Curso de nivelación de algoritmos

Taller - Clase 2

Python

Estructuras de control: condicionales

```
>>> x = 5
>>> if x < 0:
...     print 'negativo'
... elif x == 0:
...     print 'cero'
... else:
...     print 'positivo'
```

Python

Estructuras de control: condicionales

```
>>> x = 5
>>> if x < 0:
...     print 'negativo'
... elif x == 0:
...     print 'cero'
... else:
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...
positivo
```

Python

Estructuras de control: bloques

```
>>> x = 5
>>> if x < 0:
...[TAB]print 'negativo'
... elif x == 0:
...     print 'cero'
... else:
...     print 'positivo'
...
positivo
```

Python

Estructuras de control: ciclos

```
>>> a, b = 0, 1
>>> while b < 10:
...     print b
...     a, b = b, a+b
```

Python

Estructuras de control: ciclos

```
>>> a, b = 0, 1
>>> while b < 10:
...     print b
...     a, b = b, a+b
...
1
1
2
3
5
8
```

Python

Nueva línea

```
>>> # Serie de fibonacci
... a, b = 0, 1
>>> while b < 10:
...     print b
...     a, b = b, a+b
...
1
1
2
3
5
8

>>> a, b = 0, 1
>>> while b < 10:
...     print b,
...     a, b = b, a+b
...
1 1 2 3 5 8
```

Conversor de Fahrenheit a Celsius

Clase pasada (f2c_v5.py)

```
# conversor fahrenheit a celsius
import sys

fahr = float(sys.argv[1])
cel = (5*(fahr-32))/9
print "fahr=", round(fahr,2), " -> cel=", round(cel,2)
```

Conversor de Fahrenheit a Celsius

Lectura de argumentos (f2c_v5.py)

```
# conversor fahrenheit a celsius
import sys

fahr = float(sys.argv[1])
cel = (5*(fahr-32))/9
print "fahr=", round(fahr,2), " -> cel=", round(cel,2)
```

Conversor de Fahrenheit a Celsius

Lectura de argumentos

```
# python f2c_v5.py 80
fahr=80.00 -> cel=26.67
```

Conversor de Fahrenheit a Celsius

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Conversor de Fahrenheit a Celsius

Lectura de argumentos

```
# python f2c_v5.py 80
fahr=80.00 -> cel=26.67
```

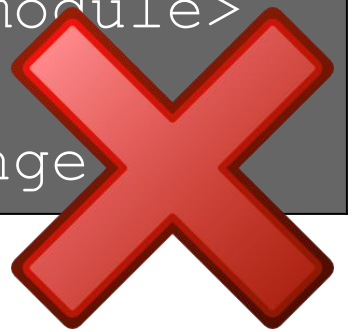
```
# python f2c_v5.py
Traceback (most recent call last):
  File "f2c_v5.py", line 4, in <module>
    fahr = float(sys.argv[1])
IndexError: list index out of range
```

Conversor de Fahrenheit a Celsius

Lectura de argumentos

```
# python f2c_v5.py 80
fahr=80.00 -> cel=26.67
```

```
# python f2c_v5.py
Traceback (most recent call last):
  File "f2c_v5.py", line 4, in <module>
    fahr = float(sys.argv[1])
IndexError: list index out of range
```



Conversor de Fahrenheit a Celsius

Sentencias condicionales (f2c_v6.py)

```
import sys

# conversor fahrenheit a celsius
if len(sys.argv) != 2:
      print "uso: f2c valor\n"
else:
      fahr = float(sys.argv[1])
      cel = (5*(fahr-32))/9
      print "fahr=", round(fahr,2), "-> cel=", round(cel,2)
```

Conversor de Fahrenheit a Celsius

Sentencias condicionales (f2c_v6.py)

```
import sys

# conversor fahrenheit a celsius
if len(sys.argv) != 2:
      print "uso: f2c valor\n"
else:
      fahr = float(sys.argv[1])
      cel = (5*(fahr-32))/9
      print "fahr=", round(fahr,2), "-> cel=", round(cel,2)
```

Conversor de Fahrenheit a Celsius

Bloques de código (f2c_v6.py)

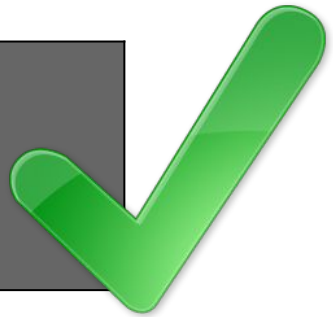
```
import sys

# conversor fahrenheit a celsius
if len(sys.argv) != 2:
[TAB] print "uso: f2c valor\n"
else:
[TAB] fahr = float(sys.argv[1])
[TAB] cel = (5*(fahr-32))/9
[TAB] print "fahr=", round(fahr,2), "-> cel=", round(cel,2)
```

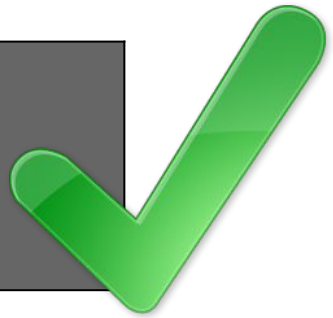
Conversor de Fahrenheit a Celsius

Lectura de argumentos

```
# python f2c_v6.py 80
fahr=80.00 -> cel=26.67
```



```
# python f2c_v6.py
uso: f2c valor
```



Conversor de Fahrenheit a Celsius

Ejercicio

Generar una tabla de conversión de grados Fahrenheit a Celsius partiendo de 0 hasta 100 a intervalos de 10.

