

Lecture 7 : Temperature Symbol table (Continued)

```
6 def convertFtoC(temp):  
7     convertedTemp = (5/9)*(temp - 32)  
8     print(temp, 'degrees in F is', convertedTemp, 'degrees in C.')  
9  
10  
11 # Main code  
12 tempInF1 = 32  
13 convertFtoC(tempInF1)  
14  
15 tempInF2 = 212  
16 convertFtoC(tempInF2)
```

Main		
<u>Name</u>	<u>Type</u>	<u>Value</u>
convertFtoC	fun	
tempInF1	int	32

convertFtoC		
<u>Name</u>	<u>Type</u>	<u>Value</u>
temp	int	32
convertedTemp	float	0.0

Line 13 : 4 step process :
Create function Symbol
table

1. Replace in fun. call, Variables
with hard values

[convertFtoC (tempInF1) → convertFtoC (32)

2. Make Symbol table to fun. Draw the arrow connecting fun. table with name in main table

3. Add entries to fun. table — one per fun. parameter.

4. Copy values passed in from function call [in main code] to function table, to fill it in.

line 7: $\star (5/9) \star (\overbrace{\text{temp} - 32}^{\text{look in fun. symbol table: } 32})$

Converted temp = 0

$\Rightarrow$ we add entry in fun. symbol table

line 8: we print. No crash $\Rightarrow$ temp & convertedTemp are in fun. table, we look up Values.

Done.

Go back to main code, finish line 13.

Done w/ function Call

Fun symbol table goes away!

```
6 def convertFtoC(temp):  
7     convertedTemp = (5/9)*(temp - 32)  
8     print(temp, 'degrees in F is', convertedTemp, 'degrees in C.')  
9  
10  
11 # Main code  
12 tempInF1 = 32  
13 convertFtoC(tempInF1)  
14 print(convertedTemp)  
15 tempInF2 = 212  
16 convertFtoC(tempInF2)
```

Main		
<u>Name</u>	<u>Type</u>	<u>Value</u>
convertFtoC	fun	$\rightarrow$
tempInF1	int	32
tempInF2	int	212

convertFtoC		
<u>Name</u>	<u>Type</u>	<u>Value</u>
temp	int	32
convertedTemp	float	0.0

line 14: This would crash
 $\Rightarrow$ convertedTemp was in fun. table, which now

gone after line 13.

line 15: Add tempInF2 to the main table.

line 16: Function call: 4 Step process

```
6 def convertFtoC(temp):  
*7     convertedTemp = (5/9)*(temp - 32)  
8     print(temp, 'degrees in F is', convertedTemp, 'degrees in C.')  
9  
10  
11 # Main code  
12 tempInF1 = 32  
13 convertFtoC(tempInF1)  
14 print(convertedTemp)  
15 tempInF2 = 212  
*16 convertFtoC(tempInF2)
```

Main		
Name	Type	Value
convertFtoC	fun	
tempInF1	int	32
tempInF2	int	212

ConvertFtoC(212)

Convert F to C		
Name	Type	Value
temp	int	212
Converted Temp float 100.0		

line 7: Add entry to fun table

line 8: we print.

go back to line 16. Then fun. table goes away!

program ends → main table goes away.

~~main~~ modules in symbol tables.

main.py

1 input turtle

Main

<u>Name</u>	<u>type</u>	<u>Value</u>
turtle	module	

~~right~~

turtle

<u>Name</u>	<u>type</u>	<u>Value</u>
right	fun	→
forward	fun	→
up	fun	→
⋮		

2. turtle.forward(100)

↳ hopping symbol tables

~~Forward~~

When done moving forward, Forward table goes away

3. turtle. right (90)