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Predefined functions in python pdf

In the last post introducing Python, I demonstrated how to make a simple application using variables and conditional statements. In order to make anything really powerful in this programming language though, you need to understand the features! In this post, we'll discuss the Python feature call. What is a Python function call? Before we look at how to invoke a feature on Python, we first need to familiarize ourselves with the concept. Read more: The best online python coursesFunctional applications are used throughout programming as a way to group certain tasks together. This becomes useful in different circumstances, especially when a recurring task needs to be done multiple times. Features are used throughout programming as a way to group specific tasks together. For example, if you built an app that has drawn hundreds of triangles on the screen to create a kaleidoscopic effect, you can do it in one of two ways:No functions: repeatedly writing code to draw a triangle. Using the Python function call: generating many coordinates and feeding them with the draw triangle function. The latter is much more efficient, requires less code, and is usually the best method. Not only that, but if you ever decide, you want to draw squares instead of triangles; You can only change a few lines of code, and the whole output will be different! Another advantage of using features is that they are modular and portable. If you write another program with a triangle in it, you can just copy and paste the triangle code in bulk! An example of a PythonHere call feature is an extremely simple example of a Python feature that will print Hello World! on screen: def hello_print(): print(Hello World!) return hello_print()Here's how to define a feature on Python and name it! The feature here is called HelloPrint. First we define this function with a def statement, then we will mark out any code that we want to be part of it directly underneath. The reverse statement simply instructs the translator to return to anywhere in the code he was on before he carried out the feature. Note that I capitalize each word in the name of the function. This is good practice because it helps distinguish python function calls from allegations. Now, anytime we want to say Hello World! We can just write HelloPrint() and it will happen! For example: def hello_print(): print(Hello World!) return hello_print() hello_print()Run this code and now you will see the message Hello World! appears twice! Because this code is grouped separately, it will not start until you use the Python function call. This also means that this code will do the same: def hello_print(): print(Hello World!) return hello_print() hello_print()This also means that you should be able to figure out how to call a function from another function: def greetings_print(): print(Hello World!) nice_day_today() return def nice_day_today(): print(Nice day today, not so!) return greetings_print() , in a nutshell, is to call the function on Python! But we still haven't tapped into the real power of Python features yet! How to pass information to python callWhile functions useful for repeating tasks, their real power lies in the ability to give and receive data. This is what these little parentheses are for: they allow us to invoke the feature on Python as well as transmit data. For example, the following code will say Hello Adam:d ef say_hello(Name): print(Hello + Name) return say_hello (Adam)This means that the same function can perform slightly different actions depending on the variables we give it. How to manipulate dataE know more useful though, it is the ability of the function to convert data. To do this, we need to transfer the information to the function, perform the action, and then return this information. Here's one way we can do this with the Python:def multiplier(Number) functional call: return number=Number*10 print(multiplier(5))Here the output will be 50 because the number 5 is transmitted by calling the Python function, which returns this value multiplied by 10. Note how we can write a Python function call just as if it were the name of the integer itself. This allows for very fast and flexible coding! There are many ways we can use this feature. Here's another small example that requires just three lines of code:def counter(Name): return len(Name) name_please =input(Name length counter! Enter your full name) print(Counter(name_please))This little app is the name length counter. To do this, you use a len operator from Python that returns an integer based on the length of the string. So, this fun app can tell you how many characters are in your name! The room was quite big and comfortable. We just scratch the surface python can doYou know how to use the python call function! It opens up a world of possibilities, but don't stop there! To really bend the full power of python, you will need to understand concepts such as features, modules and many others. To that end, we recommend checking out our guide to the best online Python courses. However, if you're a true beginner and looking for a great course with which to get started easily, we strongly recommend Coding with Python: Learning for Aspiring Developers