Conversor de Fahrenheit a Celsius

Ciclos (f2c_v7.py)

```
# conversor fahrenheit a celsius

fahr = 0.0
while fahr < 101:
    cel = (5*(fahr-32))/9
    print "fahr=", round(fahr,2), "-> cel=", round(cel,2)
    fahr = fahr + 10
```

Conversor de Fahrenheit a Celsius

Ciclos (f2c_v7.py)

```
# conversor fahrenheit a celsius

fahr = 0.0
while fahr < 101:
    cel = (5*(fahr-32))/9
    print "fahr=", round(fahr,2), "-> cel=", round(cel,2)
    fahr = fahr + 10
```

Conversor de Fahrenheit a Celsius

Salida

```
#./f2c
fahr=  0.00 -> cel=-17.78
fahr= 10.00 -> cel=-12.22
fahr= 20.00 -> cel= -6.67
fahr= 30.00 -> cel= -1.11
fahr= 40.00 -> cel=  4.44
fahr= 50.00 -> cel= 10.00
fahr= 60.00 -> cel= 15.56
fahr= 70.00 -> cel= 21.11
fahr= 80.00 -> cel= 26.67
fahr= 90.00 -> cel= 32.22
fahr=100.00 -> cel= 37.78
```

Conversor de Fahrenheit a Celsius

Ejercicio

Generar una tabla de conversión de grados Fahrenheit a Celsius partiendo de 0 hasta 100 a intervalos de 10 y a continuación la conversión de todos los valores entre 101 y 110.

Conversor de Fahrenheit a Celsius

f2c_v8.py

```
# conversor fahrenheit a celsius

fahr = 0.0
while fahr < 101:
    cel = (5*(fahr-32))/9
    print "fahr=", round(fahr,2), "-> cel=", round(cel,2)
    fahr = fahr + 10

fahr = 101.0
while fahr < 111:
    cel = (5*(fahr-32))/9
    print "fahr=", round(fahr,2), "-> cel=", round(cel,2)
    fahr = fahr + 1
```

Conversor de Fahrenheit a Celsius

Código repetido (f2c_v8.py)

```
# conversor fahrenheit a celsius

fahr = 0.0
while fahr < 101:
    cel = (5*(fahr-32))/9
    print "fahr=", round(fahr,2), "-> cel=", round(cel,2)
    fahr = fahr + 10

fahr = 101.0
while fahr < 111:
    cel = (5*(fahr-32))/9
    print "fahr=", round(fahr,2), "-> cel=", round(cel,2)
    fahr = fahr + 1
```

Conversor de Fahrenheit a Celsius

Funciones (f2c_v9.py)

```
# conversor fahrenheit a celsius

def convertir(valorInicial, valorFinal, intervalo):
    fahr = valorInicial
    while fahr < valorFinal+1:
        cel = (5*(fahr-32))/9
        print "fahr=", round(fahr,2), "-> cel=", round(cel,2)
        fahr = fahr + intervalo


convertir(0, 100, 10)
convertir(101, 110, 1)
```

Conversor de Fahrenheit a Celsius

Funciones (f2c_v9.py)

```
# conversor fahrenheit a celsius

def convertir(valorInicial, valorFinal, intervalo):
    fahr = valorInicial
    while fahr < valorFinal+1:
        cel = (5*(fahr-32))/9
        print "fahr=", round(fahr,2), "-> cel=", round(cel,2)
        fahr = fahr + intervalo


convertir(0, 100, 10)
convertir(101, 110, 1)
```

Conversor de Fahrenheit a Celsius

Funciones: encapsular y abstraer (f2c_v10.py)

```
# conversor fahrenheit a celsius

def fahrenheit2Celsius(valor):
    return (5*(fahr-32))/9

def convertir(valorInicial, valorFinal, intervalo):
    fahr = valorInicial
    while fahr < valorFinal+1:
        cel = fahrenheit2Celsius(fahr)
        print "fahr=", round(fahr,2), "-> cel=", round(cel,2)
        fahr = fahr + intervalo;


convertir(0, 100, 10);
convertir(101, 110, 1);
```

Conversor de Fahrenheit a Celsius

Funciones: valor de retorno (f2c_v10.py)

```
# conversor fahrenheit a celsius

def fahrenheit2Celsius(valor):
    return (5*(fahr-32))/9

def convertir(valorInicial, valorFinal, intervalo):
    fahr = valorInicial
    while (fahr < valorFinal+1):
        cel = fahrenheit2Celsius(fahr)
         print "fahr=", round(fahr,2), "-> cel=", round(cel,2)
         fahr = fahr + intervalo;


convertir(0, 100, 10);
convertir(101, 110, 1);
```

Ejercicio

Implementar las funciones getMin, getMax y computeMean para que el siguiente programa pueda ejecutarse correctamente.

Las funciones no deben modificar el contenido de la lista.

```
valores = [23,4,67,32,13]
print "El minimo valor es: ", getMin(valores)
print "El maximo valor es: ", getMax(valores)
print "El promedio es: ", computeMean(valores)
```