1. FIRST PROGRAM
2. VARIABLES
3. FUNCTIONS
4. DATA TYPES
5. EXPRESSIONS
6. CONDITIONALS
7. LOOPS
8. LISTS
9. FILES
10. DATA

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

Please do not print the slides.

Comments and feedback at n.meseth@hs-osnabrueck.de

FIRST PROGRAM

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

use functions

built-in functions

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

functions from built-in modules

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

external modules

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

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

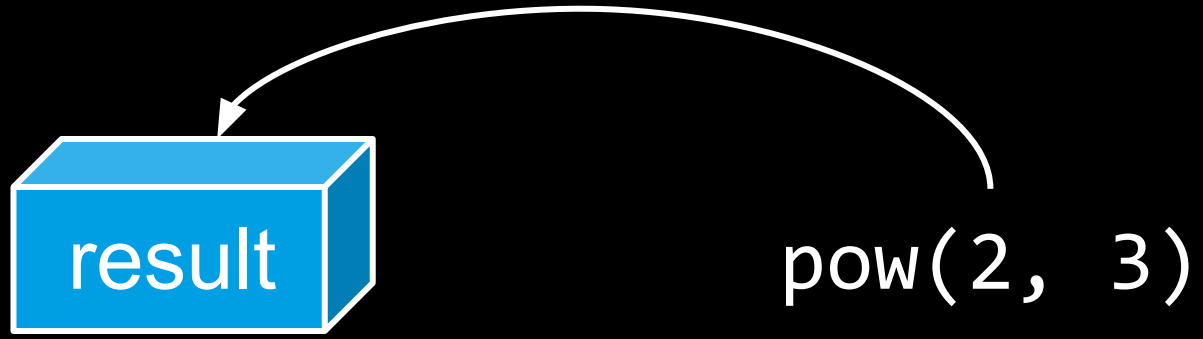
```
user_name = input("What’s your name? ")
```

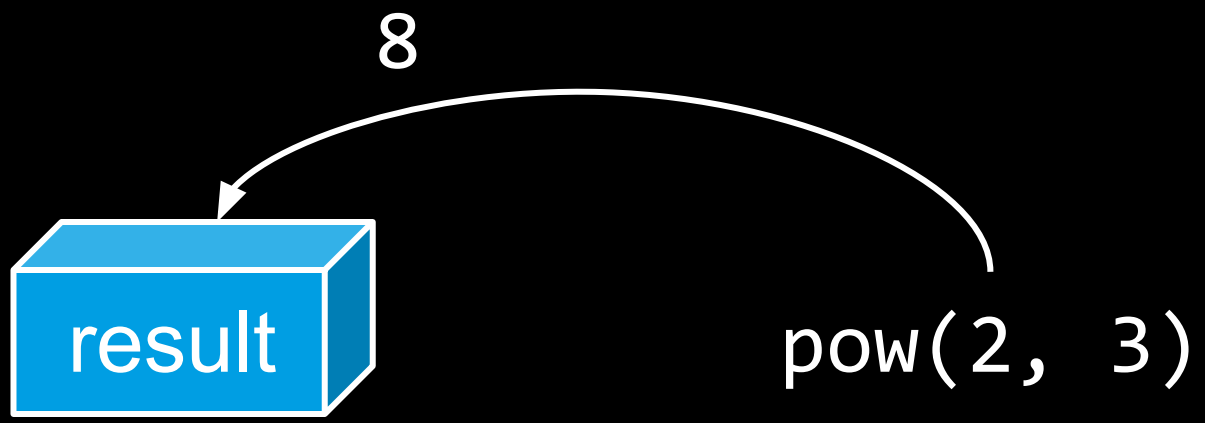
function’s return values

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

VARIABLES


result


result
pow(2, 3)


8
result
pow(2, 3)

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


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

```
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

BACK

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}")
```