Topics to be Covered

1. **Python - Interpreted or both Compiled & Interpreted?**
2. **Modules in Python**
3. **Main Function in Python**
4. **Types of Errors in Python**
5. **Exception Handling**

```
a = 100
b = 10

c = a+b

print(c)

a1 = 1000
b1 = 2000

1c = a1+b1

print(1c)
```

```
  File "<ipython-input-2-34cae58f8577>", line 11
    1c = a1+b1
    ^
SyntaxError: invalid decimal literal
```

Next steps: Fix error

Modules in Python

```
import calculator as calc

# import numpy as np
# import pandas as pd


a = 100
b = 10


calc.addPy(a,b)
```

```
110
```

```
calculator.subPy(a,b)
```

```
90
```

```
from calculator import mulPy as mPy
```

```
mPy(12,7)
```

```
84
```

```
import mulPy from calculator
```

```
  File "<ipython-input-13-03d2a69f01d3>", line 1
    import mulPy from calculator
                  ^
SyntaxError: invalid syntax
```

Next steps: Fix error

```
dir(calculator)
```

```
['__builtins__',
 '__cached__',
 '__doc__',
 '__file__',
 '__loader__',
 '__name__',
 '__package__',
 '__spec__',
 'addPy',
 'divPy',
 'mulPy',
 'subPy']
```

```
from calculator import *
```

```
subPy(a,b)
```

```
90
```

```
# inbuilt module in python
```

```
import math
```

```
math.factorial(5)
```

```
120
```

```
math.pi
```

```
3.141592653589793
```

```
math.sqrt(49)
```

```
7.0
```

```
import random
```

```
random.randint(0,5)
```

```
5
```

```
import datetime
import time
```

Types of Errors

```
# Syntax Error

a = 100
b = 10

print(a+b)

print(a+b
```

```
  File "<ipython-input-30-973495905963>", line 8
    print(a+b
              ^
SyntaxError: incomplete input
```

Next steps: Fix error

```
# Syntax Error

a = 100
b = 10

print(a+b)

1a = 200
print(1a)
```

```
  File "<ipython-input-31-2442253b8a3a>", line 8
    1a = 200
    ^
SyntaxError: invalid decimal literal
```

Next steps: Fix error

```
while True
  print(a+b)
  break
```

```
  File "<ipython-input-32-f8709b11bd7d>", line 1
    while True
               ^
SyntaxError: expected ':'
```

Next steps: Fix error

```
# Indentation Error

a = 12
print(a)
if a>10:
    print("a is {}".format(a))
  print("a value is {}".format(a))
```

```
  File "<tokenize>", line 7
    print("a value is {}".format(a))
    ^
IndentationError: unindent does not match any outer indentation level
```

Next steps: Explain error

```
a = 5
b = "3"

print(a+b)
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
<ipython-input-44-5e9ea52dc3ba> in <cell line: 4>()
      2 b = "3"
      3
----> 4 print(a+b)

TypeError: unsupported operand type(s) for +: 'int' and 'str'
```

Next steps: Explain error

```
s = "5"

int(s)
```

```
5
```

```
s = "five"
int(s)
```

```
---------------------------------------------------------------------------
ValueError                                Traceback (most recent call last)
<ipython-input-46-422fa4392760> in <cell line: 2>()
      1 s = "five"
----> 2 int(s)

ValueError: invalid literal for int() with base 10: 'five'
```

Next steps: Explain error

```
l = [10,20,30,40,50]

l.index(100)
```

```
---------------------------------------------------------------------------
ValueError                                Traceback (most recent call last)
<ipython-input-48-e97116e9fff9> in <cell line: 3>()
      1 l = [10,20,30,40,50]
      2
----> 3 l.index(100)

ValueError: 100 is not in list
```

Next steps: Explain error

```
a,b = (1,2)

print(a)
print(b)
```

```
1
2
```

```
a, b = 1,2,3,4
print(a)
print(b)
```

```
---------------------------------------------------------------------------
ValueError                                Traceback (most recent call last)
<ipython-input-50-b332185d703e> in <cell line: 1>()
----> 1 a, b = 1,2,3,4
      2 print(a)
      3 print(b)

ValueError: too many values to unpack (expected 2)
```

Next steps: Explain error

```
a = 5/2

print(a)

b = 5/0

print(b)
```

```
2.5
---------------------------------------------------------------------------
ZeroDivisionError                         Traceback (most recent call last)
<ipython-input-51-316bf058bad1> in <cell line: 5>()
      3 print(a)
      4
----> 5 b = 5/0
      6
      7 print(b)

ZeroDivisionError: division by zero
```

Next steps: Explain error

```
# Name Error

gate = da+cs
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
<ipython-input-52-f17757f5be48> in <cell line: 3>()
      1 # Name Error
      2
----> 3 gate = da+cs

NameError: name 'da' is not defined
```

