

Ayudantía de Programación

Introducción a Python

Gonzalo Fernández

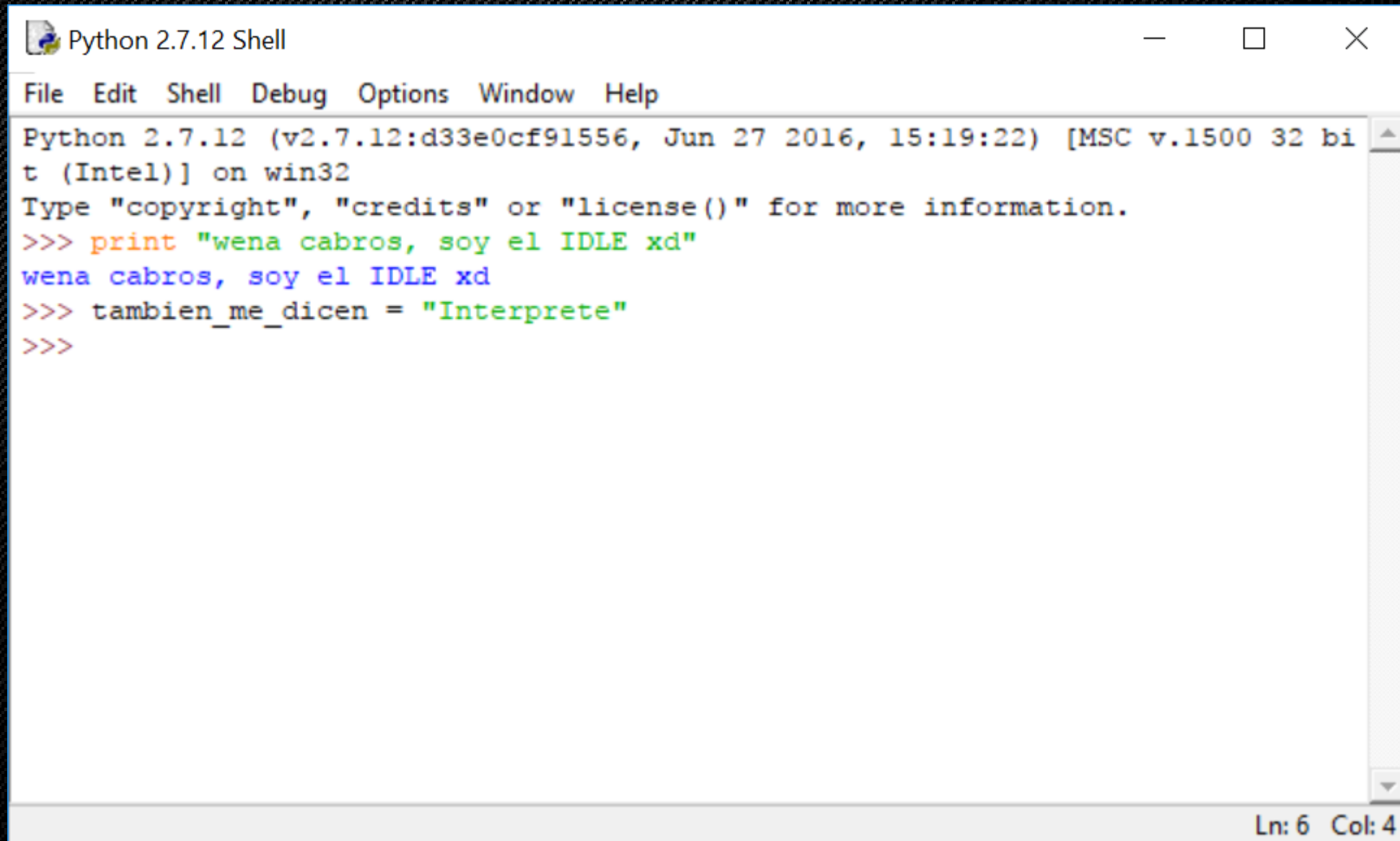
IWI-131 24-09-2018

Temas de la Ayudantía de Hoy

- Conociendo el intérprete de Python
- Tipos de datos y operaciones
- Ejemplos de sentencias básicas
- Entrada y salida de datos
- Ejercicios

