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String variables and asking a user to enter a value

input

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Two way conversations allow you to do more with computers

- Websites need your address and payment information so they can ship you products
- Insurance companies need information to calculate how much you would pay for car insurance
- Even calculators need you to enter the numbers before they can tell you the answer
- Cortana will tell you a joke if you ask her

How can we ask a user for information?

```
name = input("What is your name? ")
```

The **input** function allows you to specify a message to display and returns the value typed in by the user.

We use a variable to remember the value entered by the user.

We called our variable “name” but you can call it just about anything as long the variable name doesn’t contain spaces

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Asking a user for input

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Where do we store values?

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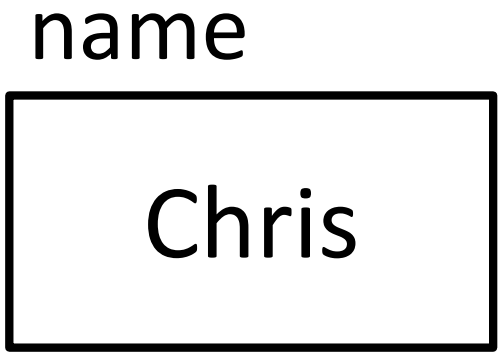
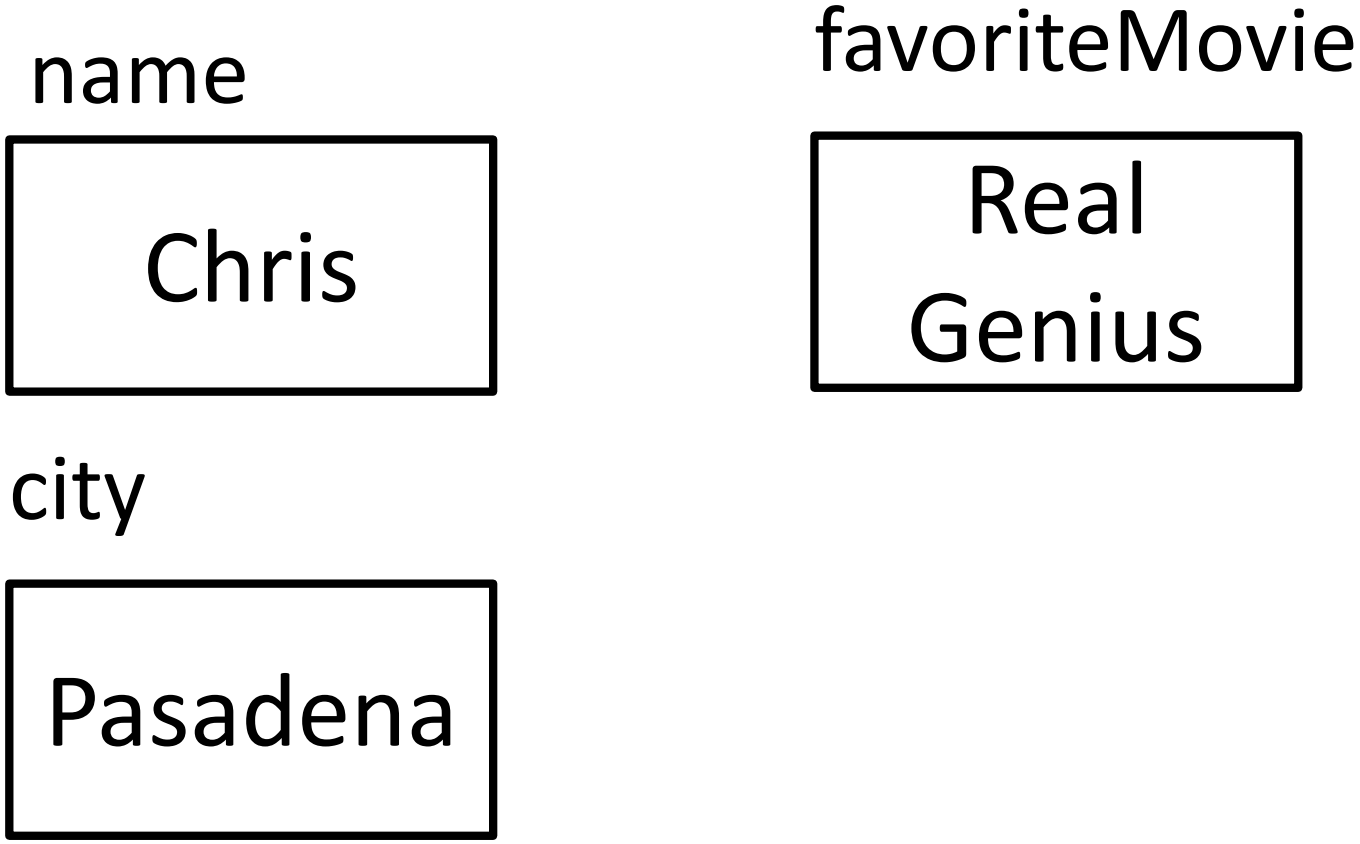
Think of a variable as a box where you can store something and come back to get it later.

