

7. Parameter Passing

Example

(Formal) Parameter

```
void f(int x, int y) {  
    y := x+1  
};
```

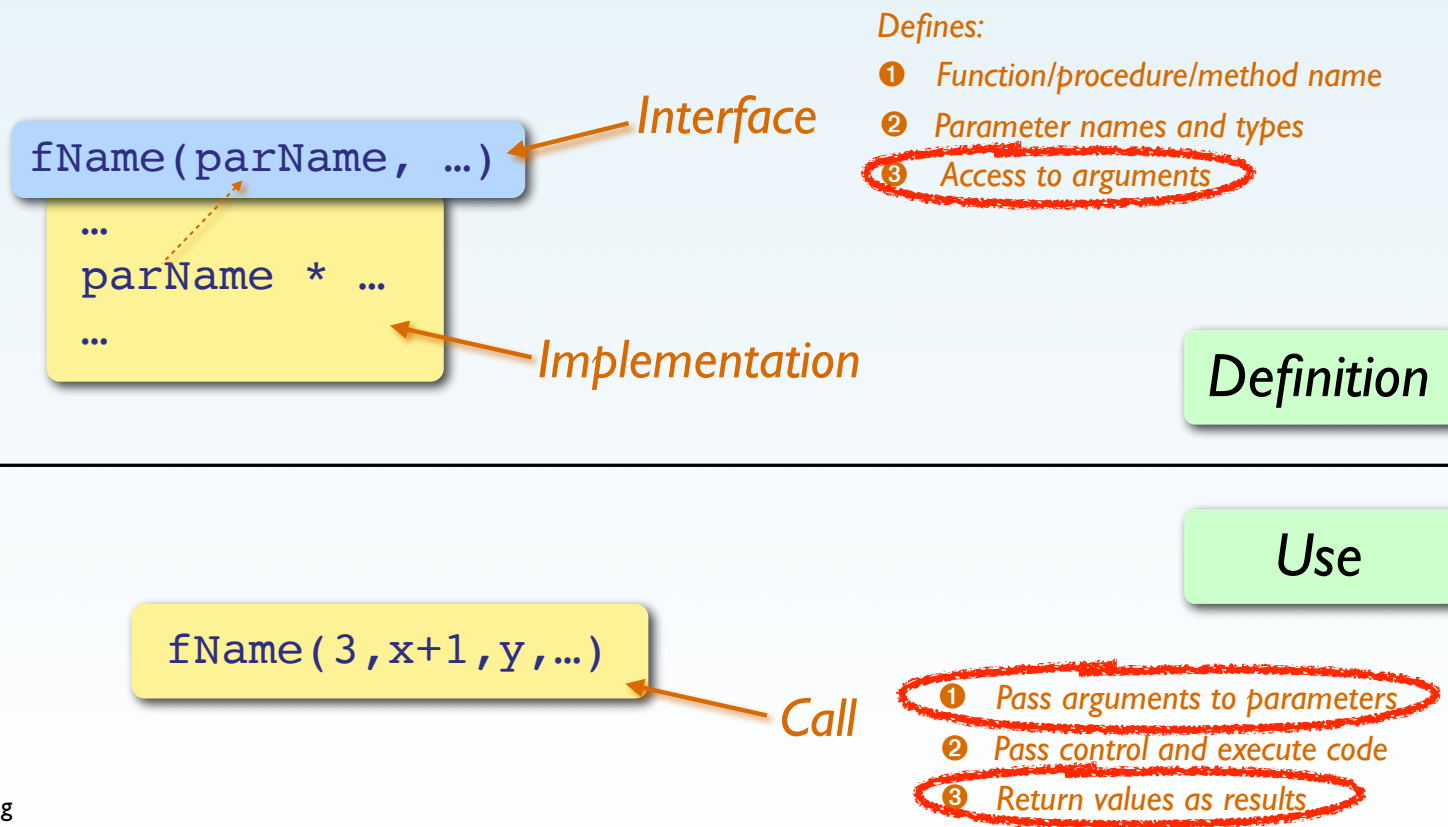
```
x := 3;  
z := 1;  
f(2*x, z);
```

*Actual Parameter, or:
Argument*

What is the value of z?

*... it depends on the
parameter passing mechanism.*

Function Definition & Use



Function Call (Generic Case)

fName (3 , x+1 , x , ...)

6

[... ⟨x: 5⟩ ...]

[⟨a: ?, b: ?, c: ?⟩, ... ⟨x: 5⟩ ...]

[⟨a: 3, b: 6, c: x⟩, ... ⟨x: 5⟩ ...]

① Evaluate argument expressions

② Create activation record with parameter names on runtime stack

③ Store values and locations in activation record

④ Transfer control to function and run code

fName (a , b , c , ...)

...

a := b+1

c := a-b

[⟨a: 7, b: 6, c: x⟩, ... ⟨x: 5⟩ ...]

[⟨a: 7, b: 6, c: x⟩, ... ⟨x: 1⟩ ...]

N/A

[... ⟨x: 1⟩ ...]

⑤ Pass values back to call site

⑥ Remove activation record from runtime stack