Dudas

Conociendo el Intérprete de Python

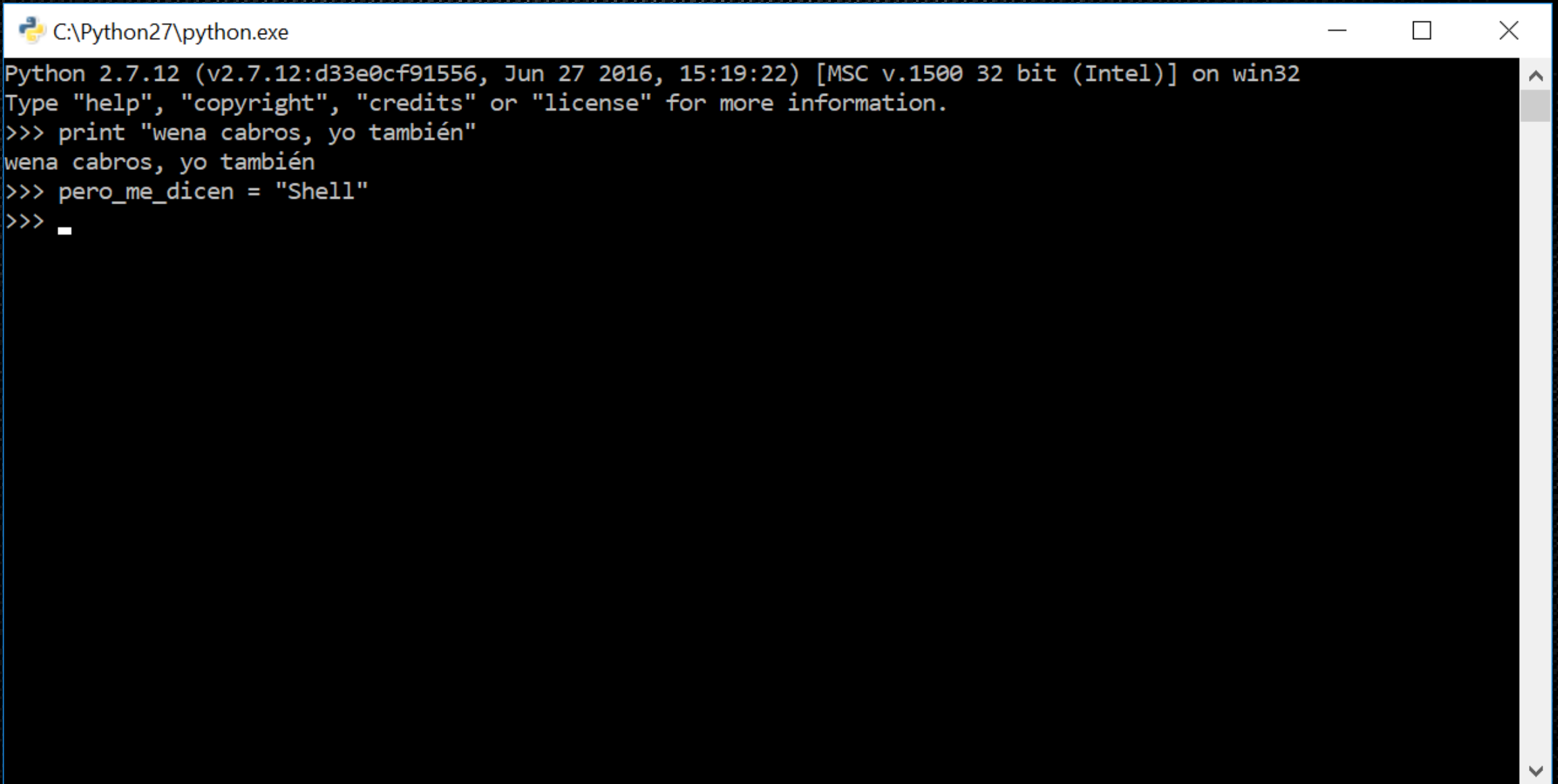


The image shows a screenshot of a Python 2.7.12 Shell window. The window has a title bar with the text "Python 2.7.12 Shell" and standard window controls (minimize, maximize, close). Below the title bar is a menu bar with the following options: File, Edit, Shell, Debug, Options, Window, and Help. The main area of the window displays the following text:

```
Python 2.7.12 (v2.7.12:d33e0cf91556, Jun 27 2016, 15:19:22) [MSC v.1500 32 bi
t (Intel)] on win32
Type "copyright", "credits" or "license()" for more information.
>>> print "wena cabros, soy el IDLE xd"
wena cabros, soy el IDLE xd
>>> tambien_me_dicen = "Interprete"
>>>
```

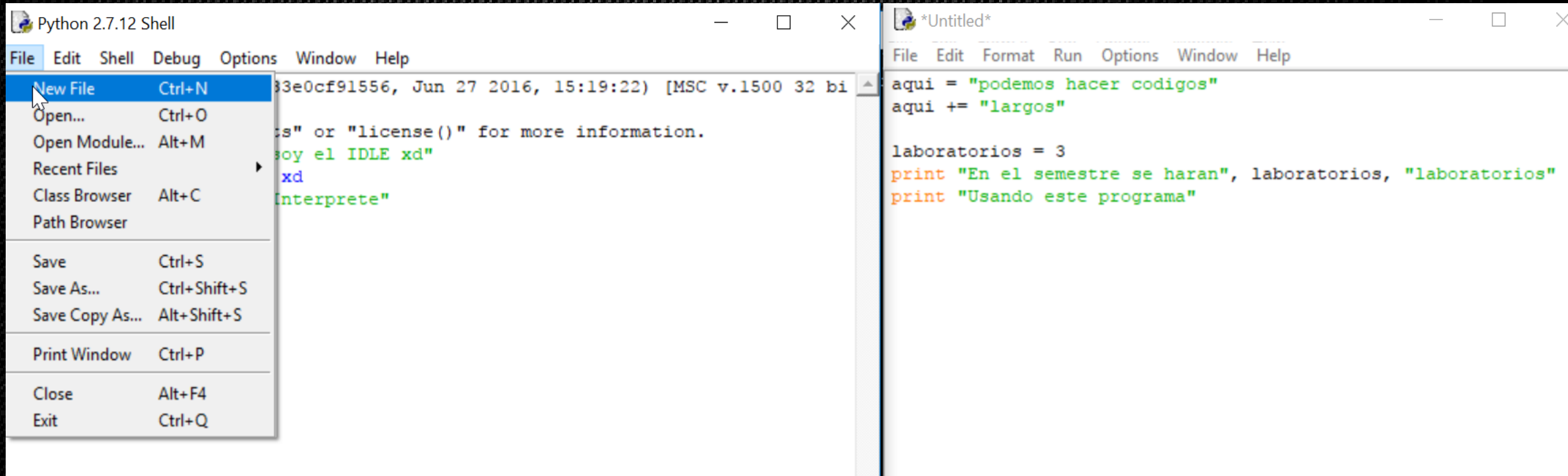
At the bottom right of the window, the status bar shows "Ln: 6 Col: 4".