that you can nab for as little as $49.99, which is an absolute steal as the course is valued at around $700. Encoding with Python: Learning for Beginners Bundle Developers Buy It Now Coding with Python: Training for Aspiring Bundle Developers Buy It Now ThoughtCo uses cookies to provide you with a great user experience. By using ThoughtCo, you accept our use of cookies. Writer 🐼 In this article you will learn what a functional paradigm is and how to use functional programming on Python. You'll also learn about understanding the list and other forms of comprehension. Functional paradigm In an imperative paradigm, you do things by providing sequence of tasks, and then he performs them. When performing a performance this can change the states. For example, let's say you set A=5, and then change the value A. In a functional paradigm you don't tell the computer what to do, but you tell him what things are. What is the largest common divider of the number that product is from 1 to n and so on. Variables cannot differ. Once the variable is installed, it remains so forever (note that purely functional languages are not called variables). Because of this, the features have no side effects in the functional paradigm. A side effect is where the function changes something beyond. Let's look at an example of some typical Python code: a = 3 def some_func(): global a = 5 some_func() print(a) Output for this code 5. In the functional paradigm, changing variables is a big no-no and having features affects things outside their sphere is also a big no-no. The only thing the function can do is calculate something and rotate. Now you might think: no variables, no side effects? Why is it good?. Good question, gnarly stranger reads this. If the function is called twice with the same parameters, it is guaranteed to return the same result. If you learn about mathematical functions, you will appreciate this benefit. We call it reference transparency. Since features have no side effects, if we build a program that calculates things, we can speed up the program. If the program knows that func(2) equates to 3, we can store this in a table. This prevents the program from running with the same feature when we already know the answer. As a rule, with functional programming, we do not use loops. We use recursion. Recursion is a mathematical concept, it means feeding into yourself. With recursive function, the function evokes itself as subcommutations. Here's a good example of the recursive feature on Python: def factorial_recursive(n): # Base case: 1! = 1 if n== 1: Return 1 # Recursive Case: n! = n * (n-1)! other: return n* factorial_recursive(n-1) Some programming languages are also lazy. This means that they do not calculate or do anything until the last second. If we write some code to execute 2 + 2, the functional program will count only that when you need to use the resellon. Soon we will explore laziness on Python. Map To understand the map, let's first see what iterators are. Iterator is all you can iterate. These are lists or arrays, but Python has many different iterators. You can even create your own objects that are iterabel, implementing magical methods. The magic method is similar to an API that helps your objects become more pythonic. You need to implement 2 magical methods to make the object iterative: class Counter: def __init__(self, low, high): # set class attributes inside the magic method __init__ # to instilize self.current = low self.high = high def __iter__(self): # the first magic method to do this iterated return self-__next__ (I): # # magic method, if self.current > self.high: raise StopIteration else: self.current += 1 return self.current - 1 First magic method, __iter__ or dunder iter (double iter underline) returns iterative object, we often use this at the beginning of the cycle. Dunder further __next__ returns what the next object is. Let's move on to a quick terminal session and check it out: for c in Counter(3, 8): print(c) This will be printed: The Python iterator is an object that has only __iter__ method. This means that we can access positions in the facility but cannot iterate through the object. Some objects will have a magical method of __next__ rather than __iter__ method, such as sets (mentioned later in this article). For this article, we assume that everything we touch is an iteratoric object. Now we know what an iterated object is, let's go back to the map feature. The map feature allows us to apply the function to each element in the iterator. We want to apply the feature to each item in the list, but know that it is possible for most iterators. The map takes 2 inputs, a function to apply and an iterated object. Let's say we have a list of numbers such as: [1, 2, 3, 4, 5] And we want to square each number, we can write code like this: x = [1, 2, 3, 4, 5] def square(num): rotate num * num print(map(map(square, x))) Functional Python lazy. If we did not include list() the function would store the iterator definition, not the list itself. We have to tell Python to turn this into a list for us to use this. It's amazing to go from nonlineual score to lazy score suddenly on Python. You get used to it if you think more in a functional mentality than imperative thinking. Now it's nice to write a normal feature