

PARCIAL III - CI3641 - JOAO PINTO 17-10490

PREGUNTA 3

ASOCIACIÓN DINÁMICA DE MÉTODOS

EJECUCIÓN PASO A PASO

```
class A {
  int a = 4, b = 9

  fun p(int x): int {
    a = b * x
    return q(a)
  }

  fun q(int y): int {
    return a + y
  }
}

class B extends A {
  A sopa = new C()

  fun q(int y): int {
    return sopa.p(a + b) + y
  }
}

class C extends B {
  int c = 0

  fun p(int x): int {
    a = 3 + x
    c = 2 * b - x
    return q(a + b + c)
  }

  fun q(int y): int {
    return c + y
  }
}

A mon = new B()
A don = new C()
B go = new C()

print(mon.p(1) + don.p(1) + go.p(1))
```

Nombre	TE	TD	Methods table	Values
mon	A	B	p -> A, q -> B	a = 4, b = 9
don	A	C	p -> C, q -> C	a = 4, b = 9, c = 0
go	B	C	p -> C, q -> C	a = 4, b = 9, c = 0
mon.sopa	A	C	p -> C, q -> C	a = 4, b = 9, c = 0
don.sopa	A	C	p -> C, q -> C	a = 4, b = 9, c = 0
go.sopa	A	C	p -> C, q -> C	a = 4, b = 9, c = 0

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class A {
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  fun q(int y): int {
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}

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  int c = 0

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    a = 3 + x
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don.sopa	A	C	p -> C, q -> C	a = 4, b = 9, c = 0
go.sopa	A	C	p -> C, q -> C	a = 4, b = 9, c = 0

mon.p	x	1
	PC	1
	return	-
Global	PC	11

```
class A {
  int a = 4, b = 9

  fun p(int x): int {
    ▶ 0   a = b * x
    ▶ 1   return q(a)
  }

  fun q(int y): int {
    ▶ 2   return a + y
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class B extends A {
  A sopa = new C()

  fun q(int y): int {
    ▶ 3   return sopa.p(a + b) + y
  }
}

class C extends B {
  int c = 0

  fun p(int x): int {
    ▶ 4   a = 3 + x
    ▶ 5   c = 2 * b - x
    ▶ 6   return q(a + b + c)
  }

  fun q(int y): int {
    ▶ 7   return c + y
  }
}

▶ 8 A mon = new B()
▶ 9 A don = new C()
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mon.q	y	9
	PC	3
	return	-
mon.p	x	1
	PC	1
	return	-
Global	PC	11

```
class A {
  int a = 4, b = 9

  fun p(int x): int {
    ▶ 0   a = b * x
    ▶ 1   return q(a)
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  A sopa = new C()

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}

class C extends B {
  int c = 0

  fun p(int x): int {
    ▶ 4   a = 3 + x
    ▶ 5   c = 2 * b - x
    ▶ 6   return q(a + b + c)
  }

  fun q(int y): int {
    ▶ 7   return c + y
  }
}

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go	B	C	p -> C, q -> C	a = 4, b = 9, c = 0
mon.sopa	A	C	p -> C, q -> C	a = 3 + 18, b = 9, c = 18 - 18
don.sopa	A	C	p -> C, q -> C	a = 4, b = 9, c = 0
go.sopa	A	C	p -> C, q -> C	a = 4, b = 9, c = 0

mon.sopa.p	x	18
	PC	6
	return	-

mon.q	y	9
	PC	3
	return	-

mon.p	x	1
	PC	1
	return	-

```
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go	B	C	p -> C, q -> C	a = 4, b = 9, c = 0
mon.sopa	A	C	p -> C, q -> C	a = 21, b = 9, c = 0
don.sopa	A	C	p -> C, q -> C	a = 4, b = 9, c = 0
go.sopa	A	C	p -> C, q -> C	a = 4, b = 9, c = 0

mon.sopa.p	x	18
	PC	6
	return	-

mon.q	y	9
	PC	3
	return	-

mon.p	x	1
	PC	1
	return	-

