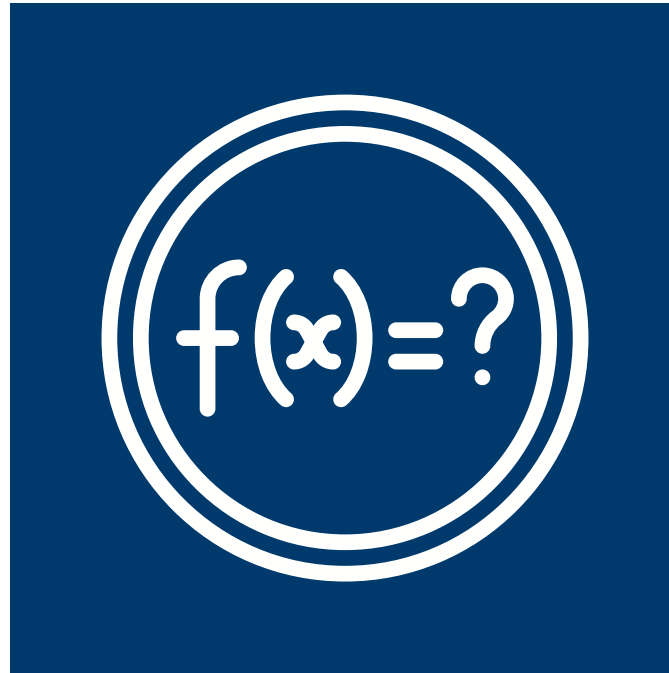


WHAT ARE PYTHON FUNCTIONS?

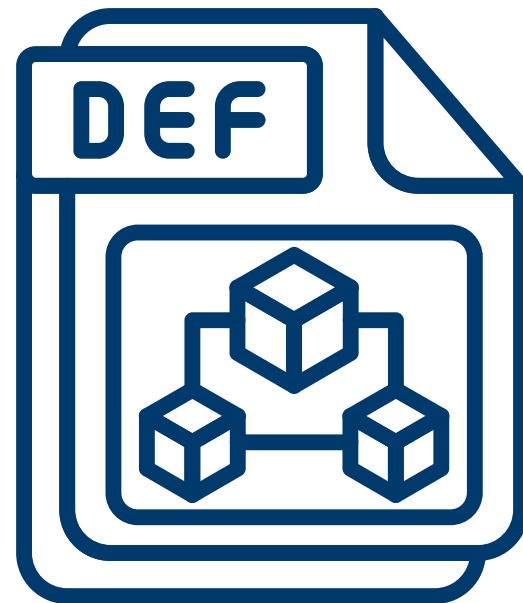


FUNCTIONS IN PYTHON ARE REUSABLE BLOCKS OF CODE THAT PERFORM A SPECIFIC TASK. THEY HELP MAKE YOUR CODE MORE ORGANIZED AND MODULAR.



HOW TO DEFINE A FUNCTION

FUNCTIONS ARE
DEFINED USING THE
DEF KEYWORD
FOLLOWED BY THE
FUNCTION NAME AND
PARENTHESES.

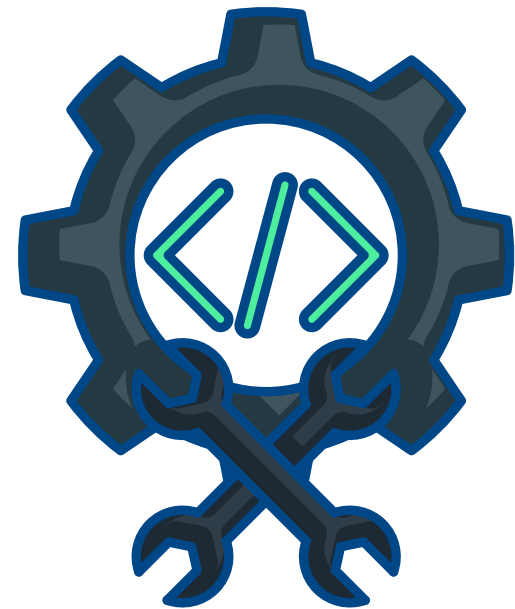


```
def greet(name):  
    print(f"Hello, {name}!")
```



HOW TO CALL A FUNCTION

INVOKE A FUNCTION BY
USING ITS NAME
FOLLOWED BY
PARENTHESES. PASS
ANY REQUIRED
ARGUMENTS INSIDE
THE PARENTHESES.

