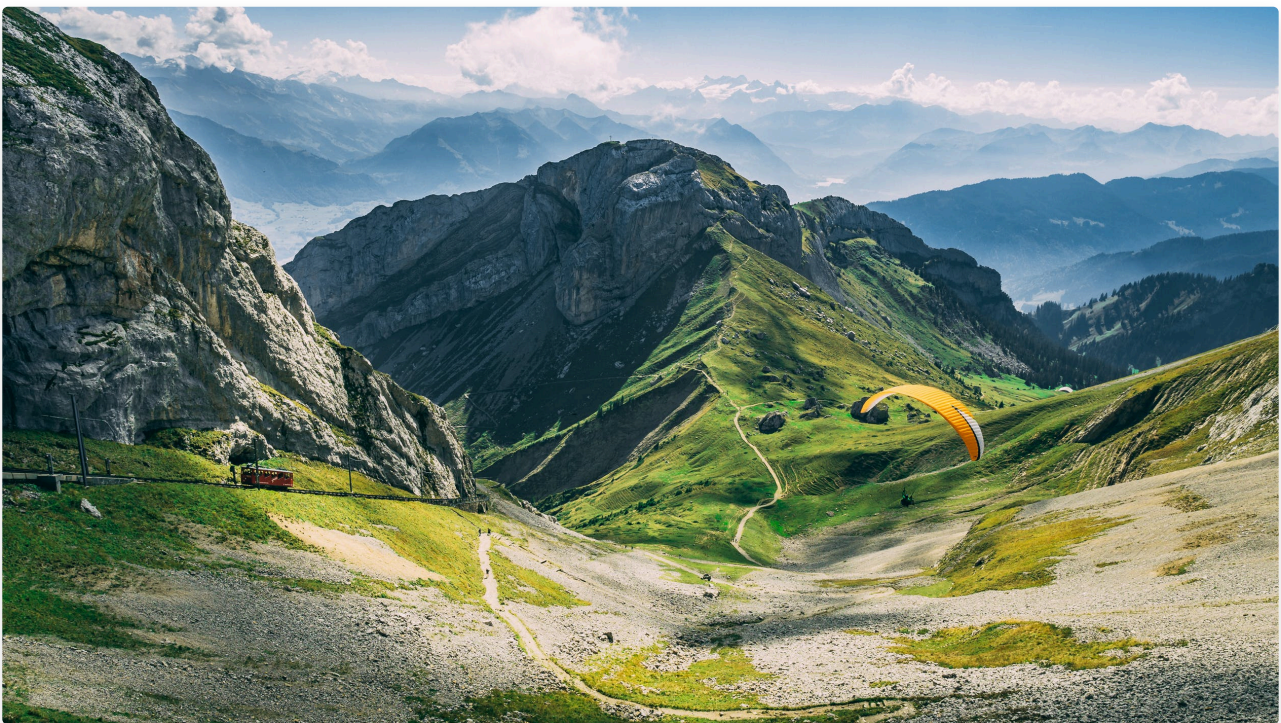


# Python Concatenation

## Textbook

### Concatenation

[Concatenation](#) is a very long word which means to combine two strings together. This works with variables and other strings that haven't been assigned to a variable yet. Concatenation is accomplished with the plus sign (+). Think of it as adding words together to make a sentence.



### Concatenation Examples

As mentioned, concatenation can be used with string variables and/or new strings. Below you will find several examples

```
1 string1 = "Paragliding is"  
2 string2 = "daring"  
3 string3 = string1 + string2  
4  
5 print(string3) #outputs "Paragliding isdaring"  
6
```

Try it!

This code creates two string variables and concatenates them together with the plus sign. After they are added together, they are assigned to a new variable, string3, and are printed out to the console.

- Notice how there is not a space in between "is" and "daring." Concatenation does not add any spaces. The code below will fix that problem

```
1 string1 = "Paragliding is"
2 string2 = "daring"
3 string3 = string1 + " " + string2 # this line of code combines two string variables and
  an unassigned string.
4
5 print(string3) # outputs "Paragliding is daring"
6
```

Try it!

