

Alcance Estático y Asociación Profunda

```
int x = 5, y = 6;
```

```
proc ohno(int x) {  
    y := 2 * x;  
}
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```
proc ohwell(int y, proc waitwhat) {  
    if (y < 10) {  
        proc ohno(int x) {  
            x := y * 2  
        }  
        ohwell(y + 10, waitwhat);  
    } else if (y < 20) {  
        ohwell(y + 10, ohno);  
    } else {  
        int x = 3;  
        waitwhat(x + y);  
    }  
    print(x, y);  
}
```

```
ohwell(x, ohno);  
print(x, y);
```

IMPRIME

GLOBAL	
x	5
y	6
ohno	proc
ohwell	proc

ww = waitwhat

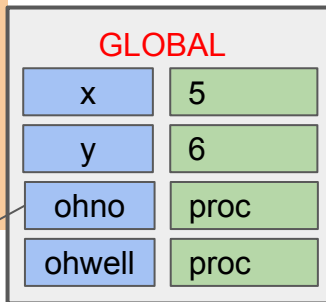
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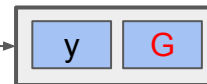
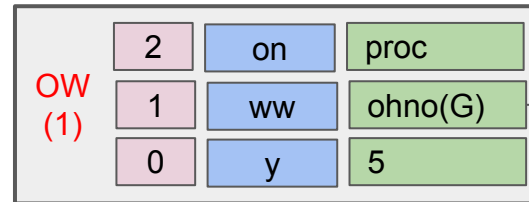
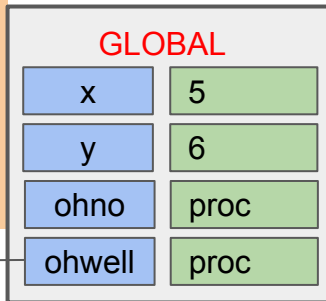
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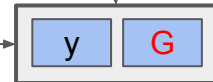
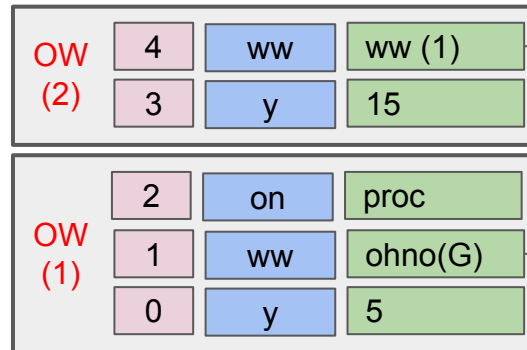
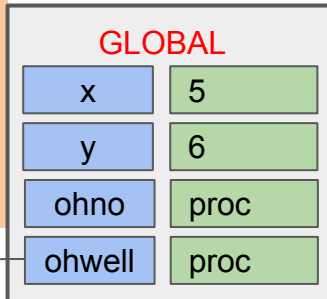
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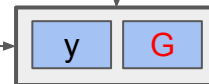
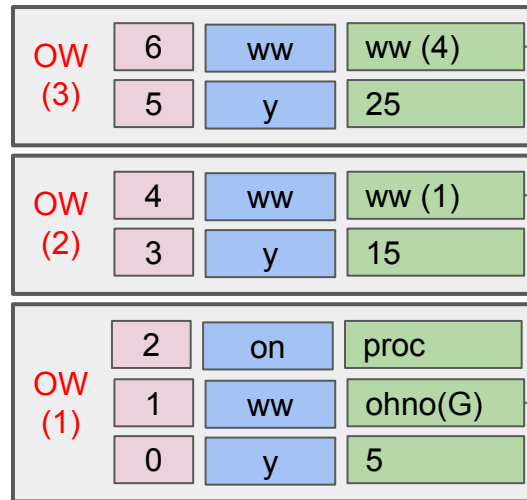
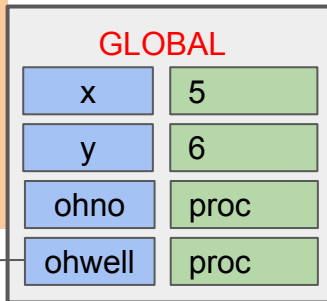
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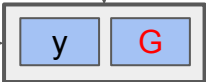
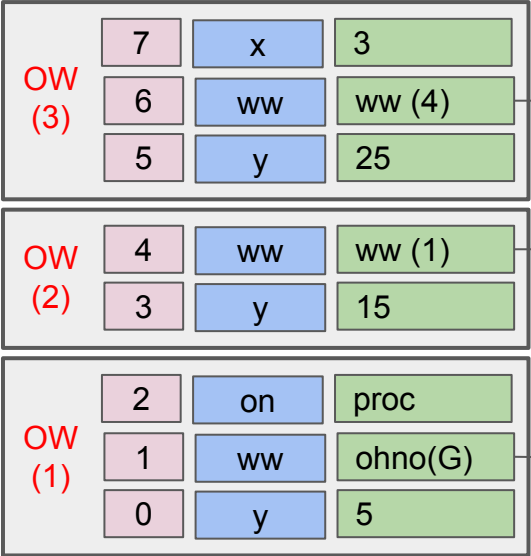
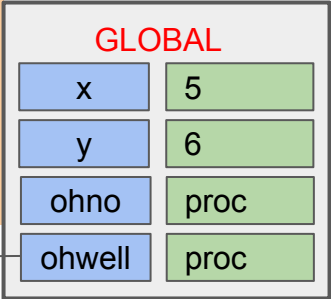
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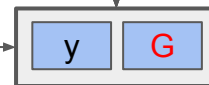
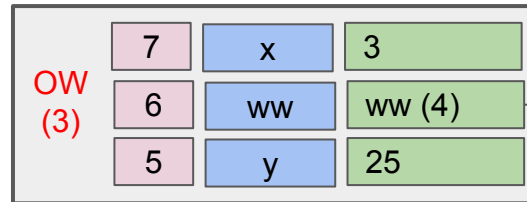
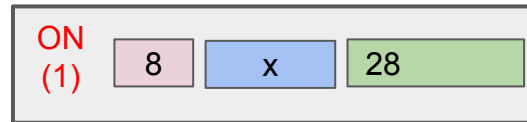
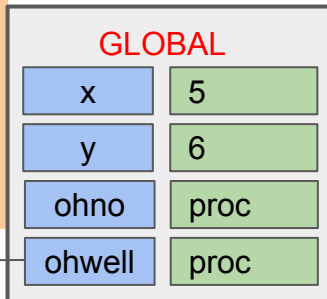
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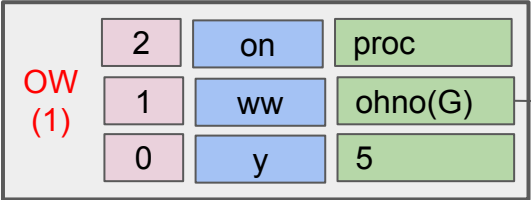
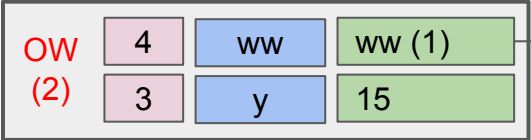
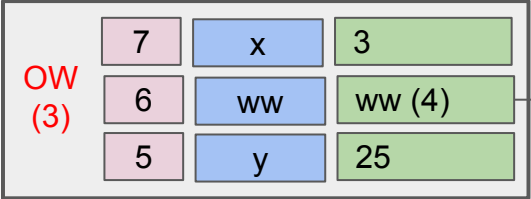
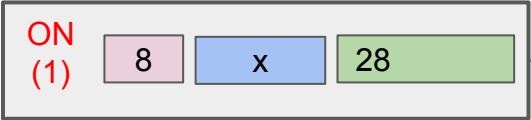
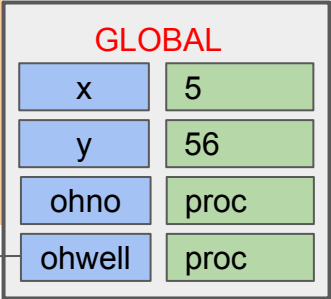
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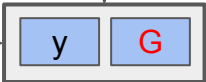
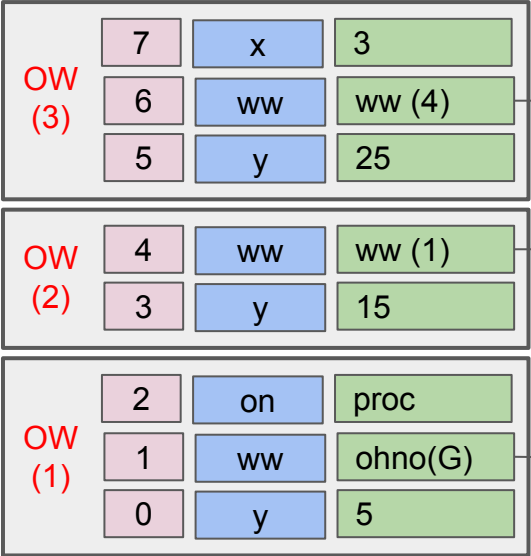
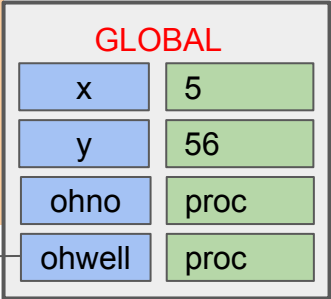
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IMPRIME

