WELCOME TO PYTHON!
VARIABLES AND DATA TYPES
FUNCTIONS
COLLECTIONS
CONDITIONALS
LOOPS
DEBUGGING AND ERROR HANDLING

WELCOME TO PYTHON!

```python
name = input("What's your name? ")

print(f"Hello {name}")
```

functions or commands

built-in functions

```
print()
input()
...
```

functions from built-in modules

```
math.sqrt()
time.sleep()
sys.exit()
...
```

external modules

```
requests.get()
...
```

comments

```python
# Ask the user for their name
name = input("What's your name? ")

# Greet the user
print(f"Hello {name}")
```

```python
# Ask the user for their name
name = input("What's your name? ")


print(f"Hello {name}") # Greet the user
```

```
’’’
a multi-line comment
for longer descriptions
’’’
print("hello, world")
```

arguments / parameter

```python
# Ask the user for their name
name = input("What's your name? ")

# Greet the user
print(f"Hello {name}")
```

bugs

syntax errors

runtime errors

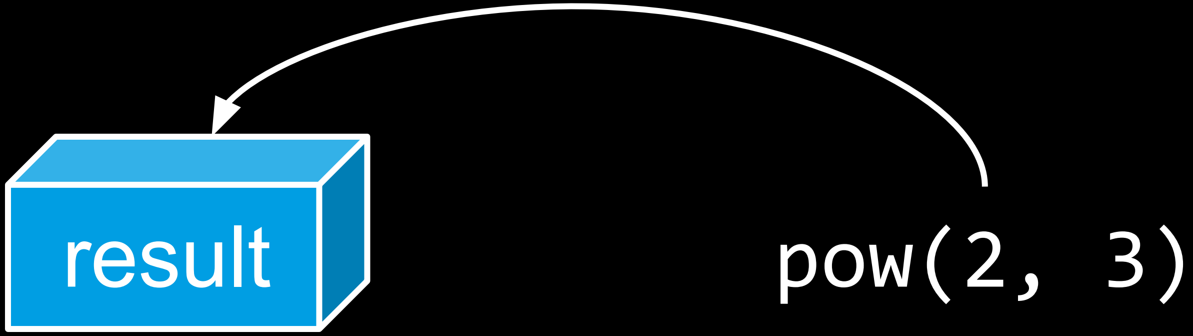
function’s return values

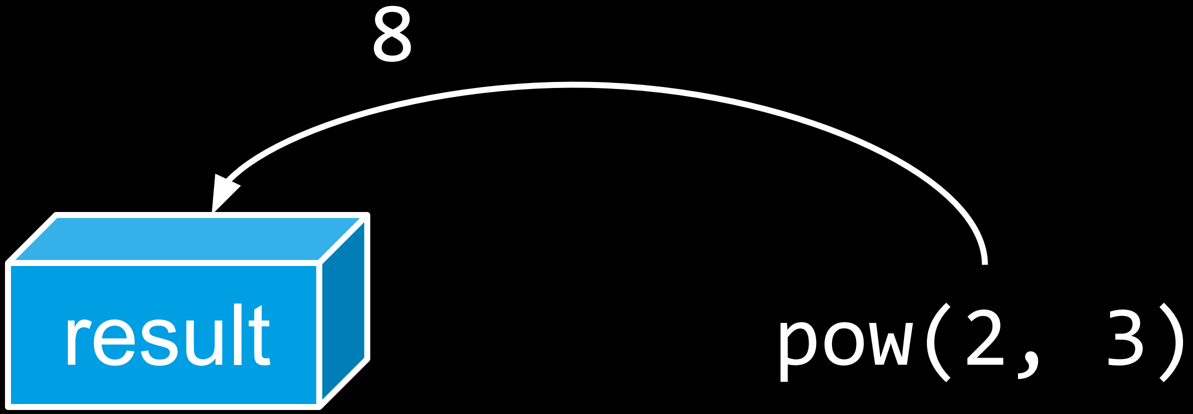
```
result = pow(2, 3)
```

VARIABLES AND DATA TYPES

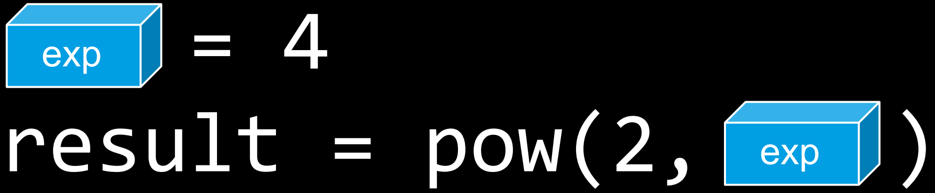
BACK

result


result
pow(2, 3)


