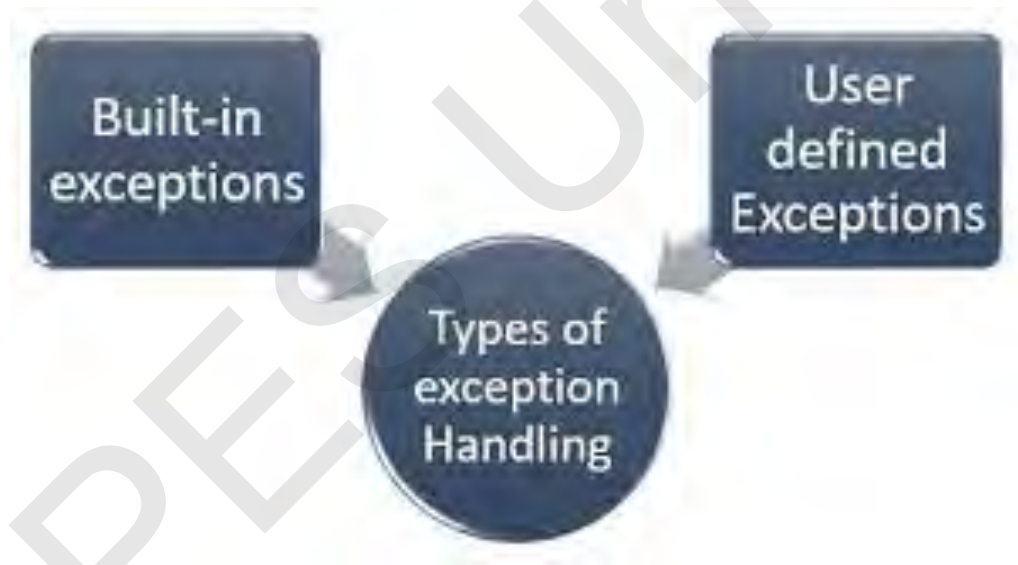


Python Exceptions

An exception is condition or unplanned event such as invalid input that occurs while a program is executing



Exceptions

```
Traceback (most recent call last):  
  File "D:\test.py", line 2, in <module>  
    print(len(a))  
TypeError: object of type 'int' has no len()
```

```
Traceback (most recent call last):  
  File "D:\test.py", line 1, in <module>  
    file=open("dsfdsffsd.txt",'r')  
FileNotFoundError: [Errno 2] No such file or directory: 'dsfdsffsd.txt'
```

```
Traceback (most recent call last):  
  File "D:\test.py", line 1, in <module>  
    print(10/0)  
ZeroDivisionError: division by zero
```

```
Traceback (most recent call last):  
  File "D:\test.py", line 2, in <module>  
    print(a[1])  
IndexError: list index out of range
```

Syntax Errors versus Exceptions

```
print("Python)
```

```
for k in (1,2,3):  
    print(k)
```



Syntax Error



Exception

```
a=10  
b=0  
print(a/b)
```

Types of Exceptions

➤ **ZeroDivisionError**

- Raised when division by zero takes place

➤ **ImportError**

- Raised when an import statement fails.

➤ **IndexError**

- Raised when an index is not found in a sequence.

➤ **IOError**

- Raised when an input/ output operation fails

➤ **FileNotFoundError**

- No such file or directory

Python Exception Handling (Try, Except and Finally)

try:

You do your operations here;

.....

except Exception1:

If there is Exception1, then execute this block.

except Exception2:

If there is Exception2, then execute this block.

.....

else:

If there is no exception then execute this block.

Exceptions cont

try:



Run this code

except:



Execute this code when
there is an exception

try:



Run this code

except:



Execute this code when
there is an exception

else:



No exceptions? Run this
code.

Exceptions: Example 1

try:

```
a=int(input("enter number 1"))
```

```
b=int(input("enter number 2"))
```

```
res=a/b
```

```
print(res)
```

except ZeroDivisionError:

```
print("Division by zero")
```

Exceptions : Example 2

try:

```
a=int(input("enter number 1"))
```

```
b=int(input("enter number 2"))
```

```
res=a/b
```

```
print(res)
```

```
file=open("dsfds.txt","r")
```

```
data=[1,2,3]
```

```
print(data[4])
```

except ZeroDivisionError:

```
print("Division by zero")
```

except FileNotFoundError:

```
print("file not found")
```

Except IndexError:

```
print("Index out of bound")
```


Raising Exceptions : User defined

```
try:
```

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

```
    if a <= 0:
```

```
        raise ValueError("Not a positive number!")
```

```
except ValueError as ve:
```

```
    print(ve)
```

Exceptions: Finally

try:



Run this code

except:



Execute this code when
there is an exception

else:



No exceptions? Run this
code.

finally:



Always run this code.

try...finally

try:

```
f = open("test.txt","r")
```

```
# perform file operations
```

```
#Handle all exceptions
```

finally:

```
f.close()
```

Why Exception handling

Error Debugging

Software maintenance