[3, 25]



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IMPRIME

[3, 25]	[5, 15]
---------	---------

x	G
---	---

GLOBAL	
x	5
y	56
ohno	proc
ohwell	proc

OW (2)	4	ww	ww (1)
	3	y	15
OW (1)	2	on	proc
	1	ww	ohno(G)
	0	y	5

y	G
---	---

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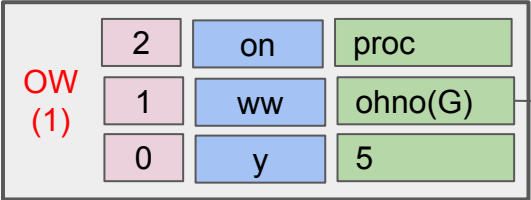
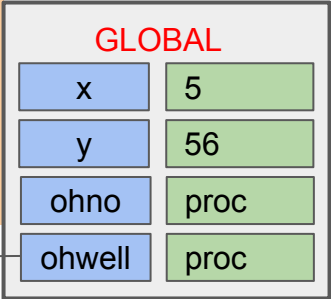
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IMPRIME

[3, 25]	[5, 15]
[5, 5]	



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## IMPRIME

[3, 25]	[5, 15]
[5, 5]	[5, 56]

## GLOBAL

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ohno	proc
ohwell	proc

x	G
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Alcance Dinámico y Asociación Profunda

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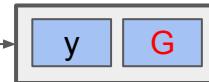
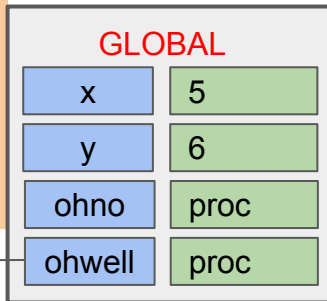
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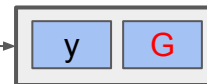
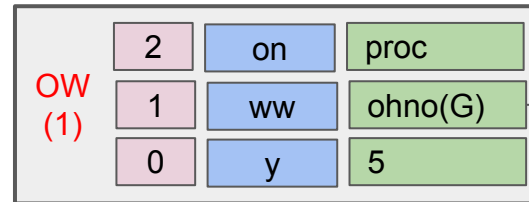
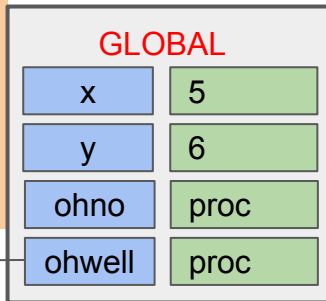
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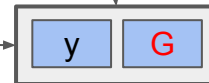
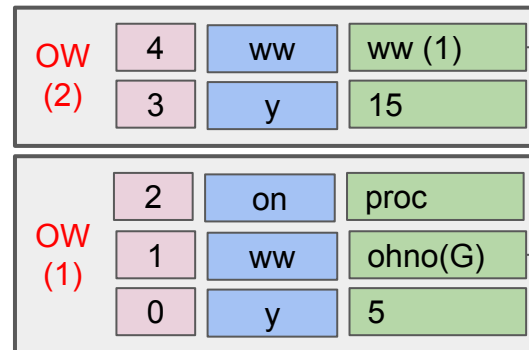
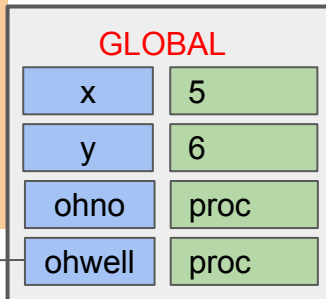
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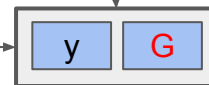
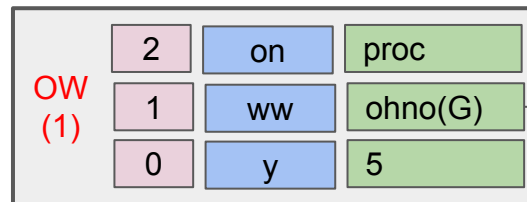
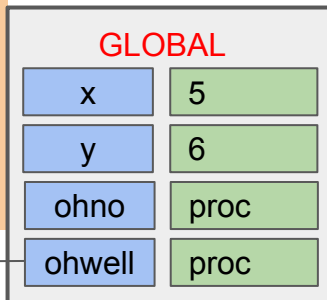
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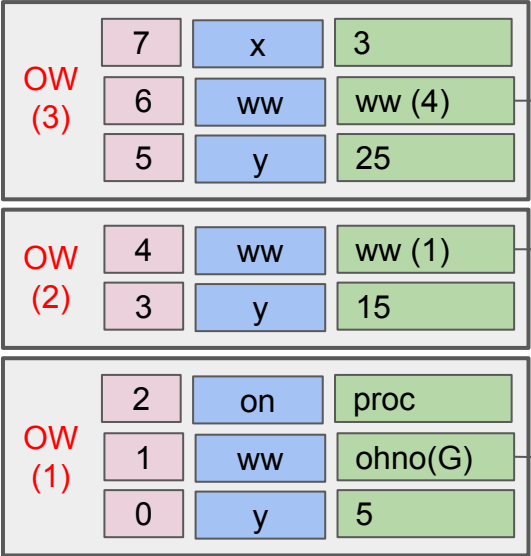
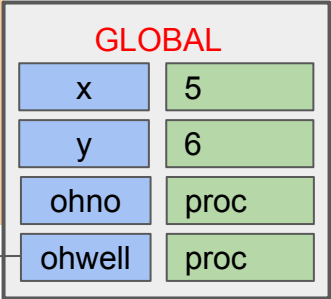
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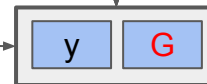
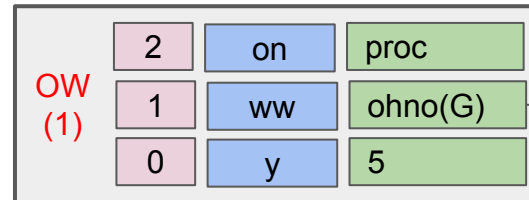
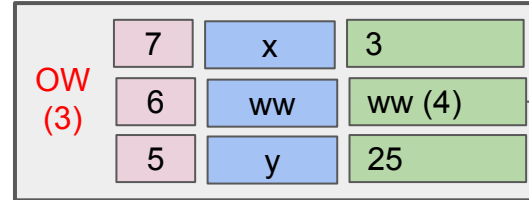
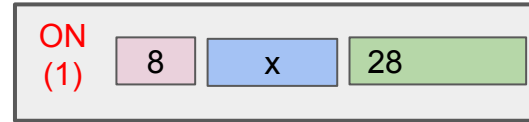
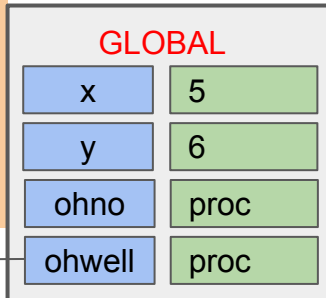
```
int x = 5, y = 6;
```

```
proc ohno(int x) {  
    y := 2 * x;  
}
```

```
proc ohwell(int y, proc waitwhat) {  
    if (y < 10) {  
        proc ohno(int x) {  
            x := y * 2  
        }  
        ohwell(y + 10, waitwhat);  
    } else if (y < 20) {  
        ohwell(y + 10, ohno);  
    } else {  
        int x = 3;  
        waitwhat(x + y);  
    }  
    print(x, y);  
}
```

```
ohwell(x, ohno);  
print(x, y);
```