8
result
pow(2, 3)

```
exp = 4
result = pow(2, exp)
```



```
exp = 4
result = pow(2, exp)
```

```
exp = 4
result = pow(2, exp)
print(result)
```

constants

```
PI = 3.14159
UID = "ZeW"
```

naming variables

```
use_underscores_for_spaces
start_with_small_letter
only_0123456789_and_letters
english_and_speaking_names
```

operators

math

```
5 + 5
9 - 8
2 / 1
6 * 7
5 // 2
10 % 3
2**3
```

logic

```
2 == 1
2*2 > 1+3
2*2 >= 1+3
"A" < "B"
"A" < "B" and 2 == 1
"A" < "B" or 2 == 1
```

strings

```
== != > < >= <=
+
*
in / not in
[1] / [1:4]
strip()
capitalize()
title()
```

data types

integer

$$\left.\begin{array}{l}\text{integer}\\ \text{float}\end{array}\right\}\ \text{numeric}$$

$$\left.\begin{array}{l}\text{integer}\\\text{float}\end{array}\right\}\ \text{numeric}$$

boolean

$$\left.\begin{array}{l}\text{integer}\\\text{float}\end{array}\right\}\ \text{numeric}$$

boolean
string

format strings

```
print(f"Hello {name}")
```

comments

```
# step 1: determine exponent


# step 2: calculate power


# step 3: print result
```

problem solving → problem decomposition

```
# step 1: determine exponent


# step 2: calculate power


# step 3: print result
# step 1: determine exponent
exp = 4

# step 2: calculate power



# step 3: print result
# step 1: determine exponent
exp = 4

# step 2: calculate power
result = pow(2, exp)

# step 3: print result
# step 1: determine exponent
exp = 4

# step 2: calculate power
result = pow(2, exp)

# step 3: print result
print(result)
```

FUNCTIONS

BACK

create functions

```python
def greet():
    print("hello")
```

parameters

```python
def greet(name):
    print(f"hello {name}")
```

parameter default values

```python
def greet(name="world"):
    print(f"hello {name}")
```

returning results

returning results

```python
def make_greeting(name):
    greeting = f"hello {name}"
    return greeting
```

COLLECTIONS

BACK

lists

```
fruits =  ["apple", "banana", "cherry"]
```

```python
fruits =  ["apple", "banana", "cherry"]
fruits[0]     # apple
```

```python
fruits =  ["apple", "banana", "cherry"]
fruits[0]     # apple
fruits[1]     # banana
```

```
fruits =  ["apple", "banana", "cherry"]
fruits[0]     # apple
fruits[1]     # banana
fruits[2]     # cherry
```

```
fruits =  ["apple", "banana", "cherry"]
fruits[0]     # apple
fruits[1]     # banana
fruits[2]     # cherry
fruits[1:2]   # ["banana", "cherry"]
```

list operations

```python
fruits.append("grape")
fruits.append("grape")

fruits.insert(1, "strawberry")
```

```python
fruits.append("grape")

fruits.insert(1, "strawberry")

fruits.pop()
fruits.append("grape")

fruits.insert(1, "strawberry")

fruits.pop()

len(fruits)
```

```python
fruits.append("grape")
fruits.insert(1, "strawberry")
fruits.pop()
len(fruits)


for fruit in fruits:
    print(fruit)  # print every fruit
```

CONDITIONALS

BACK

```
if <condition>:
    ...
```

```
if <condition>:
    ...
else:
    ...
```

```
if <condition>:
    ...
elif <condition>:
    ...
```

LOOPS

BACK

while loop

for loop

DEBUGGING AND ERROR HANDLING

BACK