Conociendo el Intérprete de Python

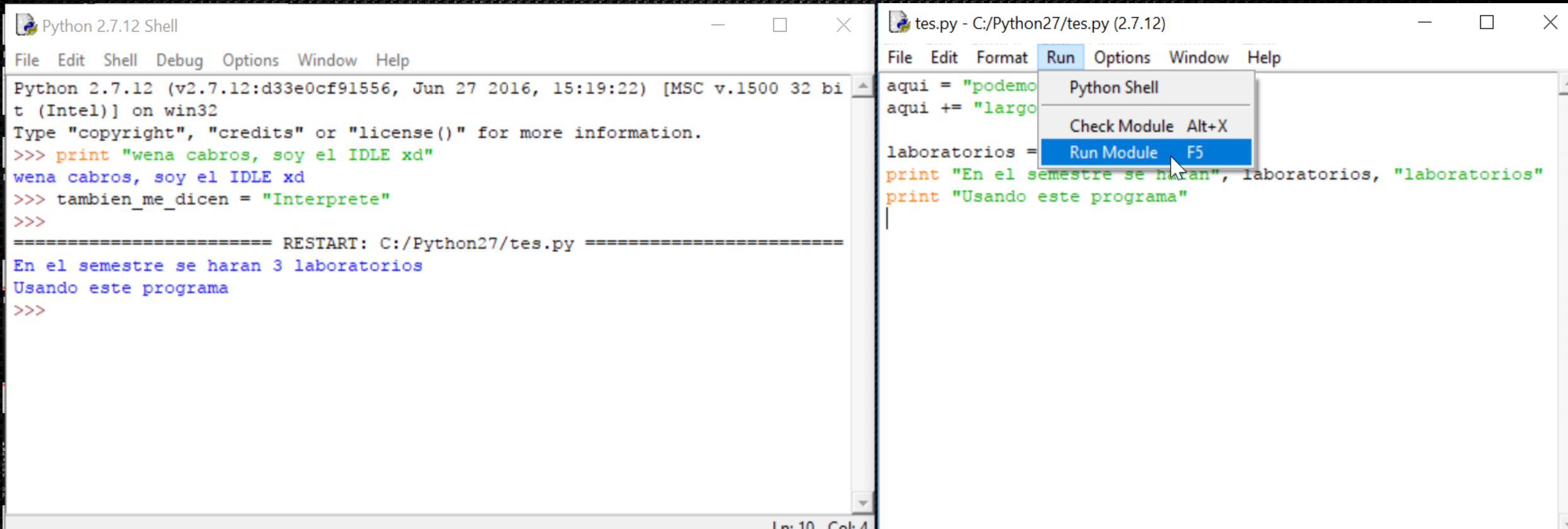


```
C:\Python27\python.exe
Python 2.7.12 (v2.7.12:d33e0cf91556, Jun 27 2016, 15:19:22) [MSC v.1500 32 bit (Intel)] on win32
Type "help", "copyright", "credits" or "license" for more information.
>>> print "wena cabros, yo también"
wena cabros, yo también
>>> pero_me_dicen = "Shell"
>>> _
```

Conociendo el Intérprete de Python



Conociendo el Intérprete de Python



The image shows two side-by-side windows from a Python 2.7.12 environment. The left window, titled 'Python 2.7.12 Shell', displays the interactive prompt. It shows the version information, a prompt to enter 'copyright', 'credits', or 'license()', and the execution of two print statements and an assignment. The output of the first print statement is visible. The right window, titled 'tes.py - C:/Python27/tes.py (2.7.12)', shows a script with three lines of code. A context menu is open over the 'Run' menu item, with 'Run Module F5' highlighted by the mouse cursor.

```
Python 2.7.12 Shell
File Edit Shell Debug Options Window Help
Python 2.7.12 (v2.7.12:d33e0cf91556, Jun 27 2016, 15:19:22) [MSC v.1500 32 bi
t (Intel)] on win32
Type "copyright", "credits" or "license()" for more information.
>>> print "wena cabros, soy el IDLE xd"
wena cabros, soy el IDLE xd
>>> tambien_me_dicen = "Interprete"
>>>
===== RESTART: C:/Python27/tes.py =====
En el semestre se haran 3 laboratorios
Usando este programa
>>>
```

```
tes.py - C:/Python27/tes.py (2.7.12)
File Edit Format Run Options Window Help
aqui = "podemo
aqui += "largo

laboratorios =
print "En el semestre se haran", laboratorios, "laboratorios"
print "Usando este programa"
|
```

asdasd.py

```
1
2 a = int(raw_input("n1: "))
3 b = int(raw_input("n2: "))
4
5 if a > b:
6     print "El numero mayor es:", a
7 else:
8     print "El numero mayor es:", b
9
10
```

I

REPL [python]

```
n1: 1
n2: 6
El numero mayor es: 6

***Repl Closed***
```


Tipos de Datos y Operadores

En Python existen **variables**, estas tienen un nombre, un valor y un tipo determinados, donde los 2 últimos pueden variar a lo largo del programa.

```
entero = 5  
flotante = 5.5555  
string = "Hola Mundirijillo"  
AlumnoAprueba = False
```

Tipos de Datos y Operadores

Los tipos de datos ofrecidos por Python son:

- **Enteros:** Números naturales
- **Flotantes:** Números reales
- **Strings:** Texto en general (siempre van entre "comillas")
- **Booleanos:** True / False

Tipos de Datos y Operadores

Python trae consigo un conjunto de operadores para poder trabajar en conjunto con sus variables.