IMPRIME



ww = waitwhat, ow = ohwell, on = ohno

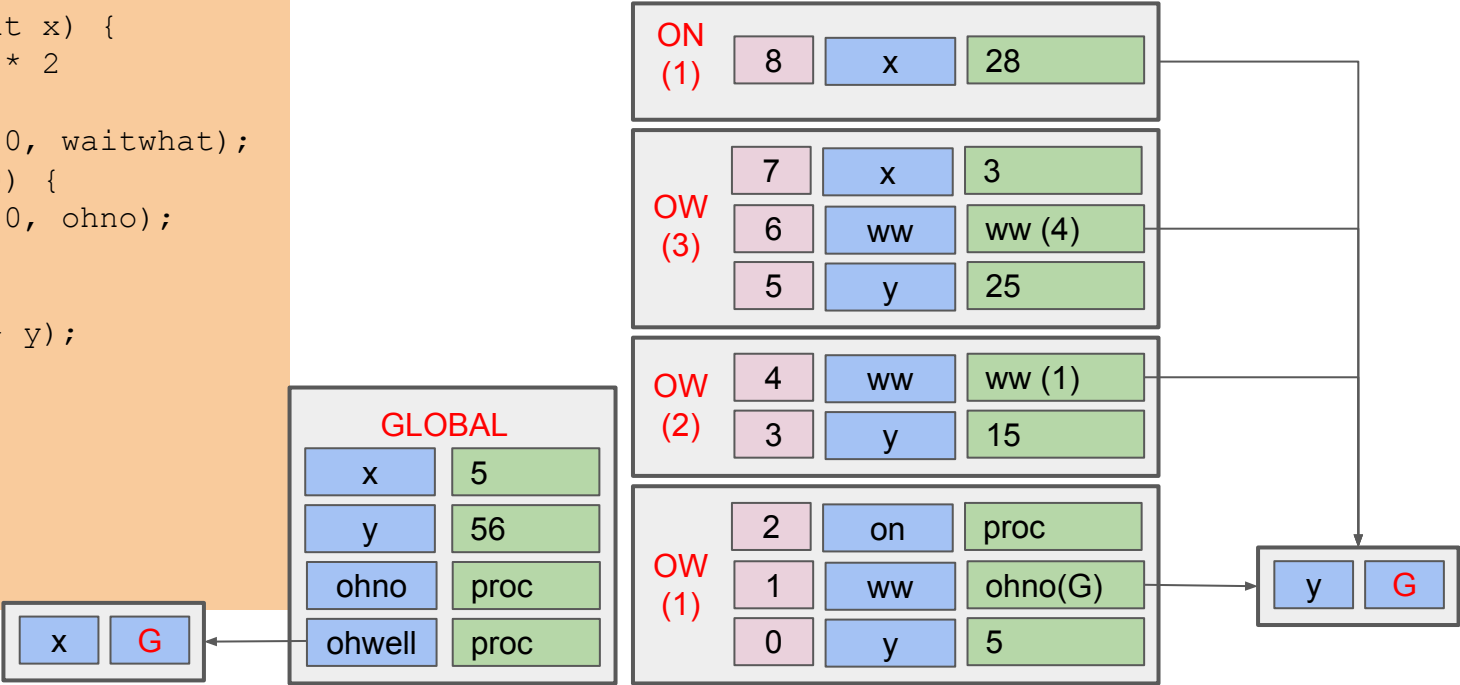
```
int x = 5, y = 6;
```

```
proc ohno(int x) {  
  y := 2 * x;  
}
```

```
proc ohwell(int y, proc waitwhat) {  
  if (y < 10) {  
    proc ohno(int x) {  
      x := y * 2  
    }  
    ohwell(y + 10, waitwhat);  
  } else if (y < 20) {  
    ohwell(y + 10, ohno);  
  } else {  
    int x = 3;  
    waitwhat(x + y);  
  }  
  print(x, y);  
}
```

```
ohwell(x, ohno);  
print(x, y);
```

IMPRIME



ww = waitwhat, ow = ohwell, on = ohno

```
int x = 5, y = 6;
```

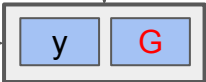
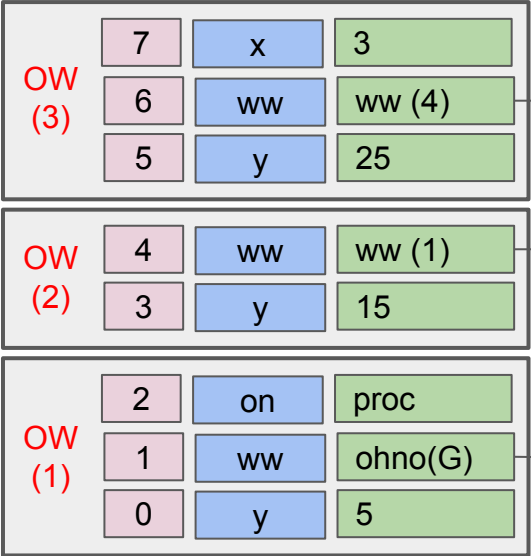
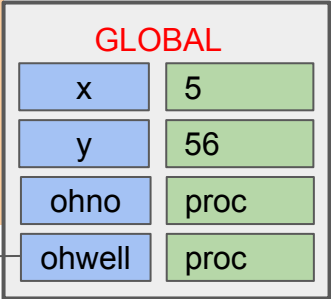
```
proc ohno(int x) {  
    y := 2 * x;  
}
```

```
proc ohwell(int y, proc waitwhat) {  
    if (y < 10) {  
        proc ohno(int x) {  
            x := y * 2  
        }  
        ohwell(y + 10, waitwhat);  
    } else if (y < 20) {  
        ohwell(y + 10, ohno);  
    } else {  
        int x = 3;  
        waitwhat(x + y);  
    }  
    print(x, y);  
}
```

```
ohwell(x, ohno);  
print(x, y);
```