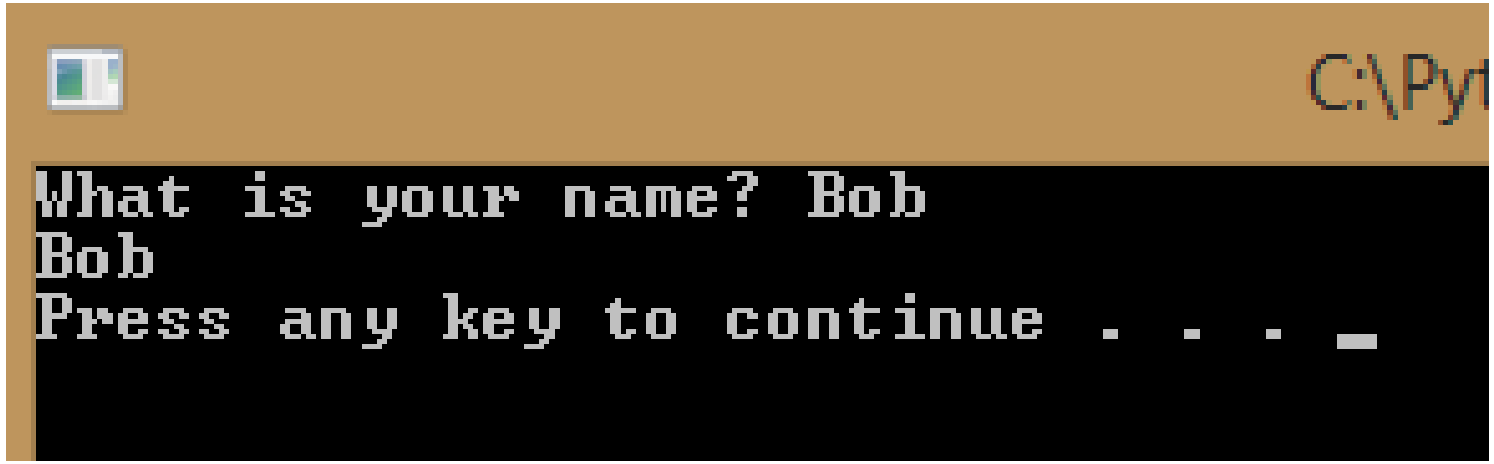


If you need to remember more than one value, just create more variables



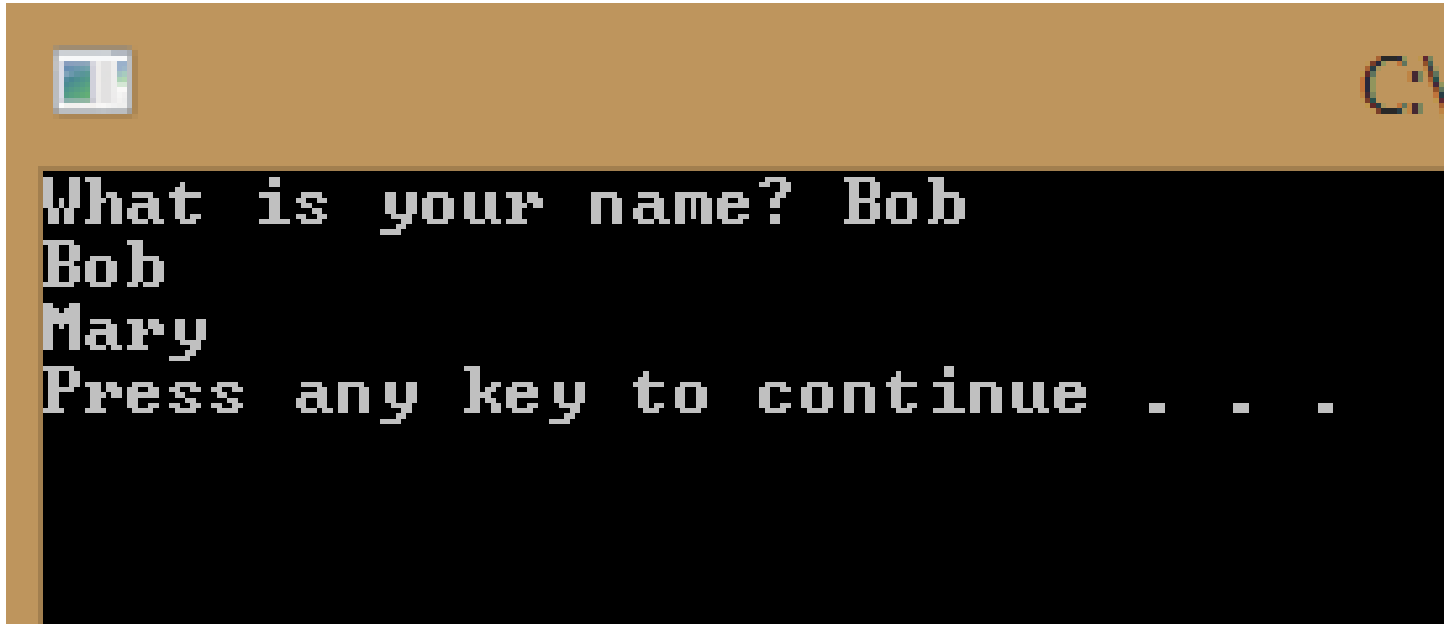
You can access the value you stored later in your code

```
name = input("What is your name? ")
print(name)
```



You can also change the value of a variable later in the code

```
name = input("What is your name? ")
print(name)
name = "Mary"
print(name)
```



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Accessing a value entered by a user

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What should I call them?

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Variable names

- Rules
  - Can not contain spaces
  - Are case sensitive
    - firstName and firstname would be two different variables
  - Cannot start with a number
- Guidelines
  - Should be descriptive but not too long (favoriteSign not yourFavoriteSignInTheHoroscope)
  - Use a casing "scheme"
    - camelCasing or PascalCasing

Which of the following do you think would be good names for variables?