# STRING CONCATENATION

Python



Skill  
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## Concatenating an Integer

Concatenation can only be done with strings. So how do you put an integer into your sentence? You need to first convert your integers to a string, then you can concatenate them together.

The following code will throw an error because you cannot concatenate an integer into a string.

```
1 age = 12
2 print("You are " + age + " years old.")
```

Try it!

This is because the computer doesn't know if you are trying to concatenate with that number or to do arithmetic with it! The "+" symbol is confusing to the computer.

To clarify what we want the computer to do, we convert our integer into a string when we concatenate it.

```
1 age = 12
```

```
2 print("You are " + str(age) + " years old.")
```

Try it!

(If you need to review converting, refer to the Converting lesson.)

As a review, 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.")
```

Try it!

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

## Checkpoint

### Concatenation

Print **three strings** concatenated together into a **new string**.

1. Create 3 variables and assign them to strings.
2. Create a 4th variable and assign it to the three variables concatenated together.
3. Print the new, 4th variable.
4. You can add new strings in to help it make sense.

#### Requirements:

- Declare three variables that are assigned to strings.
- Concatenate the three variables together and store them in a new variable.

## Questions (10)

### 1. What is concatenation?

MULTIPLE CHOICE

Choose the correct answer:

- A. Adding strings together.
- B. Splitting up strings.
- C. Printing strings.
- D. A kind of string method.

### 2. Edit the text box below to debug (fix) the code:

DEBUG CODE

Code to Debug:

```
1 newString = firstString * secondString
```

**3. What is the maximum number of strings you can concatenate?**

**Choose the correct answer:**

- A. 5
- B. 10
- C. 15
- D. There is no limit

**4. What is a simple way to concatenate an integer?**

**Choose the correct answer:**

- A. Convert it to a string.
- B. Convert it to a float.
- C. Divide it by .5.
- D. Add it like any other string using the plus + symbol.

**5. What data type is concatenation used for?**

**Choose the correct answer:**

- A. strings
- B. integers
- C. booleans
- D. floats

**6. What will the following code print out?**

```
string1 = "I like to eat" string2 = "donuts." print(string1 + string2)
```

**Choose the correct answer:**

- A. I like to eatdonuts.
- B. I like to eat donuts.
- C. I like to eat donuts
- D. donuts I like to eat

MULTIPLE CHOICE

**7. What will the following code print out?**

```
string1 = "I like to" string2 = "swim." print(string1 + " " + string2)
```

**Choose the correct answer:**

- A. I like to swim.
- B. I like toswim.
- C. I like to swim
- D. swim I like to

DEBUG CODE

**8. Debug the following code. Assume you are concatenating the variables together.****Code to Debug:**