IMPRIME

[3, 25]



ww = waitwhat, ow = ohwell, on = ohno

```
int x = 5, y = 6;
```

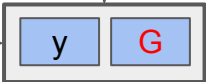
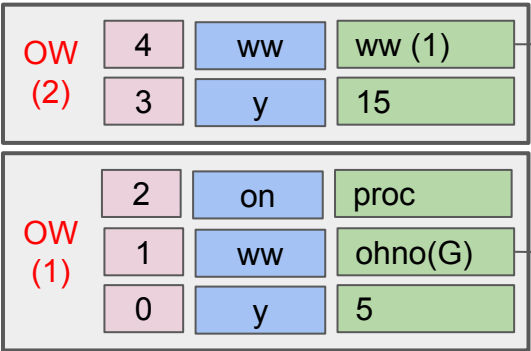
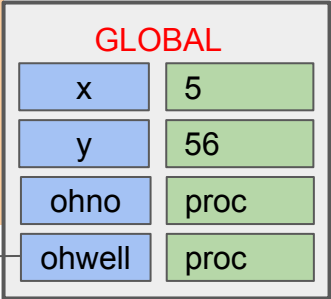
```
proc ohno(int x) {  
    y := 2 * x;  
}
```

```
proc ohwell(int y, proc waitwhat) {  
    if (y < 10) {  
        proc ohno(int x) {  
            x := y * 2  
        }  
        ohwell(y + 10, waitwhat);  
    } else if (y < 20) {  
        ohwell(y + 10, ohno);  
    } else {  
        int x = 3;  
        waitwhat(x + y);  
    }  
    print(x, y);  
}
```

```
ohwell(x, ohno);  
print(x, y);
```

IMPRIME

[3, 25]	[5, 15]
---------	---------



ww = waitwhat, ow = ohwell, on = ohno



```
int x = 5, y = 6;
```

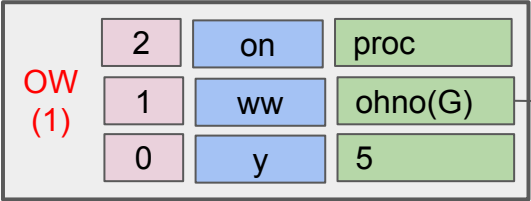
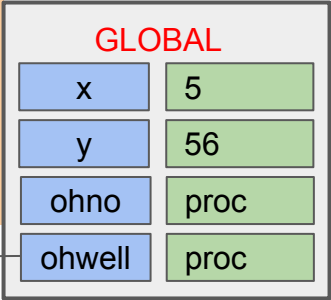
```
proc ohno(int x) {  
    y := 2 * x;  
}
```

```
proc ohwell(int y, proc waitwhat) {  
    if (y < 10) {  
        proc ohno(int x) {  
            x := y * 2  
        }  
        ohwell(y + 10, waitwhat);  
    } else if (y < 20) {  
        ohwell(y + 10, ohno);  
    } else {  
        int x = 3;  
        waitwhat(x + y);  
    }  
    print(x, y);  
}
```

```
ohwell(x, ohno);  
print(x, y);
```

IMPRIME

[3, 25]	[5, 15]
[5, 5]	



ww = waitwhat, ow = ohwell, on = ohno

```
int x = 5, y = 6;
```

```
proc ohno(int x) {  
    y := 2 * x;  
}
```

```
proc ohwell(int y, proc waitwhat) {  
    if (y < 10) {  
        proc ohno(int x) {  
            x := y * 2  
        }  
        ohwell(y + 10, waitwhat);  
    } else if (y < 20) {  
        ohwell(y + 10, ohno);  
    } else {  
        int x = 3;  
        waitwhat(x + y);  
    }  
    print(x, y);  
}
```

```
ohwell(x, ohno);  
print(x, y);
```

## IMPRIME

[3, 25]	[5, 15]
[5, 5]	[5, 56]

## GLOBAL

x	5
y	56
ohno	proc
ohwell	proc

x	G
---	---

ww = waitwhat, ow = ohwell, on = ohno

## Alcance Estático y Asociación Superficial

```
int x = 5, y = 6;
```

```
proc ohno(int x) {  
    y := 2 * x;  
}
```

```
proc ohwell(int y, proc waitwhat) {  
    if (y < 10) {  
        proc ohno(int x) {  
            x := y * 2  
        }  
        ohwell(y + 10, waitwhat);  
    } else if (y < 20) {  
        ohwell(y + 10, ohno);  
    } else {  
        int x = 3;  
        waitwhat(x + y);  
    }  
    print(x, y);  
}
```

```
ohwell(x, ohno);  
print(x, y);
```

IMPRIME



GLOBAL	
x	5
y	6
ohno	proc
ohwell	proc

ww = waitwhat, ow = ohwell, on = ohno

```
int x = 5, y = 6;
```

```
proc ohno(int x) {  
    y := 2 * x;  
}
```

```
proc ohwell(int y, proc waitwhat) {  
    if (y < 10) {  
        proc ohno(int x) {  
            x := y * 2  
        }  
        ohwell(y + 10, waitwhat);  
    } else if (y < 20) {  
        ohwell(y + 10, ohno);  
    } else {  
        int x = 3;  
        waitwhat(x + y);  
    }  
    print(x, y);  
}
```

```
ohwell(x, ohno);  
print(x, y);
```

IMPRIME



GLOBAL	
x	5
y	6
ohno	proc
ohwell	proc

OW (1)	1	ww	ohno(G)
	0	y	5

ww = waitwhat, ow = ohwell, on = ohno

```
int x = 5, y = 6;
```

IMPRIME

```
proc ohno(int x) {  
    y := 2 * x;  
}
```

```
proc ohwell(int y, proc waitwhat) {  
    if (y < 10) {  
        proc ohno(int x) {  
            x := y * 2  
        }  
        ohwell(y + 10, waitwhat);  
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        ohwell(y + 10, ohno);  
    } else {  
        int x = 3;  
        waitwhat(x + y);  
    }  
    print(x, y);  
}
```

```
ohwell(x, ohno);  
print(x, y);
```



GLOBAL	
x	5
y	6
ohno	proc
ohwell	proc

OW (1)	2	on	proc
	1	ww	ohno(G)
	0	y	5

ww = waitwhat, ow = ohwell, on = ohno

```
int x = 5, y = 6;
```

```
proc ohno(int x) {  
    y := 2 * x;  
}
```

```
proc ohwell(int y, proc waitwhat) {  
    if (y < 10) {  
        proc ohno(int x) {  
            x := y * 2  
        }  
        ohwell(y + 10, waitwhat);  
    } else if (y < 20) {  
        ohwell(y + 10, ohno);  
    } else {  
        int x = 3;  
        waitwhat(x + y);  
    }  
    print(x, y);  
}
```

```
ohwell(x, ohno);  
print(x, y);
```

IMPRIME



GLOBAL	
x	5
y	6
ohno	proc
ohwell	proc

OW (2)	4	ww	ww (1)
	3	y	15

OW (1)	2	on	proc
	1	ww	ohno(G)
	0	y	5

ww = waitwhat, ow = ohwell, on = ohno

```
int x = 5, y = 6;
```

```
proc ohno(int x) {  
    y := 2 * x;  
}
```

```
proc ohwell(int y, proc waitwhat) {  
    if (y < 10) {  
        proc ohno(int x) {  
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        ohwell(y + 10, waitwhat);  
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        ohwell(y + 10, ohno);  
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        int x = 3;  
        waitwhat(x + y);  
    }  
    print(x, y);  
}
```

```
ohwell(x, ohno);  
print(x, y);
```