Suma

+

Resta

-

Asignación

=

Módulo

%

Multiplicación

*

Potencias

**

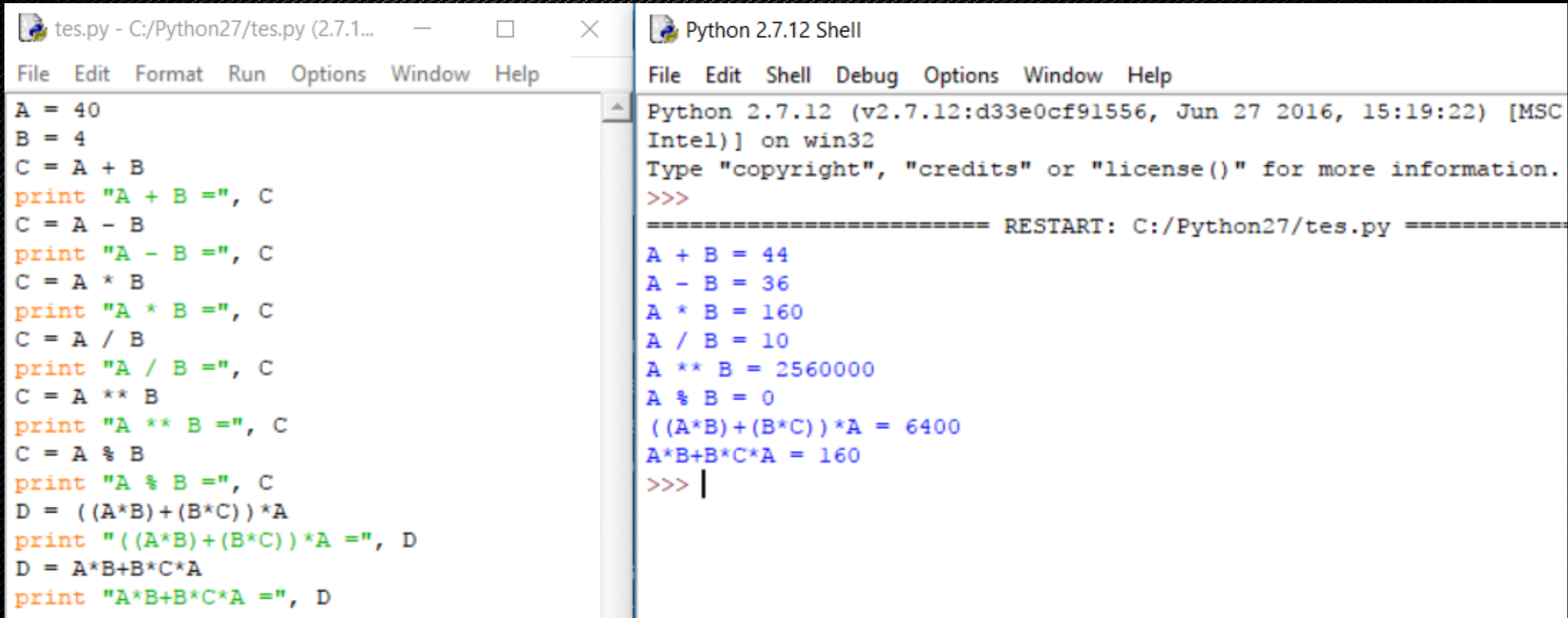
División

/

Precedencia

()

Ejemplos de Sentencias Básicas



The image shows a screenshot of a Python IDE with two windows. The left window, titled 'tes.py - C:/Python27/tes.py (2.7.1...', contains a Python script. The right window, titled 'Python 2.7.12 Shell', shows the output of running the script. The script defines variables A, B, and C, performs arithmetic operations, and prints the results. The shell window shows the execution of the script, including the restart command and the output of the print statements.

```
tes.py - C:/Python27/tes.py (2.7.1...
File Edit Format Run Options Window Help
A = 40
B = 4
C = A + B
print "A + B =", C
C = A - B
print "A - B =", C
C = A * B
print "A * B =", C
C = A / B
print "A / B =", C
C = A ** B
print "A ** B =", C
C = A % B
print "A % B =", C
D = ((A*B)+(B*C))*A
print "((A*B)+(B*C))*A =", D
D = A*B+B*C*A
print "A*B+B*C*A =", D

Python 2.7.12 Shell
File Edit Shell Debug Options Window Help
Python 2.7.12 (v2.7.12:d33e0cf91556, Jun 27 2016, 15:19:22) [MSC
Intel)] on win32
Type "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:/Python27/tes.py =====
A + B = 44
A - B = 36
A * B = 160
A / B = 10
A ** B = 2560000
A % B = 0
((A*B)+(B*C))*A = 6400
A*B+B*C*A = 160
>>> |
```

```
tes.py - C:/Python27/tes.py (2.7.1...  — □ ×  
File Edit Format Run Options Window Help  
A = 5  
print A  
A += 5  
print A  
A -= 20  
print A  
|  
  
((A*B)+(B*C))*A = 6400  
A*B+B*C*A = 160  
>>>  
----- RESTART: C:/Python27/tes.py -----  
5  
10  
-10  
>>>
```

```
tes.py - C:/Python27/tes.py (2.7.1...  — □ ×  
File Edit Format Run Options Window Help  
malditos = "ohayou"  
otakus = "gozaimasu"  
print malditos, otakus  
  
primerTexto = "Parte 1"  
segundoTexto = "Parte 2"  
tercerTexto = primerTexto + segundoTexto  
print tercerTexto  
  
primerTexto += segundoTexto  
print primerTexto  
|  
  
-10  
>>>  
----- RESTART: C:/Python27/tes.py -----  
ohayou gozaimasu  
Parte 1Parte 2  
Parte 1Parte 2  
>>>
```