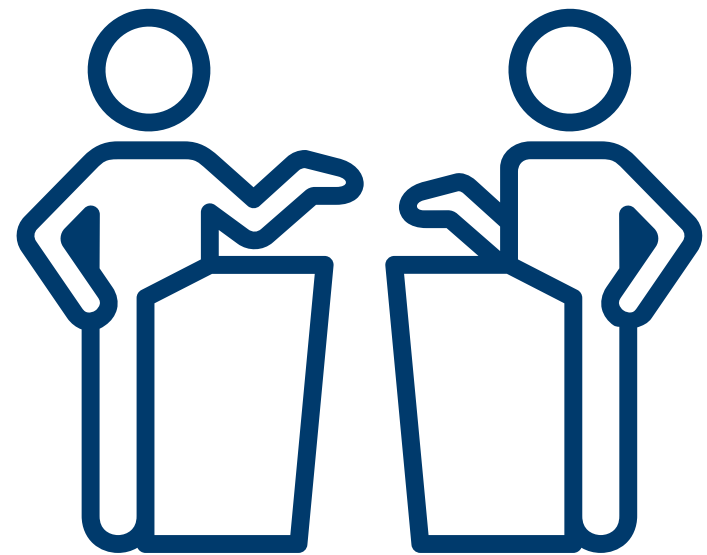


```
greet('Alice') # Output: Hello, Alice!
```



FUNCTION ARGUMENTS

FUNCTIONS CAN TAKE ZERO OR MORE ARGUMENTS, WHICH ARE VALUES PASSED INTO THE FUNCTION TO CUSTOMIZE ITS BEHAVIOR.

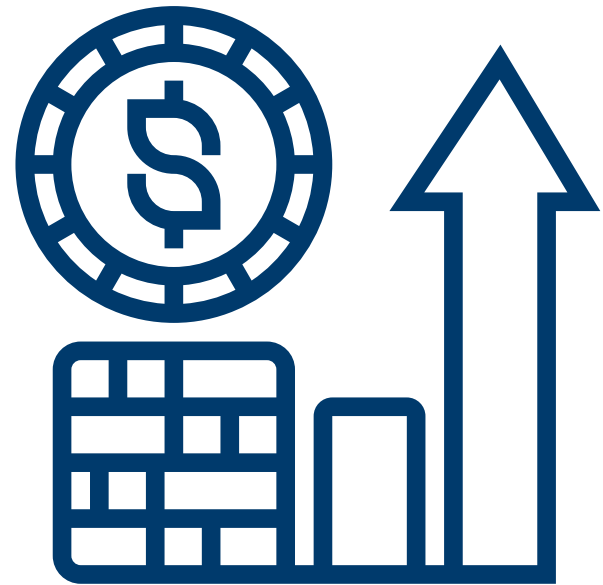


```
def add(a, b):  
    return a + b  
result = add(3, 5) # result is 8
```



RETURN STATEMENT

THE RETURN STATEMENT SENDS A RESULT BACK FROM THE FUNCTION. IT ENDS THE FUNCTION'S EXECUTION AND CAN RETURN A VALUE.



```
def multiply(x, y):  
    return x * y
```



DEFAULT PARAMETERS

FUNCTIONS CAN HAVE DEFAULT VALUES FOR PARAMETERS, WHICH ARE USED IF NO ARGUMENT IS PROVIDED.



```
def greet(name='Guest'):
    print(f"Hello, {name}!")
```



KEYWORD ARGUMENTS

SPECIFY ARGUMENTS
BY NAME WHEN
CALLING A FUNCTION,
MAKING IT CLEAR
WHAT EACH ARGUMENT
REPRESENTS.