IMPRIME



GLOBAL	
x	5
y	6
ohno	proc
ohwell	proc

OW (3)	6	ww	ww (4)
	5	y	25
OW (2)	4	ww	ww (1)
	3	y	15
OW (1)	2	on	proc
	1	ww	ohno(G)
	0	y	5

ww = waitwhat, ow = ohwell, on = ohno

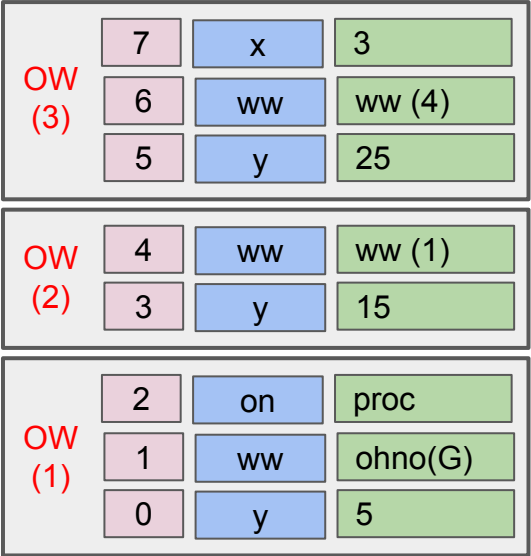
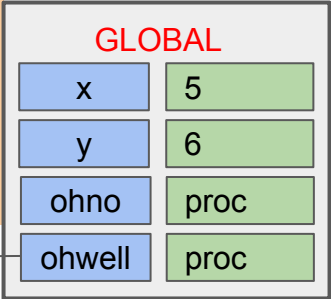


```
int x = 5, y = 6;
```

IMPRIME

```
proc ohno(int x) {  
    y := 2 * x;  
}  
  
proc ohwell(int y, proc waitwhat) {  
    if (y < 10) {  
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        ohwell(y + 10, waitwhat);  
    } else if (y < 20) {  
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    } else {  
        int x = 3;  
        waitwhat(x + y);  
    }  
    print(x, y);  
}
```

```
ohwell(x, ohno);  
print(x, y);
```



ww = waitwhat, ow = ohwell, on = ohno

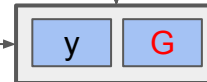
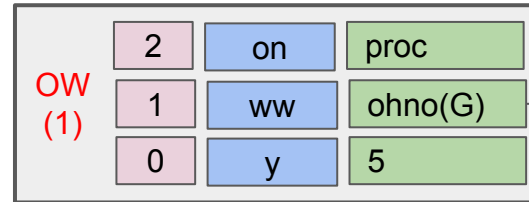
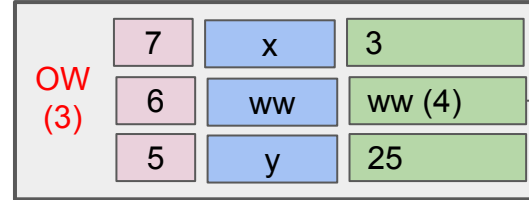
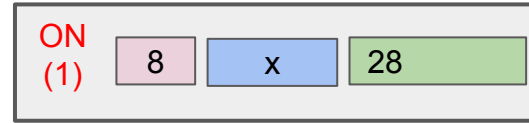
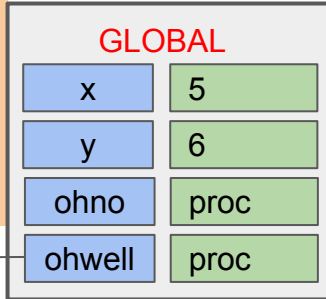
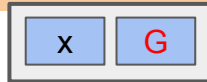
```
int x = 5, y = 6;
```

```
proc ohno(int x) {  
    y := 2 * x;  
}
```

```
proc ohwell(int y, proc waitwhat) {  
    if (y < 10) {  
        proc ohno(int x) {  
            x := y * 2  
        }  
        ohwell(y + 10, waitwhat);  
    } else if (y < 20) {  
        ohwell(y + 10, ohno);  
    } else {  
        int x = 3;  
        waitwhat(x + y);  
    }  
    print(x, y);  
}
```

```
ohwell(x, ohno);  
print(x, y);
```

IMPRIME



ww = waitwhat, ow = ohwell, on = ohno

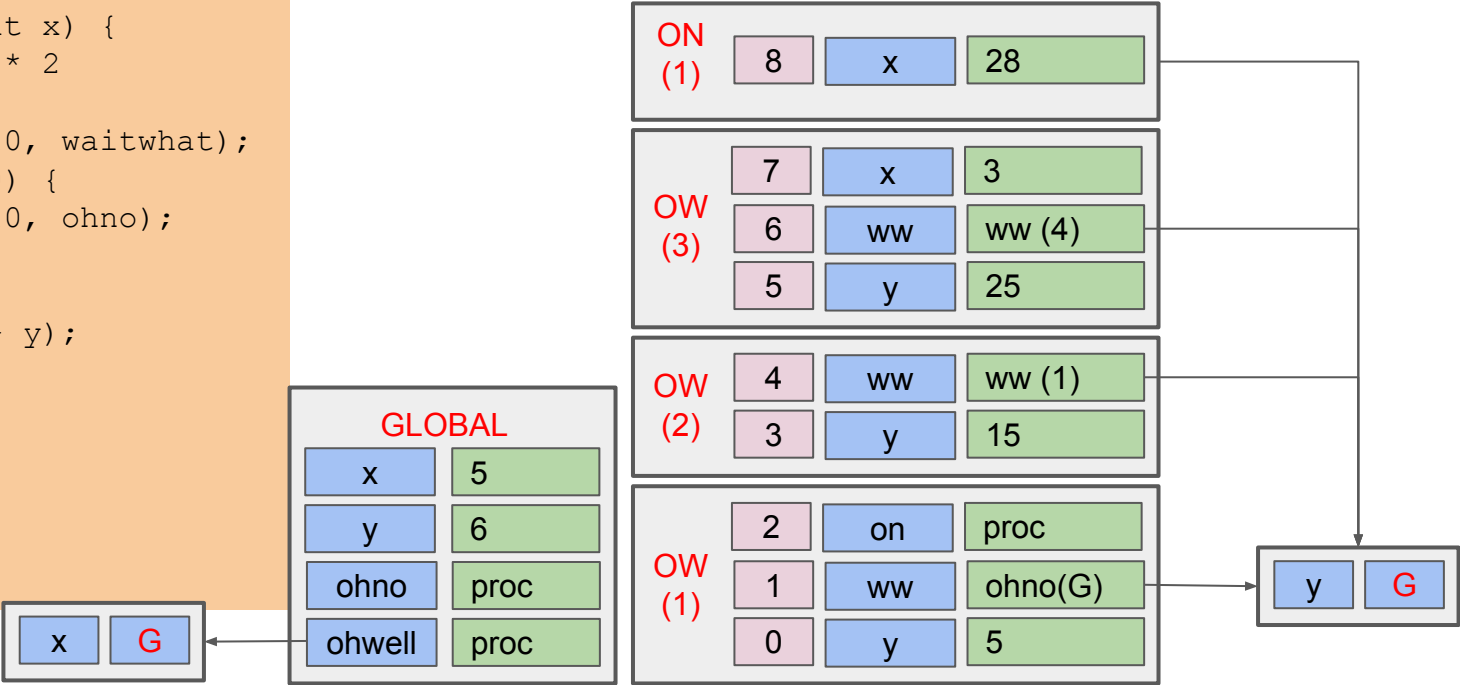
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  } else {  
    int x = 3;  
    waitwhat(x + y);  
  }  
  print(x, y);  
}
```

```
ohwell(x, ohno);  
print(x, y);
```

IMPRIME



ww = waitwhat, ow = ohwell, on = ohno