```
1 string1 = "I won "  
2 string2 = "the game."  
3  
4 print(string1 + string2
```

MULTIPLE CHOICE

**9. What data type is an input automatically accepted as?****Choose the correct answer:**

- A. String
- B. Integer
- C. Float
- D. Boolean

MULTIPLE CHOICE

**10. Which symbol is used for concatenation in Python?****Choose the correct answer:**

- A. +
- B. ^
- C. %
- D. #

## Challenges (5)

### 1. Personal Info

Write a program where the user inputs their **name**, **age**, and **birthday** (in that exact order), then prints that information back to them. Make sure the output matches exactly! Check spacing, spelling, and punctuation.

*For example*

Inputs: `Jasmine` , `15` , `December 5`

Output: `Hi Jasmine! You are 15 years old and you were born on December 5.`

*Another example*

Inputs: `Dorothy` , `12` , `Jan 1`

Output: `Hi Dorothy! You are 12 years old and you were born on Jan 1.`

Don't forget the **period** at the end! (There's one space between sentences.)

Remember that inputs are automatically accepted as strings!

### 2. Combine Strings and Integer Inputs

Write a program that takes two inputs from the user - the first is an integer and the second is a string. Remember how inputs are automatically accepted as strings? That means, if you put in the number 45 as an input, the computer will see it as the string "45".

This makes it easy to concatenate inputs because they will all automatically be strings!

Print out both inputs in one print statement. **Remember you can combine strings by using a "+" sign between them.**

For this challenge, the number should come first.

*For example:*

Inputs: `4` and `test`

Output: `4test`

*Another example:*

Inputs: `10` and `lives`

Output: `10lives`

### 3. Crazy Concatenation Sentence

Create a crazy sentence using concatenation!

Create 4 variables and assign them to inputs: animal place noun adjective

Concatenate the answers into a print statement like this: **"Today I rode a (animal) to the (place) to buy some (plural noun). It was (adjective)."**

*For example:*

Inputs: `shark` , `gym` , `guitars` , `spicy`

Output: `Today I rode a shark to the gym to buy some guitars. It was spicy.`

*Another example:*

Inputs: `shrimp` , `gazebo` , `toenails` , `feisty`

Output: `Today I rode a shrimp to the gazebo to buy some toenails. It was feisty.`

**Don't forget the period at the end!**

### 4. Halloween Candy Count

You just got back from an awesome night of trick or treating! Create a program that will print out the totals of all your delicious candies. Create the following inputs and assign them to variables:

**1. How many snickers you got.**

**2. How many nerds you got.**

**3. How many butterfingers you got.**

Print out the number of candies in the following format and calculate the grand total. Reminder to match punctuation, spacing, and spelling exactly! There's one space between sentences.

*For example:*

Inputs: `12` , `6` , `8`

Output: `This year, you got 12 snickers, 6 nerds, and 8 butterfingers.`

Inputs: `2` , `4` , `6` ,

Output: `This year, you got 2 snickers, 4 nerds, and 6 butterfingers.`

Make sure to convert the variables to the proper variable type!

## 5. Detective Buggy's Message

Detective Buggy needs to send an urgent message to his assistant. But he can't seem to get the message to come out right! Can you help him fix his message so it will send with correct spacing and punctuation?

Here is the message he wants to send: `I have an important message for Clara. Meet me at the park in 20 minutes. From, Detective Buggy.`

Copy his code and paste it into your editor and **find the bugs!**

Here is his code:

```
recipient = input(Who is the message for?)

place = "Where do you want to meet?"

minutes = input("In how many minutes would you like to meet?")

print(I have an important message for recipent" + "Meet me at the place + "in" + minutes + " minutes.
Detective Buggy."
```

For example:

Inputs: `Clara` , `park` , `20`

Output: `I have an important message for Clara. Meet me at the park in 20 minutes. From, Detective Buggy.`

Another example:

Inputs: `Liza` , `mall` , `30`

Output: `I have an important message for Liza. Meet me at the mall in 30 minutes. From, Detective Buggy.`



## Answer Keys & Solutions

### Checkpoint Solutions

#### Concatenation

```
1 string1 = "I love to "  
2 string2 = "eat food "  
3 string3 = "and go skiing."  
4  
5 together = string1 + string2 + string3  
6  
7 print(together)
```

### Questions

#### 1. What is concatenation?

MULTIPLE CHOICE

##### Correct Answer:

- A. Adding strings together. ✓ Correct
- B. Splitting up strings. ✗ Incorrect
- C. Printing strings. ✗ Incorrect
- D. A kind of string method. ✗ Incorrect

##### Explanation:

Here is an example of concatenation: "Hello " + name + "! Welcome to the party!"

#### 2. Edit the text box below to debug (fix) the code:

DEBUG CODE

##### Incorrect Code:

```
1 newString = firstString * secondString
```

##### Correct Solution:

