

5 4) Orden shell

```
def OrdenShell(lista): # [100, 22, 95, 1, 23, 45, 450, 18, 35]
```

```
    inc = int(len(lista)/2)
```

```
    while inc > 0:
```

```
        for i in range(inc, len(lista):
```

```
            j = i
```

```
            temp = lista[i]
```

```
            while j >= inc and lista[j-inc] > temp:
```

```
                lista[j] = lista[j-inc]
```

```
                j = j - inc
```

```
            lista[j] = temp
```

```
        if (inc == 2):
```

```
            inc = 1
```

```
        else:
```

```
            inc = int(inc/2.5)
```

```
    print(lista)
```

Bucle while inc > 0

Inc inicial	Lista	len(lista)
4	[23, 22, 95, 1, 35, 45, 450, 18, 100]	9
1	[1, 18, 22, 23, 35, 45, 95, 100, 450]	9

Bucle For i

Primera pasada rango de 4 a 8

$i=4, inc=4$

$j=4$

temp = 23

Iteracion del while

lista[0] = 23

Pasadas

While

Condicion

cambio

1

2

$4 \geq 4$ and $100 > 23$

$0 \geq 4$ NO

lista[4] = 100

\Rightarrow lista = [23, 22, 95, 1, 100, 45, 450, 18, 35]

$i=5, inc=4$

$j=5$

temp = 45

Iteracion del while

lista[5] = 45

\Rightarrow [23, 22, 95, 1, 100, 45, 450, 18, 35]

While

Pasada

Condicion

cambio

j

1

$5 \geq 4$ and $22 > 45$

#NO

$i=6, inc=4$

$j=6$

temp = 450

Iteracion del while

lista[6] = 450

\Rightarrow [23, 22, 95, 1, 100, 45, 450, 18, 35]

While

Pasada

Condicion

cambio

j

1

$6 \geq 4$ and $95 > 450$

#NO

$i=7$

$inc=4$

$j=7$

temp = 18

Iteracion del while

lista[7] = 18

\Rightarrow [23, 22, 95, 1, 100, 45, 450, 18, 35]

#NO $7 \geq 4$ and $1 > 18$

$i=8$

$inc=4$

$j=8$

temp = 35

Iteracion while

lista[4] = 35

\Rightarrow [23, 22, 95, 1, 35, 45, 450, 18, 100]

Pasada

While

Condicion

cambio

j

1

$8 \geq 4$ and $100 > 35$

lista[8] = 100

4

2

$4 \geq 4$ and $23 > 35$ #NO

Segunda pasada rango de 1 a 9

i=1 inc=1

j=1

temp=22

Iteracion del while

Lista[0]=22

while			
Pasadas	Condicion	Cambio	j
1	1 > 1 and 22 > 22	Lista[1]=23	0
2	0 > 1 #NO		

⇒ Lista=[22,23,95,1,35,45,450,18,100]

i=2 inc=1

j=2

temp=95

Iteracion del while

Lista[2]=95 ⇒ Lista=[22,23,95,1,35,45,450,18,100]

#NO 2 > 1 and 23 > 95

i=3 inc=1

j=3

temp=1

Iteracion del while

Lista[0]=1

while			
Pasadas	Condicion	Cambio	j
1	3 > 1 and 95 > 1	Lista[3]=95	2
2	2 > 1 and 23 > 1	Lista[2]=23	1
3	1 > 1 and 22 > 1	Lista[1]=22	0

⇒ Lista=[1,22,23,95,35,45,450,18,100]

i=4 inc=1

j=4

temp=35

Iteracion del while

Lista[3]=35

while			
Pasadas	Condicion	Cambio	j
1	4 > 1 and 95 > 35	Lista[4]=95	3
2	3 > 1 and 23 > 35 #NO		

⇒ Lista=[1,22,23,35,95,45,450,18,100]

i=5 inc=1

j=5

temp=45

Iteracion del while

Lista[4]=45

while			
Pasadas	Condicion	Cambio	j
1	5 > 1 and 95 > 45	Lista[5]=95	4
2	4 > 1 and 35 > 45 #NO		

⇒ Lista=[1,22,23,35,45,95,450,18,100]

i=6 inc=1

j=6

temp=450

Iteracion del while

Lista[6]=450

#NO 6 > 1 and 95 > 450

⇒ Lista=[1,22,23,35,45,95,450,18,100]

$i = 7$ $inc = 1$

$j = 7$

$temp = 18$

Iteracion del while

$lista[1] = 18$

while

Pasadas	Condicion	Cambio	j
1	$7 \geq 1$ and $18 > 18$	$lista[7] = 450$	6
2	$6 \geq 1$ and $95 > 18$	$lista[6] = 95$	5
3	$5 \geq 1$ and $45 > 18$	$lista[5] = 45$	4
4	$4 \geq 1$ and $35 > 18$	$lista[4] = 35$	3
5	$3 \geq 1$ and $23 > 18$	$lista[3] = 23$	2
6	$2 \geq 1$ and $22 > 18$	$lista[2] = 22$	1

$\Rightarrow Lista = [1, 18, 22, 23, 35, 45, 95, 450, 100]$

$i = 8$ $inc = 1$

$j = 8$

$temp = 100$

Iteracion del while

$lista[7] = 100$

while

Pasadas	Condicion	Cambio	j
1	$8 \geq 1$ and $450 > 100$	$lista[8] = 450$	7
2	$7 \geq 1$ and $95 > 100$	NO	

$\Rightarrow Lista = [1, 18, 22, 23, 35, 45, 95, 100, 450]$