Entrada y Salida de Datos

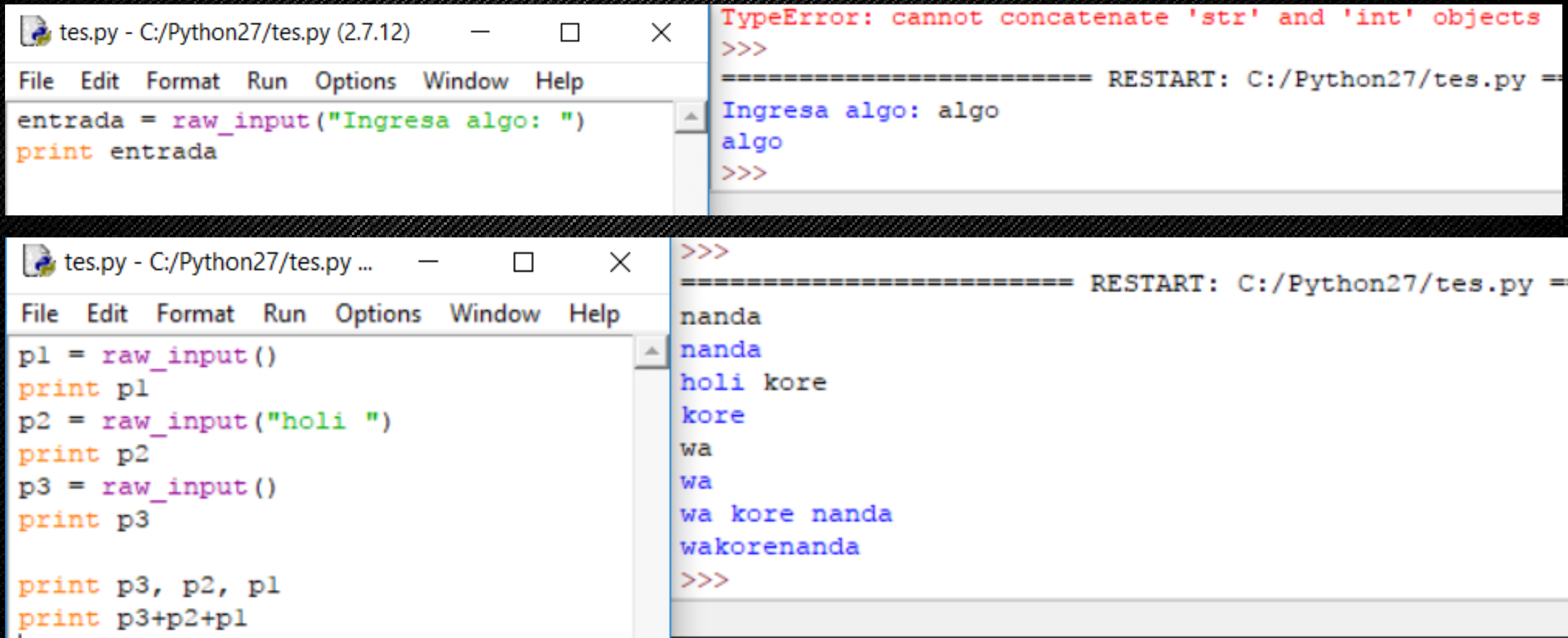
Una de las partes más importantes de la mayoría de programas es la forma en que éste recibirá y devolverá datos.

En Python, existen 2 funciones que se encargan de resolver este tema.

Entrada
`raw_input`

Salida
`print`

Entrada y Salida de Datos



The image displays two screenshots of a Python IDE window titled 'tes.py - C:/Python27/tes.py (2.7.12)'. The first screenshot shows a simple program that prompts the user to enter a value and prints it. The second screenshot shows a more complex program that prompts the user to enter three values and prints them individually and concatenated.

```
tes.py - C:/Python27/tes.py (2.7.12)
File Edit Format Run Options Window Help
entrada = raw_input("Ingresa algo: ")
print entrada

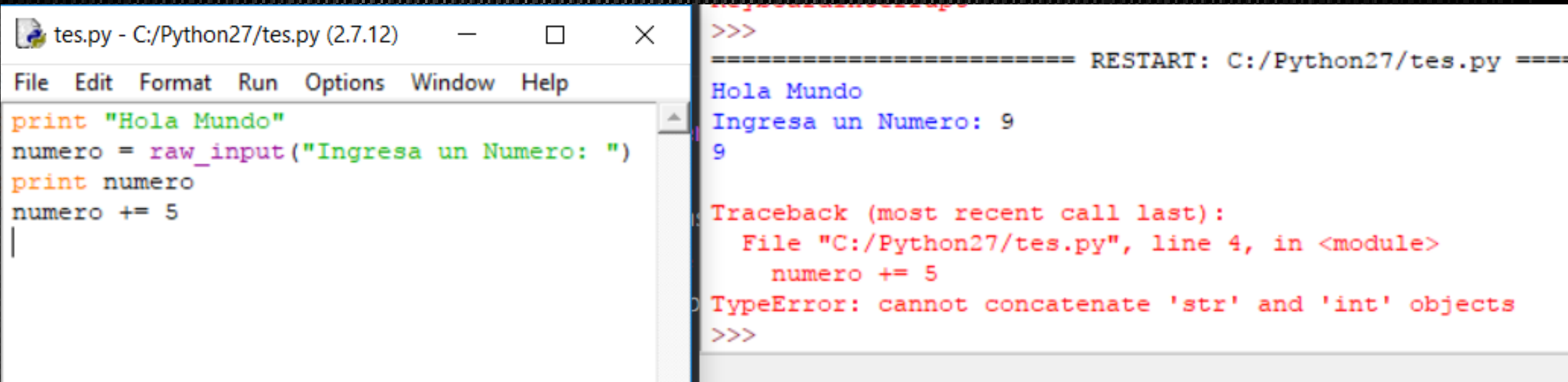
TypeError: cannot concatenate 'str' and 'int' objects
>>>
===== RESTART: C:/Python27/tes.py =====
Ingresa algo: algo
algo
>>>
```

```
tes.py - C:/Python27/tes.py ...
File Edit Format Run Options Window Help
p1 = raw_input()
print p1
p2 = raw_input("holi ")
print p2
p3 = raw_input()
print p3

print p3, p2, p1
print p3+p2+p1

>>>
===== RESTART: C:/Python27/tes.py =====
nanda
nanda
holi kore
kore
wa
wa
wa kore nanda
wakorenanda
>>>
```