like square(num), but it doesn't look right. We have to define an entire function to use it once on the map? Well, we can define the function on the map using the lambda (anonymous) function. Lambda expressions Lambda expressions are one string function. Take, for example, this lambda expression that squares the number given to it: Now let's run this: I hear you. Brandon, where are the arguments? What the hell is that? what doesn't look like a feature? Well, it's confusing, but can be explained. We assign something to a variable square. in this part: tells Python that it's a lambda function, and the input is called x. All that after colon is what we do with the introduction, and it returns everything that results from it. To simplfy our square program in one line we can do: x = [1, 2, 3, 4, 5] print(list(map(lambda num: num * num, x))))))))In lambda expression, all arguments go left, and the things you want to do with them go right. It gets a bit messy, no one can deny it. There is some fun in writing code that only other functional programmers can read. Also, it's super cool to take a feature and turn it into a one-liner. Shrink is a function that converts the iterator into one thing. Usually we calculations in the list to reduce it to one number. The decrease is as follows: We can (and often will) use lambda expressions as a function. A list product is each number multiplied together. To program this:product = 1 x = [1, 2, 3, 4] for num in x: product = product * numBut with decrease we can write: from functools import reduce product = reduce((lambda x, y: x * y),[1, 2, 3, 4])To get the same product. The code is shorter, and with knowledge of functional programming it is neater. Filter Filter Filter takes iteration and filters everything we don't want in this iteration. The filter accepts the function and the list. It applies the function to each item in the list, and if this function returns True, it does nothing. If it returns False, it removes the item from the list. The syntax looks like this: Let's see a small example, without the filter we will write: x = range (-5, 5) new_list = [] for num in x: if num < 0: new_list.append(num)With filter, it becomes: x = range (-5, 5) all_less_than_zero = list(filter(lambda num: num < 0, x)))Higher order functions Higher order functions can accept functions as parameters and return functions. A very simple example would look like this: def summation(nums): return sum(nums) def action(func, numbers): return func(numbers) print(action(summation, [1, 2, 3])) # Output is 6A or a simple example of the second definition, return functions, are: def rtnBrandon(): return brandon def rtnJohn(): return john def rtnPerson(): age = int(input(What is your age?)) if age == 21: return rtnBrandon() otherwise: return rtnJohn()You know earlier as I thought Well, higher-order features make it easier. We don't need to store a variable anywhere if all we do is transfer data through a long tunnel of features. All python features are first class objects. We define a first-class object as one or more of these functions: Created during execution The assigned variable or element in the data structure is passed as a function argument Returned as a result of the Function How much all functions in Python are first class and can be used as a higher order function. Partial application of partial application (also called closure) is surprising, but it is cool. We can invoke a function without providing all the arguments it requires. Let's see this in an example. We want to create a function that accepts 2 arguments, base and exhibitor, and returns the base to the power of the exhibitor like this: def power(base, exponent): return base ** exponentNow we want to have a special square function to work out the square number using the power function: def square(base): return power(base, 2)It works, but what if we want a function cube? or function to power 4? Can we continue to write them forever? Well, we could. If we repeatedly do the same, it is a sign that there is faster way to speed things up, and this will allow us not to repeat our time We can use partial programs here. Let's see an example of a square function using a partial application: with functools import partial square = partial (power, exponent = 2) print(square(2)) # output 4Isn is not so cool! We can invoke functions that require 2 arguments using only argument 1, telling Python, which is the second argument. We can also use the cycle to generate a power function that runs from cubics to 1,000 power. with functools import partial powers = [] for x in the range (2, 1001): powers.append(partial(power, exhibitor = x)) print(powers[0](3)) # output 9Functional programming not Pythonic You might notice, but many things we want to do in functional programming revolve around lists. In addition to the mitigation and partial application feature, all the features you've seen generate lists. Guido (the inventor of Python) doesn't like functional things on Python because Python already has its way of creating lists. If we write import this into a Python IDLE session, we'll get: >>> import this Zen Python, Tim Peters Beautiful is better than ugly. Explicit is better than anoiful. Simple is better than complicated. The complex is better than complex. The