- Variable1
- First Name
- Date
- 3Name
- DOB
- DateOfBirth
- YourFavoriteSignInTheHoroscope

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Manipulating variables

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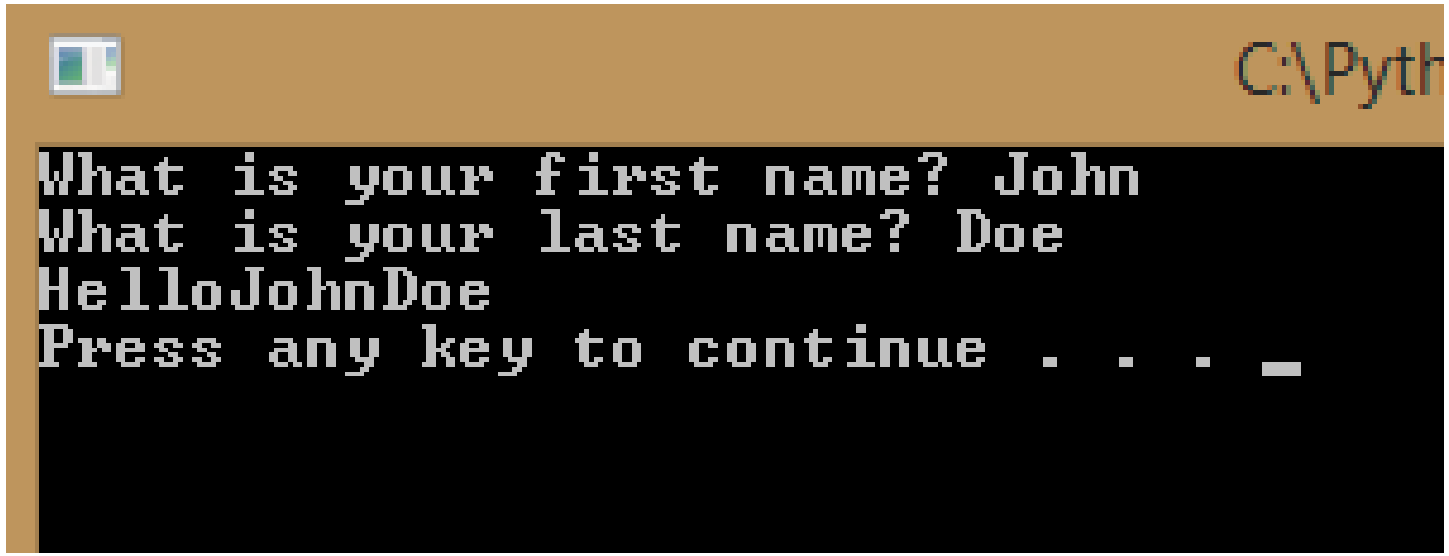
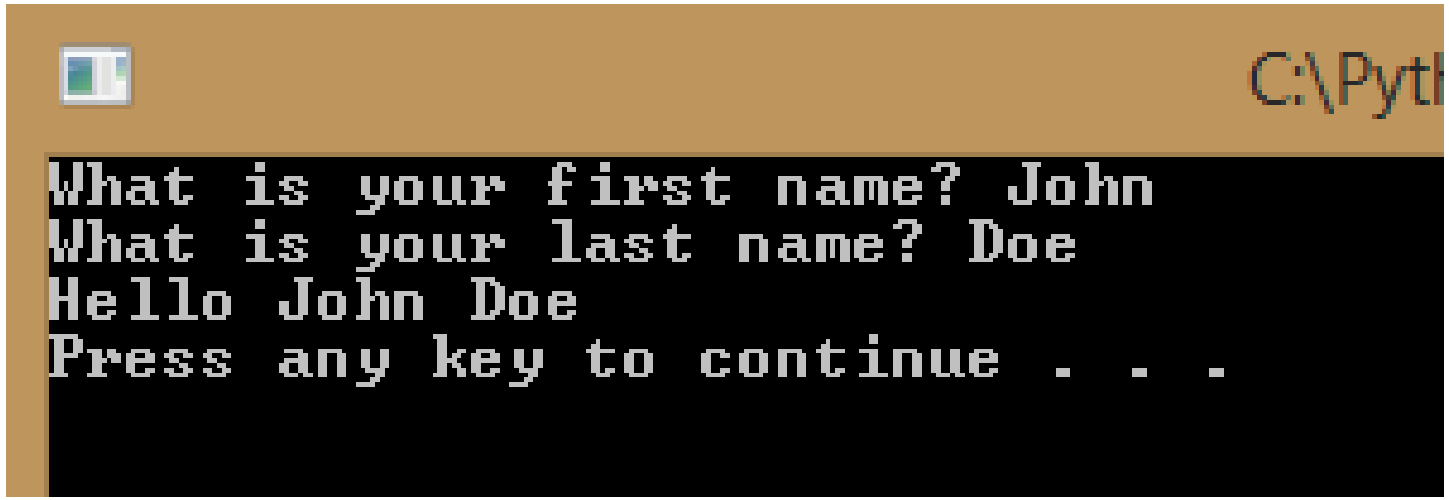
You can combine variables and strings with the + symbol

```
firstName = input("What is your first name? ")
lastName = input("What is your last name? " )
print("Hello" + firstName + lastName)
```