Entrada y Salida de Datos



The image shows a screenshot of a Python IDE window titled 'tes.py - C:/Python27/tes.py (2.7.12)'. The window has a menu bar with 'File', 'Edit', 'Format', 'Run', 'Options', 'Window', and 'Help'. The editor area contains the following Python code:

```
print "Hola Mundo"
numero = raw_input("Ingresa un Numero: ")
print numero
numero += 5
|
```

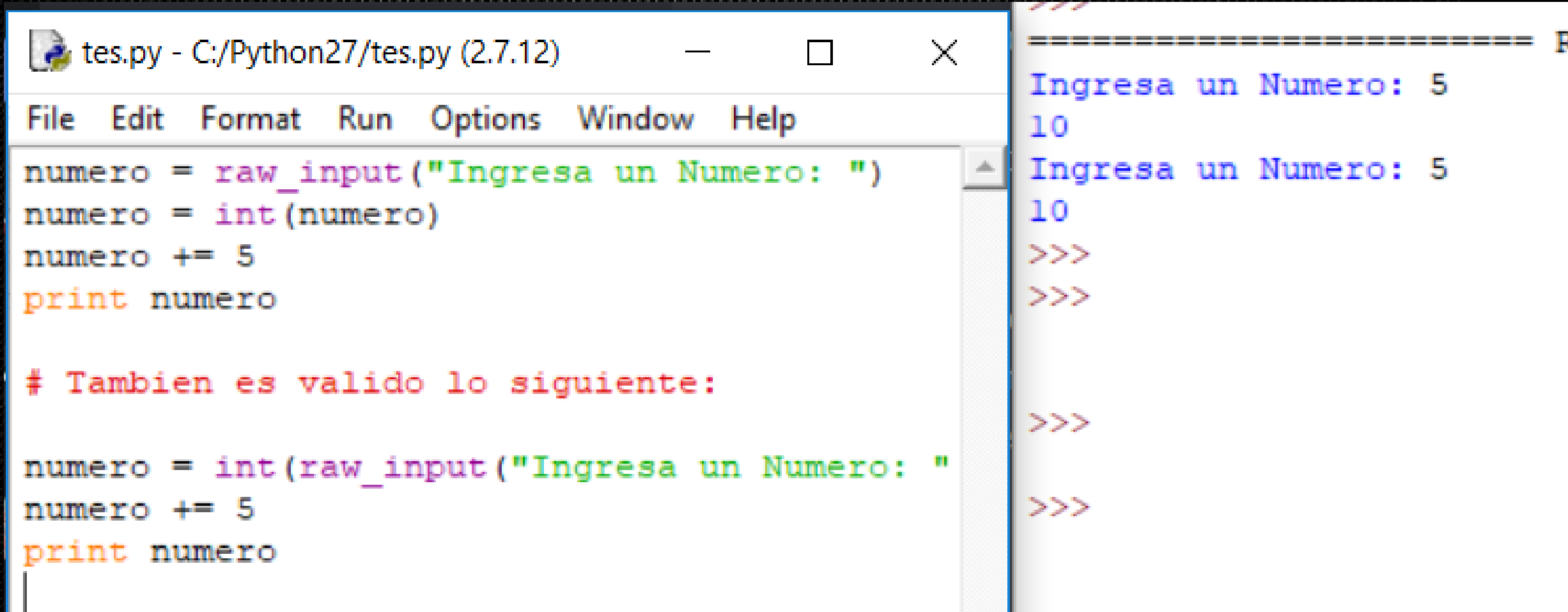
The right side of the image shows the Python interpreter's output and error messages:

```
>>>
===== RESTART: C:/Python27/tes.py =====
Hola Mundo
Ingresa un Numero: 9
9

Traceback (most recent call last):
  File "C:/Python27/tes.py", line 4, in <module>
    numero += 5
TypeError: cannot concatenate 'str' and 'int' objects
>>>
```

The error message indicates a `TypeError: cannot concatenate 'str' and 'int' objects`, which occurs because the variable `numero` is a string (from `raw_input`) and cannot be incremented with the `+=` operator.