apartment is better than invested. Sparse is better than dense. Readability matters. Special cases are not special enough to break the rules. Although practicality beats cleanliness. Mistakes should never pass silently. Unless you're clearly in default. In the face of ambiguity, give up the temptation to guess. There needs to be one - and preferably only one - obvious way to do it. Although this path may not initially be obvious unless you are Dutch. Now it's better than never. Although never often better than * right * now. If implementation is hard to explain, it's a bad idea. If implementation is easy to explain, it might be a good idea. Namespaces are one great idea - let's make more of them! It's a Zen python. It's a poem about what something a pitonic means. The part we want to relate to here: > There must be one — and preferably only one — an obvious way to do it. The Python map and filter can do the same as understanding the list (discussed next). This violates one Zen Python rule, so these parts are functional pythonic programming. Another talking point is Lambda. In Python, the lambda function is a normal function. Lambda is syntastic sugar. Both are equivalent: foo = lambda a: 2 def foo(a): reverse regular function 2A can do anything that can lambda function, but it does not work the other way around. The lambda function can't do anything a normal feature can do. It was a brief argument about why functional programming doesn't fit into the entire Python ecosystem very well. You may have noticed that I mentioned the list of understandings earlier, we will discuss them now. Understanding list Before I mentioned that everything you could do with a map or filter you can do with a list That's the part where we learn about them. A (In 2 2 розуміння — це спосіб створення списків на Python. Синтаксис: [функція для елемента в ітераторі]Так що давайте квадрат кожен номер у списку, як приклад: print([x * x для x в [1, 2, 3, 4]])Добре, так що ми можемо побачити, як ми можемо застосувати функцію до кожного елемента в списку. Як ми можемо обійти застосування фільтра? Ну, подивіться на цей код з більш ранніх: x = діапазон (-5, 5) all_less_than_zero = list(filter(lambda num: num < 0, x)) print(all_less_than_zero)Ми можемо перетворити це в список розуміння, як так: x = діапазон (-5, 5) all_less_than_zero = [num для num в x, якщо num < 0]Список розуміння підтримки, якщо заяви, як це. Вам більше не потрібно застосовувати мільйон функцій до чогось, щоб отримати те, що ви хочете. Справді, якщо ми намагаємося зробити якийсь список шансів, що він буде виглядати чистіше і простіше, використовуючи список розуміння. Що робити, якщо ми хочемо, щоб квадрат кожне число нижче 0 у списку? Ну, з лямбда, карта і фільтр ми будемо писати: x = діапазон (-5, 5) all_less_than_zero = list(map(lambda num: num * num, list(filter(lambda num: num < 0, x))))) Це довго і складно. Зі списком розуміння це: x = діапазон (-5, 5) all_less_than_zero = [num * num для num в x, якщо num < 0]Список розуміння тільки добре для, ну, списки. Карта і фільтр роботи на будь-який ітерації, так що з цим? Ми можемо використовувати будь-яке розуміння для будь-якого ітеруючого об'єкта, з яким ми стикаємося. Інші осмисленняМи можемо генерувати будь-які ітерації за допомогою розуміння. Починаючи з Python 2.7, ми можемо навіть створити словник (hashmap). # Taken from page 70 chapter 3 of Fluent Python by Luciano Ramalho DIAL_CODES = [(86, 'China'), (91, 'India'), (1, 'United States'), (62, 'Indonesia'), (55, 'Brazil'), (92, 'Pakistan'), (880, 'Bangladesh'), (234, 'Nigeria'), (7, 'Russia'), (81, 'Japan'),] >>> country_code = {country: code for code, country in DIAL_CODES} >>> country_code {'Brazil': 55, 'Indonesia': 62, 'Pakistan': 92, 'Russia': 7, 'China': 86, 'United States': 1, 'Japan': 81, 'India': 91, 'Nigeria': 234, 'Bangladesh': 880} >>> {code: country.upper() for country, code in country_code.items() if code < 66} {1: 'UNITED STATES', 7: 'RUSSIA', 62: 'INDONESIA', 55: 'BRAZIL'}If it's an iterable, we can generate it. Let's look at one last example of sets. If you don't know what a set is, check out this other article I wrote. The TL;DR is:Sets are lists of elements, no element is repeated twice in that list The order in sets do not matter # taken from page 87, chapter 3 of Fluent Python by Luciano Ramalho >>> from unicodedata import name >>> {chr(i) for i in range(32, 256) if 'SIGN' in name(chr(i), '')} {'×', '¥', '°', '£', '©', '¬', '%', 'µ', '>', '¤', '±', '¶', '§', '<', '=', '®', '$', '÷', '¢', '+'}You may notice that sets have the same curly braces as dictionaries. Пітон розумний. Він буде знати, чи ви пишете словник розуміння або набір розуміння на основі того, чи you extra value for ditionary or not. If you want to learn more about understanding, check out this visual guide. If you want to More about understanding & generators, check out this article. Conclusion Functional programming is beautiful and clean. Functional code can be clean, but it can also be messy. Some hardcore Python programmers don't like the functional paradigm on Python. You have to use what you want to use, use the best tool to work with. Join Hacker Noon Create your free account to unlock your custom reading experience. Experience.

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