Next steps: Explain error

```
s = "Venky"
```

```
s.reverse()
```

```
---------------------------------------------------------------------------
AttributeError                            Traceback (most recent call last)
<ipython-input-53-51af539dcf85> in <cell line: 3>()
      1 s = "Venky"
      2
----> 3 s.reverse()

AttributeError: 'str' object has no attribute 'reverse'
```

Next steps: Explain error

```
s[::-1]
```

```
'ykneV'
```

```
l = ["v", "e", "n", "k", "y"]
l.reverse()
```

```
l
```

```
['y', 'k', 'n', 'e', 'v']
```

```
x = [1,2,3,4,5]
```

```
x[7]
```

```
---------------------------------------------------------------------------
IndexError                                Traceback (most recent call last)
<ipython-input-57-bb26ef17231a> in <cell line: 3>()
      1 x = [1,2,3,4,5]
      2
----> 3 x[7]

IndexError: list index out of range
```

Next steps: Explain error

Exception Handling

```
a = 100
b = 10

print(a+b)

c = a/(b-b)

d = a//b
e = a*b

print(d)
print(e)
```

```
110
---------------------------------------------------------------------------
ZeroDivisionError                         Traceback (most recent call last)
<ipython-input-59-486f685a259b> in <cell line: 6>()
      4 print(a+b)
      5
----> 6 c = a/(b-b)
      7
      8 d = a//b

ZeroDivisionError: division by zero
```

Next steps: Explain error

```
a = int(input("Enter a number a:"))
b = int(input("Enter a number b: "))
print("Division: ", a/b)


print("addition: ",a+b)
print("multiplication: ",a*b)
print("subtraction: ",a-b)
```

```
Enter a number a:10
Enter a number b: 0
---------------------------------------------------------------------------
ZeroDivisionError                         Traceback (most recent call last)
<ipython-input-63-8bade4917810> in <cell line: 3>()
      1 a = int(input("Enter a number a:"))
      2 b = int(input("Enter a number b: "))
----> 3 print("Division: ", a/b)
      4
      5

ZeroDivisionError: division by zero
```

Next steps: Explain error

```
# try-except

try:
  a = int(input("Enter a number a:"))
  b = int(input("Enter a number b: "))
  print("Division: ", a/b)
except Exception as e:
  print("Exception occured: {}".format(e))

print("addition: ",a+b)
print("multiplication: ",a*b)
print("subtraction: ",a-b)
```

```
Enter a number a:10
Enter a number b: 0
Exception occured: division by zero
addition:  10
multiplication:  0
subtraction:  10
```

```
try:
  l = [100, 10,20,30,40,50]
  number = int(input("Enter the number : "))
  i = l.index(number)
  print(i)
  print(number/i)
except ZeroDivisionError:
  print("Zero Division Error Occurs")
except ValueError:
  print("Value not found in list")
except Exception as e:
  print("Unknown error occurs : {}".format(e))
```

```
Enter the number : 60
Value not found in list
```

```
try:
  l = [100, 10,20,30,40,50]
  number = int(input("Enter the number : "))
  i = l.index(number)
  print(i)
  print(number/i)

except ZeroDivisionError:
  print("Zero Division Error Occurs")
except ValueError:
  print("Value not found in list")
except Exception as e:
  print("Unknown error occurs : {}".format(e))
finally:
  print("Try-Except block is over")
```

```
Enter the number : 50
5
10.0
Try-Except block is over
```

```
try:
  l = [100, 10,20,30,40,50]
  number = int(input("Enter the number : "))
  i = l.index(number)
  print(i)
  print(number/i)

except ZeroDivisionError:
  print("Zero Division Error Occurs")
except ValueError:
  print("Value not found in list")
except Exception as e:
  print("Unknown error occurs : {}".format(e))
finally:
  print("Try-Except block is over")
```

```
Enter the number : 100
0
Zero Division Error Occurs
Try-Except block is over
```

```
try:
  l = [100, 10,20,30,40,50]
  number = int(input("Enter the number : "))
  i = l.index(number)
  print(i)
  print(number/i)

except ZeroDivisionError:
  print("Zero Division Error Occurs")
except ValueError:
  print("Value not found in list")
except Exception as e:
  print("Unknown error occurs : {}".format(e))
else:
  print("Error Free Try Block")
finally:
  print("Try-Except block is over")
```

```
Enter the number : 50
5
10.0
Error Free Try Block
Try-Except block is over
```

```
try:
  l = [100, 10,20,30,40,50]
  number = int(input("Enter the number : "))
  i = l.index(number)
```

```
    print(i)
    print(number/i)

  except ZeroDivisionError:
    print("Zero Division Error Occurs")
  except ValueError:
    print("Value not found in list")
  except Exception as e:
    print("Unknown error occurs : {}".format(e))
  else:
    print("Error Free Try Block")
  finally:
    print("Try-Except block is over")
```

```
Enter the number : 100
0
Zero Division Error Occurs
Try-Except block is over
```