Entrada y Salida de Datos



The image shows a screenshot of a Python IDE window titled 'tes.py - C:/Python27/tes.py (2.7.12)'. The window has a menu bar with 'File', 'Edit', 'Format', 'Run', 'Options', 'Window', and 'Help'. The main editor area contains two code snippets. The first snippet uses `raw_input` to get input, convert it to an integer, and add 5. The second snippet is a comment indicating an alternative method using `int(raw_input(...))`. To the right of the code editor, there is a console window showing the execution of the first snippet. It displays the prompt 'Ingresa un Numero: 5', the user input '10', and the output 'Ingresa un Numero: 5' followed by '10'. There are also several empty prompt lines (`>>>`) shown.

```
tes.py - C:/Python27/tes.py (2.7.12)
File Edit Format Run Options Window Help

numero = raw_input("Ingresa un Numero: ")
numero = int(numero)
numero += 5
print numero

# Tambien es valido lo siguiente:

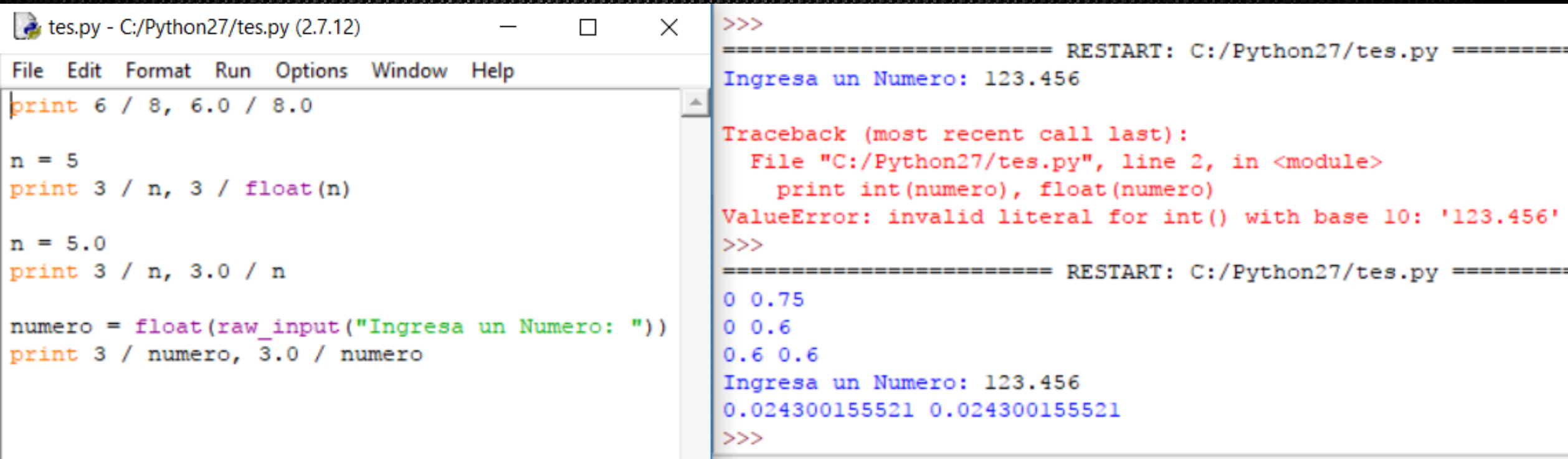
numero = int(raw_input("Ingresa un Numero: "))
numero += 5
print numero

=====
Ingresa un Numero: 5
10
Ingresa un Numero: 5
10
>>>
>>>

>>>

>>>
```

Entrada y Salida de Datos



The image shows a screenshot of a Python IDE window titled 'tes.py - C:/Python27/tes.py (2.7.12)'. The window is split into two panes. The left pane shows the source code, and the right pane shows the execution output.

Source Code (Left Pane):

```
print 6 / 8, 6.0 / 8.0

n = 5
print 3 / n, 3 / float(n)

n = 5.0
print 3 / n, 3.0 / n

numero = float(raw_input("Ingresa un Numero: "))
print 3 / numero, 3.0 / numero
```

Execution Output (Right Pane):

```
>>>
===== RESTART: C:/Python27/tes.py =====
Ingresa un Numero: 123.456

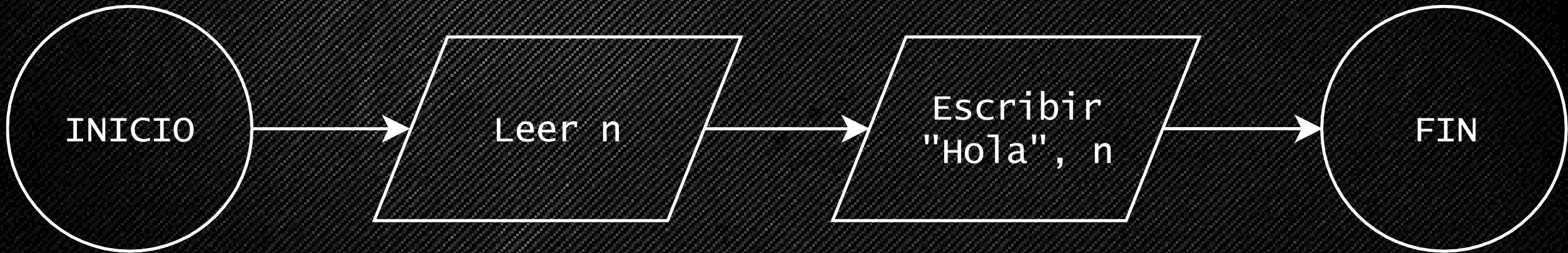
Traceback (most recent call last):
  File "C:/Python27/tes.py", line 2, in <module>
    print int(numero), float(numero)
ValueError: invalid literal for int() with base 10: '123.456'
>>>
===== RESTART: C:/Python27/tes.py =====
0 0.75
0 0.6
0.6 0.6
Ingresa un Numero: 123.456
0.024300155521 0.024300155521
>>>
```