```
int x = 5, y = 6;
```

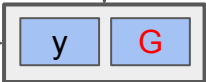
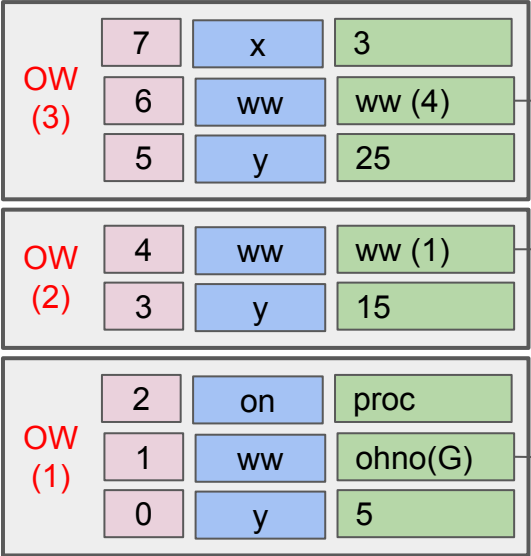
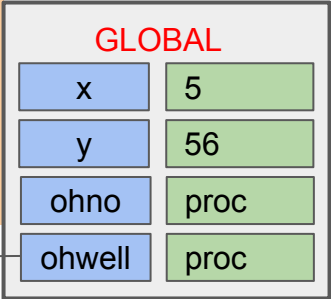
```
proc ohno(int x) {  
    y := 2 * x;  
}
```

```
proc ohwell(int y, proc waitwhat) {  
    if (y < 10) {  
        proc ohno(int x) {  
            x := y * 2  
        }  
        ohwell(y + 10, waitwhat);  
    } else if (y < 20) {  
        ohwell(y + 10, ohno);  
    } else {  
        int x = 3;  
        waitwhat(x + y);  
    }  
    print(x, y);  
}
```

```
ohwell(x, ohno);  
print(x, y);
```

IMPRIME

[3, 25]



ww = waitwhat, ow = ohwell, on = ohno

```
int x = 5, y = 6;
```

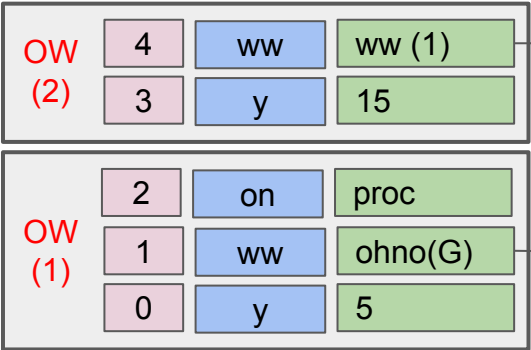
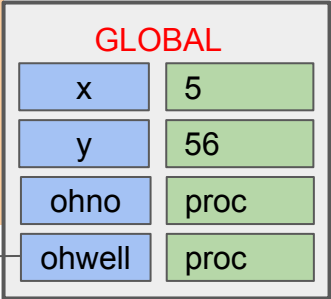
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    y := 2 * x;  
}
```

```
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    if (y < 10) {  
        proc ohno(int x) {  
            x := y * 2  
        }  
        ohwell(y + 10, waitwhat);  
    } else if (y < 20) {  
        ohwell(y + 10, ohno);  
    } else {  
        int x = 3;  
        waitwhat(x + y);  
    }  
    print(x, y);  
}
```

```
ohwell(x, ohno);  
print(x, y);
```

IMPRIME

[3, 25]	[5, 15]
---------	---------



ww = waitwhat, ow = ohwell, on = ohno

```
int x = 5, y = 6;
```

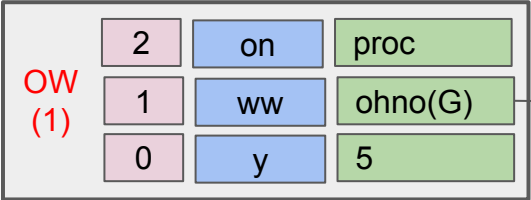
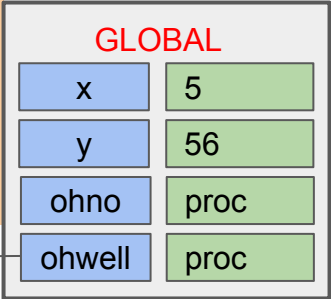
```
proc ohno(int x) {  
    y := 2 * x;  
}
```

```
proc ohwell(int y, proc waitwhat) {  
    if (y < 10) {  
        proc ohno(int x) {  
            x := y * 2  
        }  
        ohwell(y + 10, waitwhat);  
    } else if (y < 20) {  
        ohwell(y + 10, ohno);  
    } else {  
        int x = 3;  
        waitwhat(x + y);  
    }  
    print(x, y);  
}
```

```
ohwell(x, ohno);  
print(x, y);
```

IMPRIME

[3, 25]	[5, 15]
[5, 5]	



ww = waitwhat, ow = ohwell, on = ohno

```
int x = 5, y = 6;
```

```
proc ohno(int x) {  
    y := 2 * x;  
}
```

```
proc ohwell(int y, proc waitwhat) {  
    if (y < 10) {  
        proc ohno(int x) {  
            x := y * 2  
        }  
        ohwell(y + 10, waitwhat);  
    } else if (y < 20) {  
        ohwell(y + 10, ohno);  
    } else {  
        int x = 3;  
        waitwhat(x + y);  
    }  
    print(x, y);  
}
```

```
ohwell(x, ohno);  
print(x, y);
```

## IMPRIME

[3, 56]	[5, 15]
[5, 5]	[5, 56]



GLOBAL	
x	5
y	56
ohno	proc
ohwell	proc

ww = waitwhat, ow = ohwell, on = ohno

Alcance Dinámico y Asociación Superficial



```
int x = 5, y = 6;
```

```
proc ohno(int x) {  
    y := 2 * x;  
}
```

```
proc ohwell(int y, proc waitwhat) {  
    if (y < 10) {  
        proc ohno(int x) {  
            x := y * 2  
        }  
        ohwell(y + 10, waitwhat);  
    } else if (y < 20) {  
        ohwell(y + 10, ohno);  
    } else {  
        int x = 3;  
        waitwhat(x + y);  
    }  
    print(x, y);  
}
```

```
ohwell(x, ohno);  
print(x, y);
```

IMPRIME



GLOBAL	
x	5
y	6
ohno	proc
ohwell	proc

ww = waitwhat, ow = ohwell, on = ohno

```
int x = 5, y = 6;
```

```
proc ohno(int x) {  
    y := 2 * x;  
}
```

```
proc ohwell(int y, proc waitwhat) {  
    if (y < 10) {  
        proc ohno(int x) {  
            x := y * 2  
        }  
        ohwell(y + 10, waitwhat);  
    } else if (y < 20) {  
        ohwell(y + 10, ohno);  
    } else {  
        int x = 3;  
        waitwhat(x + y);  
    }  
    print(x, y);  
}
```

```
ohwell(x, ohno);  
print(x, y);
```

IMPRIME



GLOBAL	
x	5
y	6
ohno	proc
ohwell	proc

OW (1)	1	ww	ohno(G)
	0	y	5

ww = waitwhat, ow = ohwell, on = ohno

```
int x = 5, y = 6;
```

IMPRIME

```
proc ohno(int x) {  
    y := 2 * x;  
}
```

```
proc ohwell(int y, proc waitwhat) {  
    if (y < 10) {  
        proc ohno(int x) {  
            x := y * 2  
        }  
        ohwell(y + 10, waitwhat);  
    } else if (y < 20) {  
        ohwell(y + 10, ohno);  
    } else {  
        int x = 3;  
        waitwhat(x + y);  
    }  
    print(x, y);  
}
```

```
ohwell(x, ohno);  
print(x, y);
```



