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The slides are meant as visual support for the lecture.
They are neither a documentation nor a script.

Please do not print the slides.

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FIRST PROGRAM

```
print("hello, world")
```

use functions

arguments / parameter

comments

```
# this is a comment  
print("hello, world")
```



```
# this is a comment  
print("hello, world") # another comment
```

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

bugs

syntax errors

runtime errors

user input

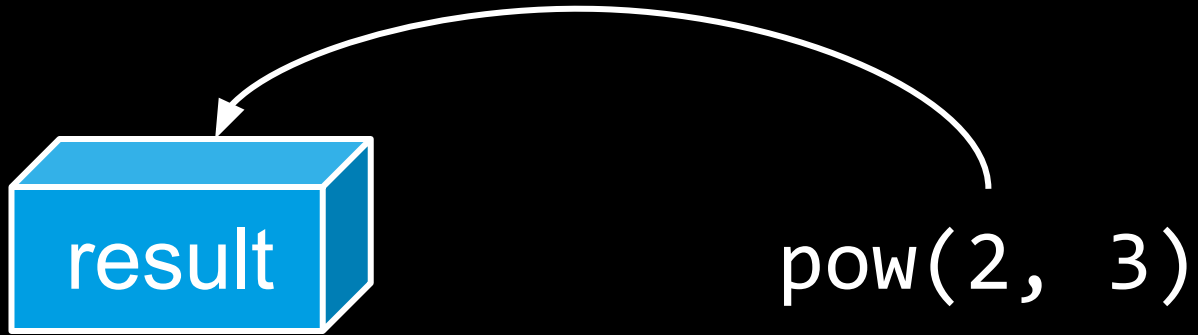
```
user_name = input("What's your name? ")
```

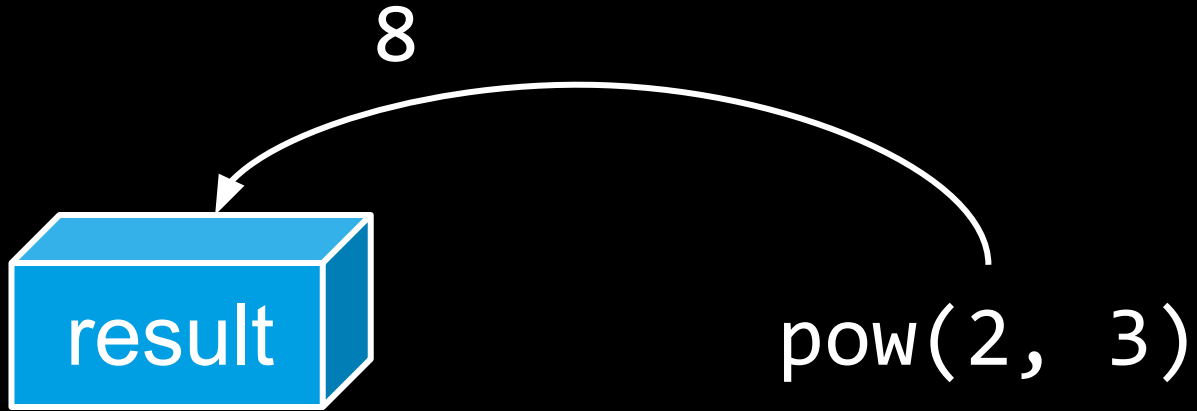
return values


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

VARIABLES







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

`exp` = 4

`result = pow(2, exp)`

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


pseudocode

step 1: determine exponent

step 2: calculate power

step 3: print result

problem solving → divide and conquer

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

create functions

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

parameters

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

format strings

parameter default values

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

return a result


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

EXPRESSIONS

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

data types

integer

float

boolean

string

```
strip()  
capitalize()  
title()
```

format strings

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

CONDITIONALS


```
if <condition>:
```

```
    ...
```

```
if <condition>:
```

```
    ...
```

```
else:
```

```
    ...
```

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

LOOPS

while loop

for loop