Ejercicios

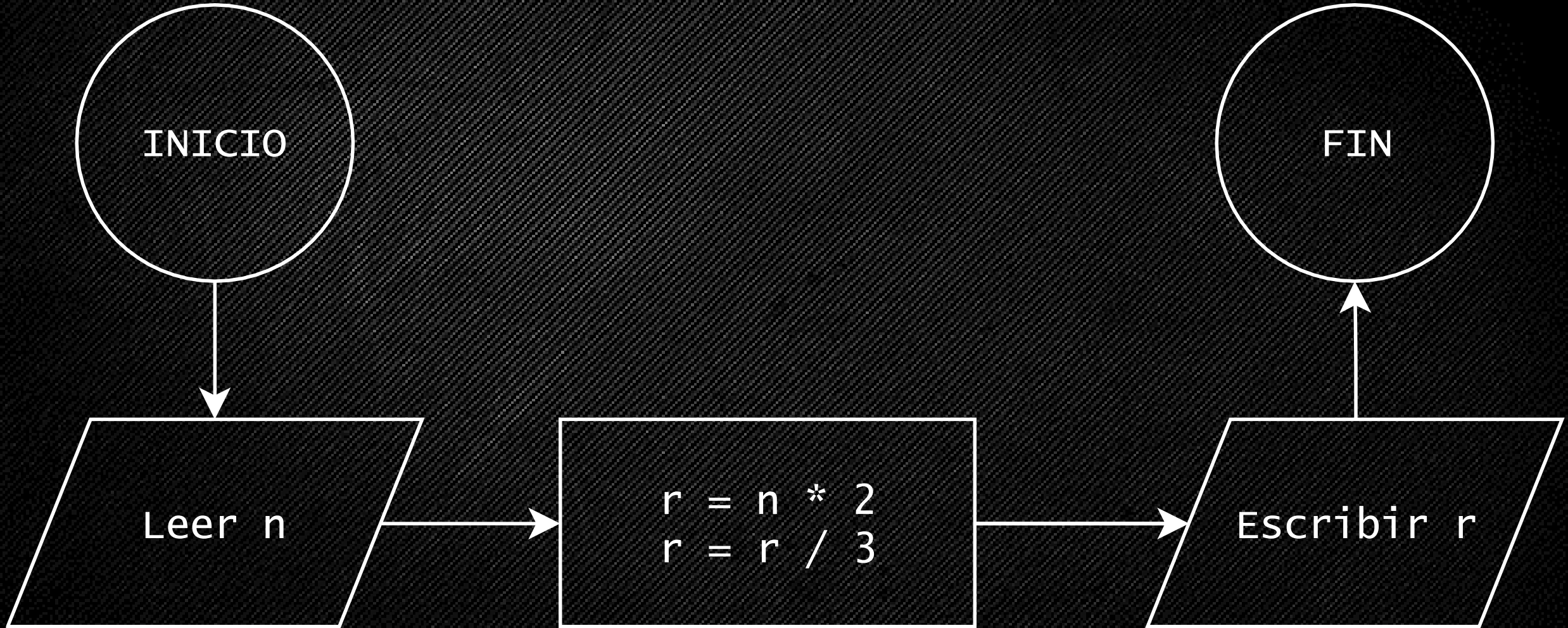
Hola Mundo



Saludar



Duplicar y Dividir



Múltiplos

Realice un programa que solicite un número al usuario y muestre en pantalla los primeros 5 múltiplos del mismo, según el siguiente ejemplo:

Ingresa un numero: 5

5

10

15

20

25

Promedio de Notas

Realice un programa que solicite al usuario sus 3 notas de certámenes y muestre en pantalla su promedio final, de acuerdo al siguiente ejemplo:

Ingresa sus notas:

0

64

100

Su promedio final es: 54.333333333333333336

Áreas y Perímetros

Realice un programa que solicite al usuario un número **n** y muestre en pantalla el área y perímetro de un cuadrado, círculo y triángulo, asumiendo que todos son de lado/radio **n**

Ingresa un numero: 5

Cuadrado: $A = 25$, $P = 20$

Triángulo: $A = 10.825317547305483$, $P = 15$

Círculo: $A = 78.53981633974483$, $P = 31.41592653589793$

Invertir un Número

Realice un programa que solicite al usuario un número de **3** dígitos y muestre en pantalla el número invertido según el siguiente ejemplo:

Ingresa un numero: 123
321

The background is a dark blue field filled with various electronic and computing icons. At the top center are two server racks. To the left is a DSLR camera. Below the servers is a desktop monitor displaying a webpage, with a smartphone in front of it. To the right of the monitor is a laptop. Further right is a game controller and a crossed wrench and screwdriver. Below the monitor is a keyboard and a mouse. To the left of the keyboard is a webcam. At the bottom left is a red MP3 player. To the right of the MP3 player is a hard drive. At the bottom center is a printer. To the right of the printer is a USB drive and a floppy disk. At the top right is a wireless router. At the bottom right is a magnifying glass. White lines connect some of these devices, suggesting a network or data flow. The text 'Fin de la Ayudantía 2' is written in a large, white, sans-serif font across the center of the image.

Fin de la Ayudantía 2

Gonzalo Fernández

IWI-131 24-09-2018