Often you need to add punctuation or spaces to format the output correctly

```
firstName = input("What is your first name? ")
lastName = input("What is your last name? " )
print("Hello " + firstName + " " + lastName)
```



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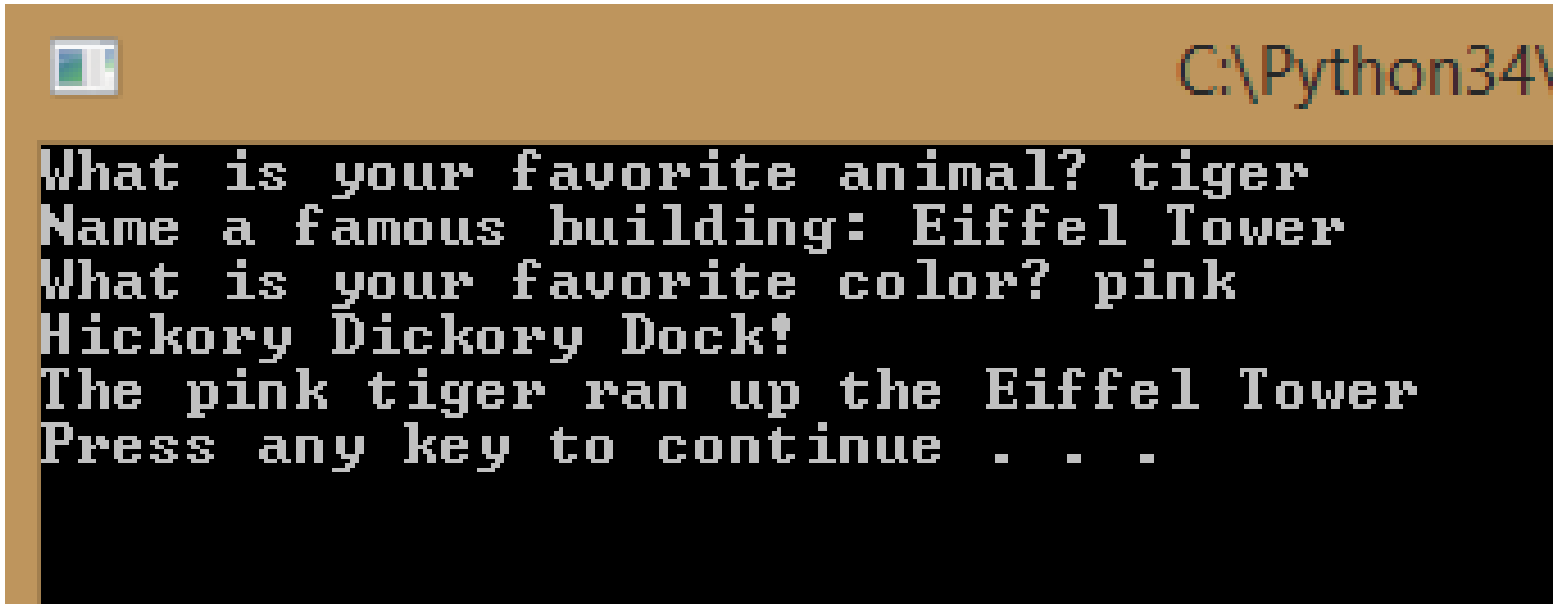
Formatting output