```
1 newString = firstString + secondString
```

##### Explanation:

Concatenation is like adding words together.

### 3. What is the maximum number of strings you can concatenate?

MULTIPLE CHOICE

Correct Answer:

- A. 5 ✗ Incorrect
- B. 10 ✗ Incorrect
- C. 15 ✗ Incorrect
- D. There is no limit ✓ Correct

#### Explanation:

Concatenation can sometimes have many strings added together.

### 4. What is a simple way to concatenate an integer?

MULTIPLE CHOICE

Correct Answer:

- A. Convert it to a string. ✓ Correct
- B. Convert it to a float. ✗ Incorrect
- C. Divide it by .5. ✗ Incorrect
- D. Add it like any other string using the plus + symbol. ✗ Incorrect

#### Explanation:

Only strings can be concatenated.

### 5. What data type is concatenation used for?

MULTIPLE CHOICE

Correct Answer:

- A. strings ✓ Correct
- B. integers ✗ Incorrect
- C. booleans ✗ Incorrect

D. floats

✗ Incorrect

### Explanation:

Concatenation is like adding words together.

## 6. What will the following code print out?

MULTIPLE CHOICE

### Correct Answer:

A. I like to eatdonuts.

✓ Correct

B. I like to eat donuts.

✗ Incorrect

C. I like to eat donuts

✗ Incorrect

D. donuts I like to eat

✗ Incorrect

### Explanation:

If you don't add a space within your string, the concatenated result will not have a space.

## 7. What will the following code print out?

MULTIPLE CHOICE

### Correct Answer:

A. I like to swim.

✓ Correct

B. I like toswim.

✗ Incorrect

C. I like to swim

✗ Incorrect

D. swim I like to

✗ Incorrect

### Explanation:

If you don't add a space within your string, the concatenated result will not have a space.

## 8. Debug the following code. Assume you are concatenating the variables together.

DEBUG CODE

### Incorrect Code:

```
1 string1 = "I won "  
2 string2 = "the game."  
3  
4 print(string1 + string2
```

#### Correct Solution:

```
1 string1 = "I won "  
2 string2 = "the game."  
3  
4 print(string1 + string2)
```

#### Explanation:

Don't forget to close your quotation marks and parentheses!

### 9. What data type is an input automatically accepted as?

MULTIPLE CHOICE

#### Correct Answer:

- |            |             |
|------------|-------------|
| A. String  | ✓ Correct   |
| B. Integer | ✗ Incorrect |
| C. Float   | ✗ Incorrect |
| D. Boolean | ✗ Incorrect |

#### Explanation:

Even integer inputs become a different data type when entered.

### 10. Which symbol is used for concatenation in Python?

MULTIPLE CHOICE

#### Correct Answer:

- |      |             |
|------|-------------|
| A. + | ✓ Correct   |
| B. ^ | ✗ Incorrect |
| C. % | ✗ Incorrect |
| D. # | ✗ Incorrect |

#### Explanation:

Concatenation is kind of like adding sentences together.

### 1. Personal Info

Solution:

```
1 name = input("What is your name?")
2 age = input("What is your age?")
3 birthday = input("When is your birthday?")
4
5 print("Hi " + name + "! You are " + age + " years old and you were born on " +
  birthday + ".")
```

### 2. Combine Strings and Integer Inputs

Solution:

```
1 number = input("Pick your favorite number")
2
3 word = input("Pick your favorite word.")
4
5
6 print(number + word)
```

### 3. Crazy Concatenation Sentence

Solution:

```
1 animal = input("Name an animal")
2 place = input("Name a place")
3 noun = input("Name a plural noun")
4 adjective = input("Name an adjective")
5
6 print("Today I rode a " + animal + " to the " + place + " to buy some " + noun + ".
  It was " + adjective + ".")
```

### 4. Halloween Candy Count

Solution:

```
1 snickers = int(input("How many snickers did you get?"))
2
3 nerds = int(input("How many nerds did you get?"))
4
5 butterfingers = int(input("How many butterfingers did you get?"))
6
7 total = snickers + nerds + butterfingers
8
9 print("This year, you got " + str(snickers) + " snickers, " + str(nerds) + " nerds,
  and " + str(butterfingers) + " butterfingers.")
```

## 5. Detective Buggy's Message

Solution:

```
1 recipient = input("Who is the message for?")
2
3 place = input("Where do you want to meet?")
4
5 minutes = input("In how many minutes would you like to meet?")
6
7 print("I have an important message for " + recipient + ". Meet me at the " + place +
  " in " + minutes + " minutes. From, Detective Buggy." )
```