

# Exception Handling

Cyber Operations Fundamentals

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# What Is An Exception?

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- From the Python documentation ([docs.python.org](https://docs.python.org)):

*Even if a statement or expression is syntactically correct, it may cause an error when an attempt is made to execute it. Errors detected during execution are called exceptions and are not unconditionally fatal.*

- What happens if you type this into the Python interpreter?

```
n = 5
10 * (1 / n)
n = 0
10 * (1 / n)
```

# Handling Exceptions

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- The Python construct for exception handling is try...except

```
x = int(input("Enter an integer: "))  
print("Your integer is:",x)
```

-----

```
import sys
```

```
try:
```

```
    x = int(input("Enter a integer: "))
```

```
except:
```

```
    print("Oops! Invalid integer.")
```

```
    sys.exit(1)
```

```
print("Your integer is:",x)
```

← If the exception occurs (called *thrown*),  
this line of code never executes

# `import sys? sys.exit(1)?`

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- Python is a very modular language that has been extensively enhanced with external modules or libraries
- Not every program needs every library, so the `import` statement allows you to connect external libraries to your code to add functionality as needed
- The `sys` library provides several useful system functions that your code can use. A frequently used function from the `sys` library is `exit()`, which immediately terminates program execution.
- The syntax for using a function in a library is :

*LibraryName.functionName*

# What's The Number 1 In `sys.exit(1)`?

- The 1 is called the exit code.
- When you want your program to terminate, you can include an integer that provides more information about the type of error encountered.
- In UNIX, generally speaking, an exit code of 0 means the program terminated with no errors. An exit code of 1 means there was some kind of issue.
  - There are many non-zero exit codes in UNIX that we'll explore in SY204
- When a program in UNIX terminates, you can see what error code was returned by typing: `echo $?` in the shell immediately after the program completes. Try this in a shell:

```
ls -l  
echo $?
```