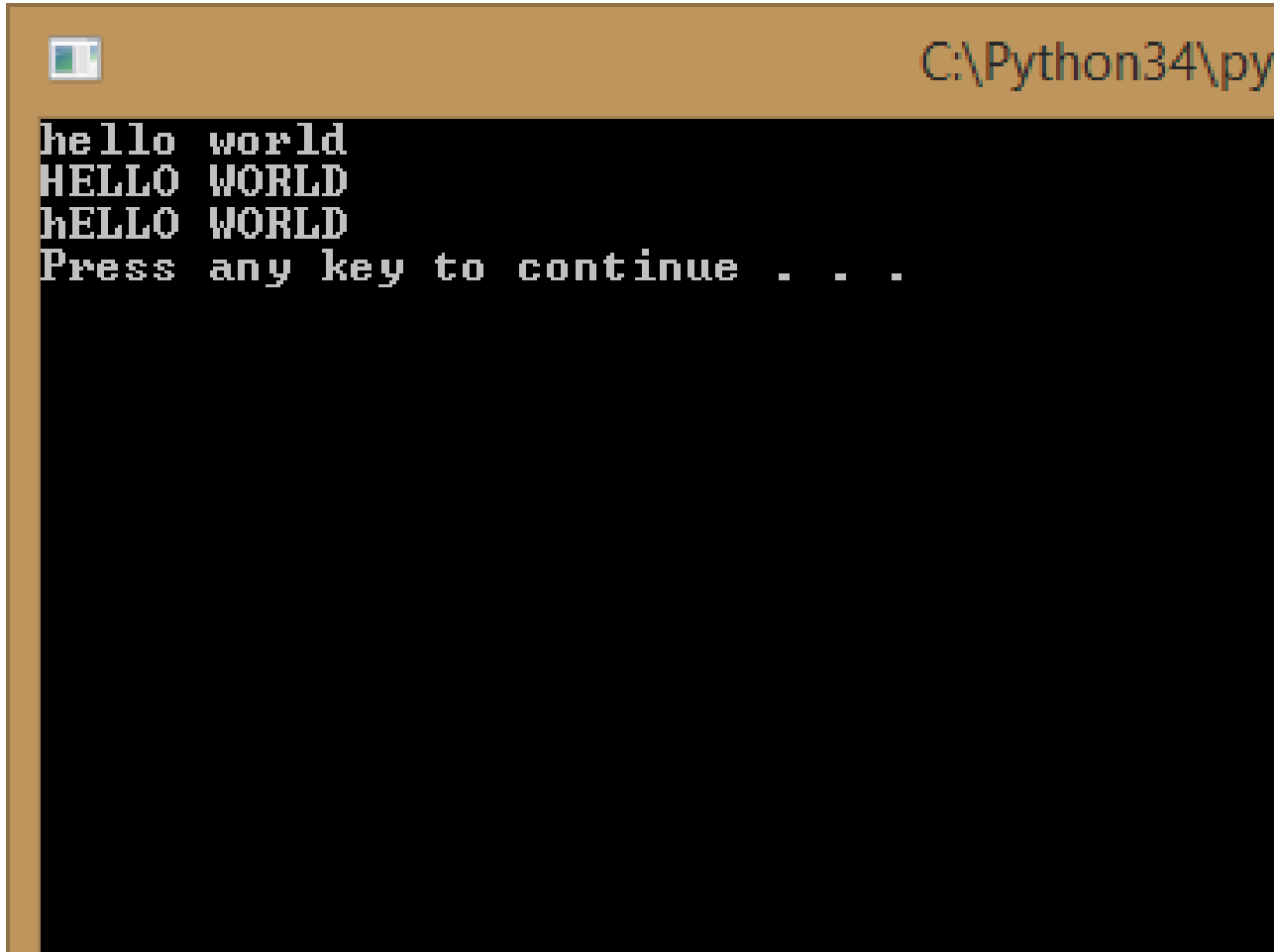
Now you can create a story teller program!

```
animal = input("What is your favorite animal? " )
building = input("Name a famous building: ")
color = input("What is your favorite color? ")
print("Hickory Dickory Dock!")
print("The "+color+" "+animal+" ran up the "+building)
```