GLOBAL	
x	5
y	6
ohno	proc
ohwell	proc

OW (1)	2	on	proc
	1	ww	ohno(G)
	0	y	5

ww = waitwhat, ow = ohwell, on = ohno

```
int x = 5, y = 6;
```

```
proc ohno(int x) {  
    y := 2 * x;  
}
```

```
proc ohwell(int y, proc waitwhat) {  
    if (y < 10) {  
        proc ohno(int x) {  
            x := y * 2  
        }  
        ohwell(y + 10, waitwhat);  
    } else if (y < 20) {  
        ohwell(y + 10, ohno);  
    } else {  
        int x = 3;  
        waitwhat(x + y);  
    }  
    print(x, y);  
}
```

```
ohwell(x, ohno);  
print(x, y);
```

IMPRIME



GLOBAL	
x	5
y	6
ohno	proc
ohwell	proc

OW (2)	4	ww	ww (1)
	3	y	15

OW (1)	2	on	proc
	1	ww	ohno(G)
	0	y	5

ww = waitwhat, ow = ohwell, on = ohno

```
int x = 5, y = 6;
```

```
proc ohno(int x) {  
    y := 2 * x;  
}
```

```
proc ohwell(int y, proc waitwhat) {  
    if (y < 10) {  
        proc ohno(int x) {  
            x := y * 2  
        }  
        ohwell(y + 10, waitwhat);  
    } else if (y < 20) {  
        ohwell(y + 10, ohno);  
    } else {  
        int x = 3;  
        waitwhat(x + y);  
    }  
    print(x, y);  
}
```

```
ohwell(x, ohno);  
print(x, y);
```

IMPRIME



GLOBAL	
x	5
y	6
ohno	proc
ohwell	proc

OW (3)	6	ww	ww (4)
	5	y	25
OW (2)	4	ww	ww (1)
	3	y	15
OW (1)	2	on	proc
	1	ww	ohno(G)
	0	y	5

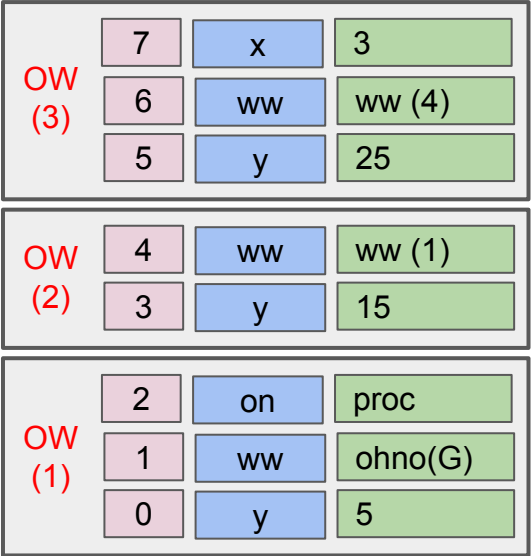
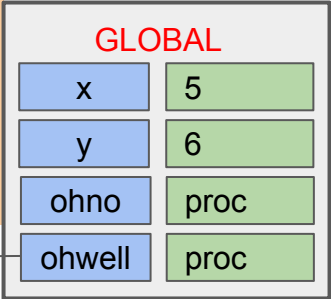
ww = waitwhat, ow = ohwell, on = ohno

```
int x = 5, y = 6;
```

IMPRIME

```
proc ohno(int x) {  
    y := 2 * x;  
}  
  
proc ohwell(int y, proc waitwhat) {  
    if (y < 10) {  
        proc ohno(int x) {  
            x := y * 2  
        }  
        ohwell(y + 10, waitwhat);  
    } else if (y < 20) {  
        ohwell(y + 10, ohno);  
    } else {  
        int x = 3;  
        waitwhat(x + y);  
    }  
    print(x, y);  
}
```

```
ohwell(x, ohno);  
print(x, y);
```



ww = waitwhat, ow = ohwell, on = ohno

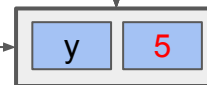
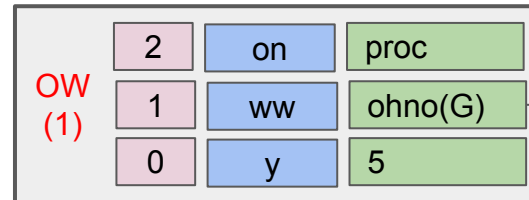
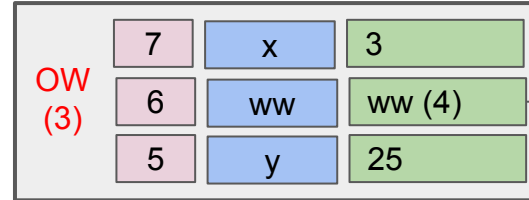
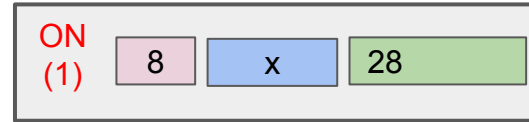
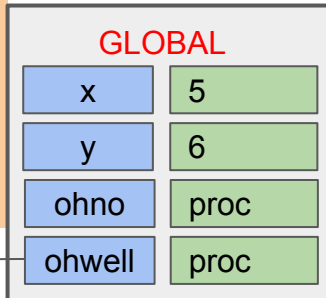
```
int x = 5, y = 6;
```

```
proc ohno(int x) {  
    y := 2 * x;  
}
```

```
proc ohwell(int y, proc waitwhat) {  
    if (y < 10) {  
        proc ohno(int x) {  
            x := y * 2  
        }  
        ohwell(y + 10, waitwhat);  
    } else if (y < 20) {  
        ohwell(y + 10, ohno);  
    } else {  
        int x = 3;  
        waitwhat(x + y);  
    }  
    print(x, y);  
}
```

```
ohwell(x, ohno);  
print(x, y);
```

