

# Python Programming

## Stack Trace

**Mostafa S. Ibrahim**

*Teaching, Training and Coaching since more than a decade!*

*Artificial Intelligence & Computer Vision Researcher*

*PhD from Simon Fraser University - Canada*

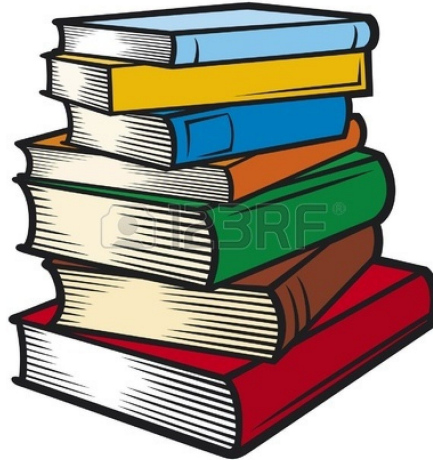
*Bachelor / Msc from Cairo University - Egypt*

*Ex-(Software Engineer / ICPC World Finalist)*



# Stack Trace (aka traceback and backtrace)

- The function calls made in your code at a specific point
  - We saw it during debugging functions calls
  - The word stack coming from the Stack data structure (LIFO)
- In big projects, an exception can be in module that called a module that has a function called a function
- The trace helps us:
  - What is the exact file/line where problem occurred
  - The function calls from begin to the failure point



# Function calls

- $f1 \Rightarrow f2 \Rightarrow f3 \Rightarrow f4 \Rightarrow \text{sqrt}$ 
  - -10 is out of the **domain values** range for a sqrt function in mathematics

```
program.py x
1 import mod1
2
3 print(mod1.f1(-10))
```

```
mod1.py x mod2.py x
1 import mod2
2
3 def f1(x):
4     return mod2.f2(x)
5
```

```
mod2.py x mod3.py x
1 import mod3
2
3 def f2(x):
4     return mod3.f3(x)
5
```

```
mod3.py x mod4.py x
1 import mod4
2
3 def f3(x):
4     return mod4.f4(x)
5
```

```
mod4.py x program.py x
1 import math
2
3 def f4(x):
4     return math.sqrt(x)
5
```

# Stack Trace: Observe

- Last line: Direct message with the error
- Directly before it: where the issue occurred
  - File path / Line number
  - Click it, go directly to the line
- Go back and back till the calling point: f4, f3, f2, f1 (LIFO)
- Note: Python 2 was very limited in stack trace info

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Traceback (most recent call last):

File ["/home/moustafa/00Udemy/CPP/private\\_gitlab\\_code/python\\_skills/23\\_exceptions/code/04/program.py"](#), line 3, in <module>  
print(mod1.f1(-10))

File ["/home/moustafa/competitive/git/private\\_courses/programming\\_cpp/python\\_skills/23\\_exceptions/code/04/mod1.py"](#), line 4, in f1  
return mod2.f2(x)

File ["/home/moustafa/competitive/git/private\\_courses/programming\\_cpp/python\\_skills/23\\_exceptions/code/04/mod2.py"](#), line 4, in f2  
return mod3.f3(x)

File ["/home/moustafa/competitive/git/private\\_courses/programming\\_cpp/python\\_skills/23\\_exceptions/code/04/mod3.py"](#), line 4, in f3  
return mod4.f4(x)

File ["/home/moustafa/competitive/git/private\\_courses/programming\\_cpp/python\\_skills/23\\_exceptions/code/04/mod4.py"](#), line 4, in f4  
return math.sqrt(x)

ValueError: math domain error

*“Acquire knowledge and impart it to the people.”*

*“Seek knowledge from the Cradle to the Grave.”*