Variables also allow you to manipulate the contents of the variable

```
message = 'Hello world'
print(message.lower())
print(message.upper())
print(message.swapcase())
```



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Manipulating values with string functions

Geek Tip!

- Lower, upper, and swapcase are different string functions
- Because we are storing a string in the variable, we can use any of the Python string functions to manipulate the string

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Visual Studio awesomeness

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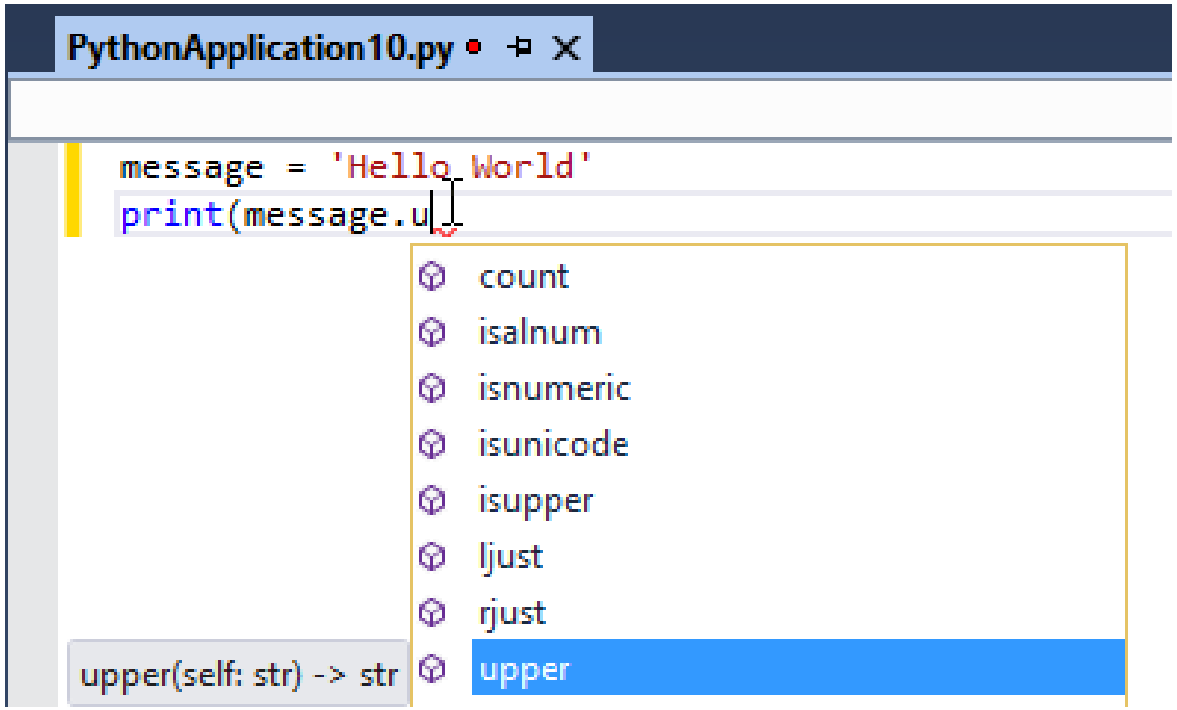
Did you notice the pop up list?