```
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  int c = 0

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    a = 3 + x
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    return q(a + b + c)
  }

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don.sopa	A	C	p -> C, q -> C	a = 4, b = 9, c = 0
go.sopa	A	C	p -> C, q -> C	a = 4, b = 9, c = 0

mon.sopa.q	y	30
	PC	7
	return	0 + 30 = 30

mon.sopa.p	x	18
	PC	6
	return	-

mon.q	y	9
	PC	3
	return	-


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  int a = 4, b = 9

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  fun q(int y): int {
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don.sopa	A	C	p -> C, q -> C	a = 4, b = 9, c = 0
go.sopa	A	C	p -> C, q -> C	a = 4, b = 9, c = 0

mon.sopa.p	x	18
	PC	6
	return	30

mon.q	y	9
	PC	3
	return	-

mon.p	x	1
	PC	1
	return	-

```
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  int a = 4, b = 9

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go.sopa	A	C	p -> C, q -> C	a = 4, b = 9, c = 0

mon.q	y	9
	PC	3
	return	30 + 9 = 39
mon.p	x	1
	PC	1
	return	-
Global	PC	11

```
class A {
  int a = 4, b = 9

  fun p(int x): int {
    a = b * x
    return q(a)
  }

  fun q(int y): int {
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class B extends A {
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class C extends B {
  int c = 0

  fun p(int x): int {
    a = 3 + x
    c = 2 * b - x
    return q(a + b + c)
  }

  fun q(int y): int {
    return c + y
  }
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go.sopa	A	C	p -> C, q -> C	a = 4, b = 9, c = 0

mon.p	x	1
	PC	1
	return	39
Global	PC	11

```
class A {
  int a = 4, b = 9

  fun p(int x): int {
    a = b * x
    return q(a)
  }

  fun q(int y): int {
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don.p	x	1
	PC	6
	return	-
Global	PC	11

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Nombre	TE	TD	Methods table	Values
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go	B	C	p -> C, q -> C	a = 4, b = 9, c = 0
mon.sopa	A	C	p -> C, q -> C	a = 21, b = 9, c = 0
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don.p	x	1
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go.sopa	A	C	p -> C, q -> C	a = 4, b = 9, c = 0

don.q	y	30
	PC	7
	return	17 + 30 = 47
don.p	x	1
	PC	6
	return	-
Global	PC	11

```
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  int a = 4, b = 9

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```
class A {
  int a = 4, b = 9

  fun p(int x): int {
    a = b * x
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class B extends A {
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go.sopa	A	C	p -> C, q -> C	a = 4, b = 9, c = 0

El objeto **go** tiene el mismo *tipo dinámico* y los *mismos valores iniciales* para **a**, **b** y **c** que el objeto **don**.

Por lo tanto los resultados (y pasos) de ejecución de **go.p(1)** son idénticos a los de **don.p(1)**.

Se omiten los pasos, en la siguiente lamina están los resultados.

```
class A {
  int a = 4, b = 9

  fun p(int x): int {
    a = b * x
    return q(a)
  }

  fun q(int y): int {
    return a + y
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}

class B extends A {
  A sopa = new C()

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A don = new C()
B go = new C()

print(mon.p(1) 39 + don.p(1) 47 + go.p(1) 47)
```

Nombre	TE	TD	Methods table	Values
mon	A	B	p -> A, q -> B	a = 9, b = 9
don	A	C	p -> C, q -> C	a = 4, b = 9, c = 17
go	B	C	p -> C, q -> C	a = 4, b = 9, c = 17
mon.sopa	A	C	p -> C, q -> C	a = 21, b = 9, c = 0
don.sopa	A	C	p -> C, q -> C	a = 4, b = 9, c = 0
go.sopa	A	C	p -> C, q -> C	a = 4, b = 9, c = 0

IMPRIME

> 133

ASOCIACIÓN DINÁMICA DE MÉTODOS

RESULTADOS

FINALMENTE

El programa imprime:

```
A mon = new B()  
A don = new C()  
B go = new C()  
  
print(mon.p(1) + don.p(1) + go.p(1))  
  
> 133
```