IMPRIME



ww = waitwhat, ow = ohwell, on = ohno

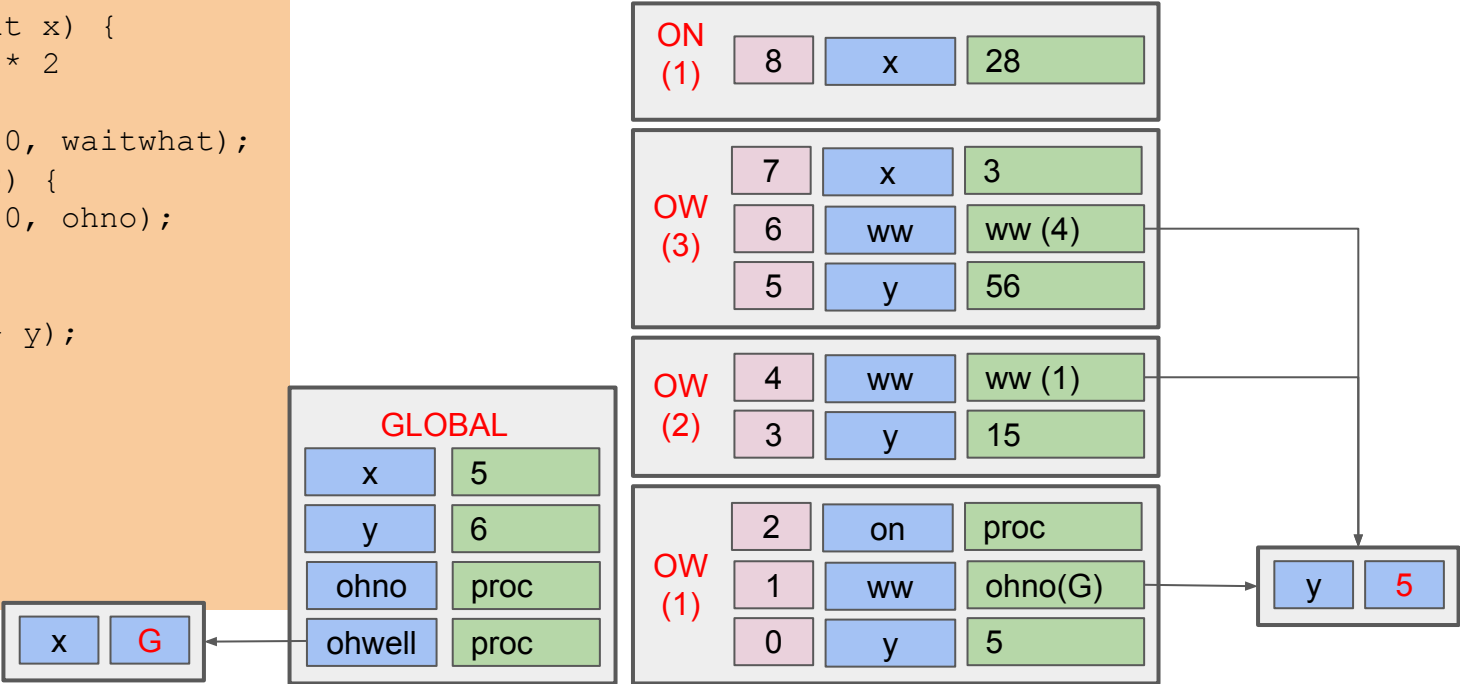
```
int x = 5, y = 6;
```

```
proc ohno(int x) {  
  y := 2 * x;  
}
```

```
proc ohwell(int y, proc waitwhat) {  
  if (y < 10) {  
    proc ohno(int x) {  
      x := y * 2  
    }  
    ohwell(y + 10, waitwhat);  
  } else if (y < 20) {  
    ohwell(y + 10, ohno);  
  } else {  
    int x = 3;  
    waitwhat(x + y);  
  }  
  print(x, y);  
}
```

```
ohwell(x, ohno);  
print(x, y);
```

IMPRIME





```
int x = 5, y = 6;
```

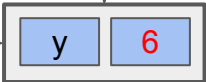
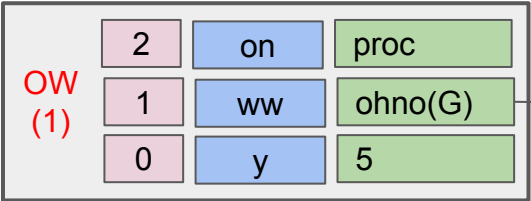
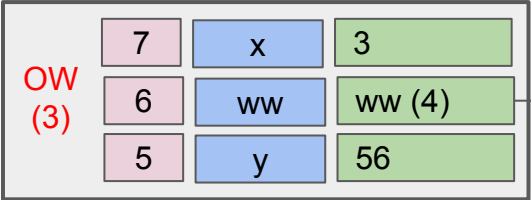
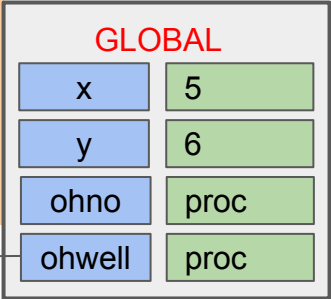
```
proc ohno(int x) {  
    y := 2 * x;  
}
```

```
proc ohwell(int y, proc waitwhat) {  
    if (y < 10) {  
        proc ohno(int x) {  
            x := y * 2  
        }  
        ohwell(y + 10, waitwhat);  
    } else if (y < 20) {  
        ohwell(y + 10, ohno);  
    } else {  
        int x = 3;  
        waitwhat(x + y);  
    }  
    print(x, y);  
}
```

```
ohwell(x, ohno);  
print(x, y);
```

IMPRIME

[3, 56]



ww = waitwhat, ow = ohwell, on = ohno

```
int x = 5, y = 6;
```

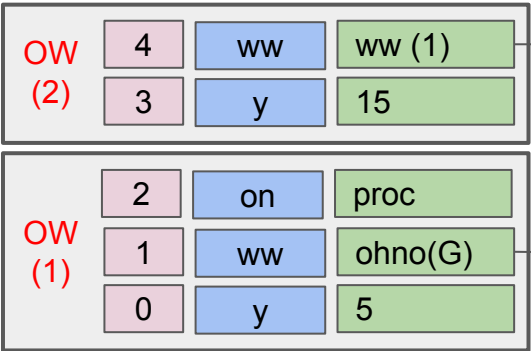
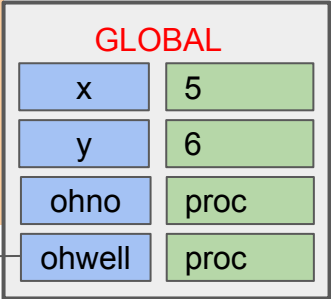
```
proc ohno(int x) {  
    y := 2 * x;  
}
```

```
proc ohwell(int y, proc waitwhat) {  
    if (y < 10) {  
        proc ohno(int x) {  
            x := y * 2  
        }  
        ohwell(y + 10, waitwhat);  
    } else if (y < 20) {  
        ohwell(y + 10, ohno);  
    } else {  
        int x = 3;  
        waitwhat(x + y);  
    }  
    print(x, y);  
}
```

```
ohwell(x, ohno);  
print(x, y);
```

IMPRIME

[3, 56]	[5, 15]
---------	---------



ww = waitwhat, ow = ohwell, on = ohno

```
int x = 5, y = 6;
```

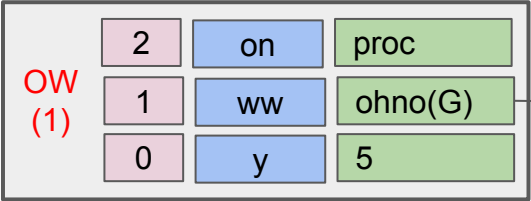
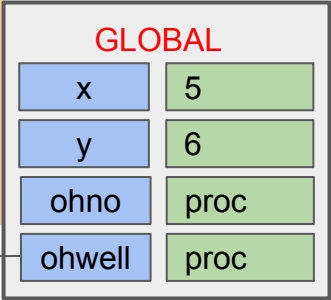
```
proc ohno(int x) {  
    y := 2 * x;  
}
```

```
proc ohwell(int y, proc waitwhat) {  
    if (y < 10) {  
        proc ohno(int x) {  
            x := y * 2  
        }  
        ohwell(y + 10, waitwhat);  
    } else if (y < 20) {  
        ohwell(y + 10, ohno);  
    } else {  
        int x = 3;  
        waitwhat(x + y);  
    }  
    print(x, y);  
}
```

```
ohwell(x, ohno);  
print(x, y);
```

IMPRIME

[3, 56]	[5, 15]
[5, 5]	



ww = waitwhat, ow = ohwell, on = ohno

```
int x = 5, y = 6;
```

```
proc ohno(int x) {  
    y := 2 * x;  
}
```

```
proc ohwell(int y, proc waitwhat) {  
    if (y < 10) {  
        proc ohno(int x) {  
            x := y * 2  
        }  
        ohwell(y + 10, waitwhat);  
    } else if (y < 20) {  
        ohwell(y + 10, ohno);  
    } else {  
        int x = 3;  
        waitwhat(x + y);  
    }  
    print(x, y);  
}
```

```
ohwell(x, ohno);  
print(x, y);
```

## IMPRIME

[3, 56]	[5, 15]
[5, 5]	[5, 6]

## GLOBAL

x	5
y	6
ohno	proc
ohwell	proc

x	G
---	---

ww = waitwhat, ow = ohwell, on = ohno