That's IntelliSense.

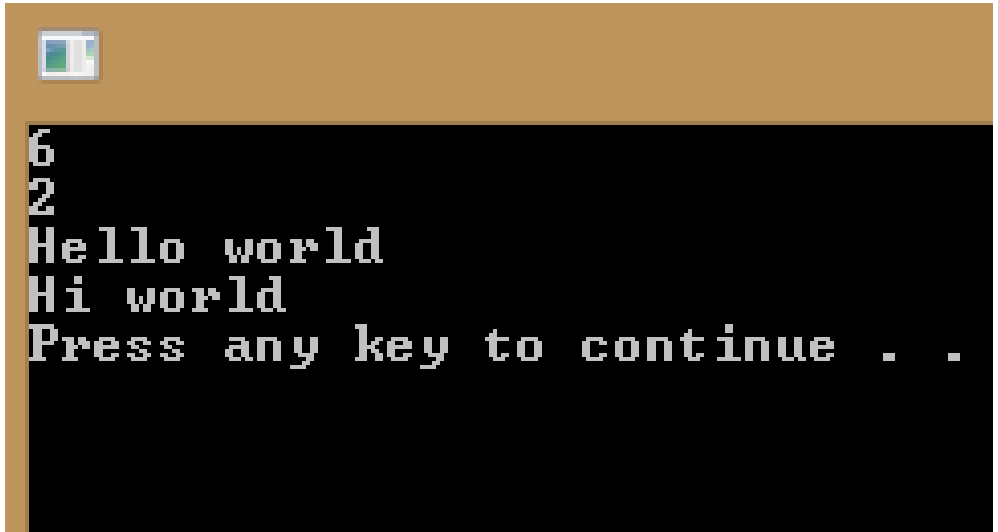
Visual Studio will suggest possible functions that you can call automatically after you type the '.'

You can also use CTRL+J or CTRL+SPACE to launch IntelliSense



What do you think these functions will do?

```
message = 'Hello world'
print(message.find('world'))
print(message.count('o'))
print(message.capitalize())
print(message.replace('Hello','Hi'))
```



Programmers do not memorize all these functions!!

So how do programmers find them when they need them?

- IntelliSense
- Documentation
- Internet searches

How could we…

Have a user enter their postal code and then display that postal code in upper case letters even if the user typed it in lowercase?

```
postalCode = input("Please enter your postal code: ")
print(postalCode.upper())
```

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Converting to uppercase

Did you notice?

The intellisense didn't appear to help us select the **upper()** function.

That's because our program didn't know we were going to store a string value in the postalCode variable. The **upper()** function is only for strings.
A good habit when coding in any language is to initialize your variables. That means when you create them you give them an initial value.

```
postalCode = " "
postalCode = input("Please enter your postal code: ")
print(postalCode.upper())
```

How could we...

Ask someone for their name and then display the name someone with the first letter of their first and last name uppercase and the rest of their name lowercase?

```
name = " "
name = input("Please enter your name: ")
print(name.capitalize())
```

Functions and variables allow us to make new mistakes in our code…

Each line of code below has a mistake…

```
message = Hello world
23message = 'Hello world'
New message = 'Hi there'
print(message.upper)
print(mesage.lower())
print(message.count())
```

```
message = 'Hello world'
23message = 'Hello world'
New message = 'Hi there'
print(message.upper())
print(message.lower())
print(message.count('H'))
```

Your challenge

- Write a program that allows a person to personalize a story
- Take a page from a book or make up a story. Ask the user to enter information you can replace in the story such as their name, a place, or insert adjectives or adverbs into the story. Then display the personalized story to the user
- For extra credit make sure you correct anything they type in with the incorrect case (e.g. if they type an adjective in uppercase you may want to display it in lowercase)

Congratulations!

- You can now write a computer program that will interact with a user

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