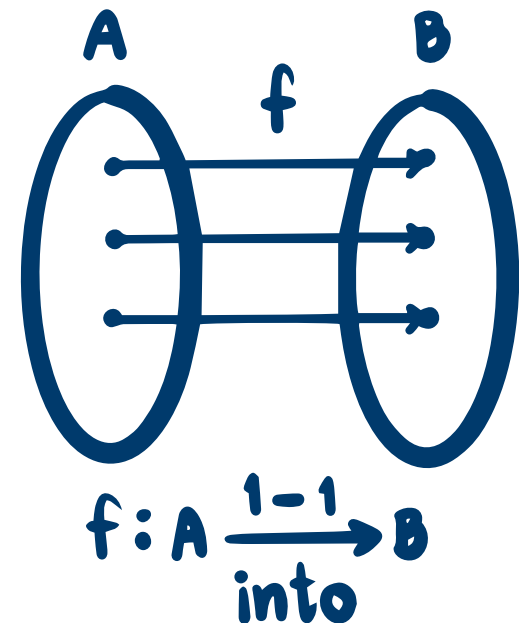


```
def describe_person(name, age):  
    print(f"{name} is {age} years old.")  
describe_person(age=25, name='Bob')
```



VARIABLE-LENGTH ARGUMENTS

FUNCTIONS CAN ACCEPT
A VARIABLE NUMBER OF
ARGUMENTS USING
`*ARGS` FOR POSITIONAL
ARGUMENTS AND
`**KWARGS` FOR
KEYWORD ARGUMENTS.



```
def sum_all(*numbers):  
    return sum(numbers)
```


LAMBDA FUNCTIONS

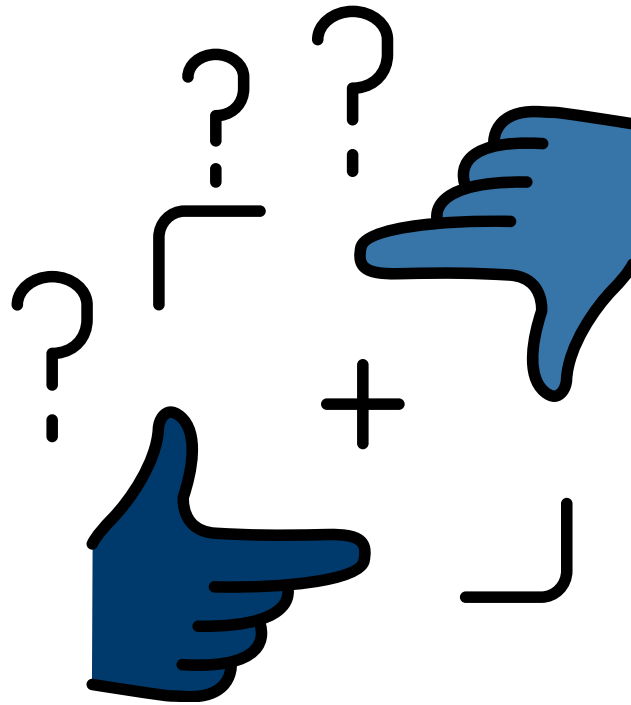
LAMBDA FUNCTIONS ARE SMALL, ANONYMOUS FUNCTIONS DEFINED USING THE LAMBDA KEYWORD. THEY'RE USEFUL FOR SHORT OPERATIONS.



```
square = lambda x: x * x  
print(square(5)) # Output: 25
```



WRAPPING UP



FUNCTIONS ARE A POWERFUL WAY TO STRUCTURE YOUR CODE AND MAKE IT REUSABLE. KEEP PRACTICING TO MASTER THEM!



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