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| Circle Language Spec: System Objects |

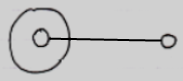
## Connections

This section covers any kind of connection between objects, that is a result of accessing system aspects. First the graphical overview of all possible system aspect connections is displayed. After that the details are covered.

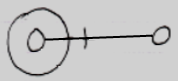
|  |  |
| --- | --- |
| Object Get | Object Set |
|  |  |
|  |  |
| Use As Class | Class Set |
|  |  |
|  |  |
|  |  |
| Value Get | Value Set |
|  |  |
|  |  |
| Clone (2) Get | Clone (2) Set |
|  |  |
|  |  |
|  |  |
| New | Annul |
|  |  |
|  |  |
| Something | Nothing |
|  |  |
|  |  |
|  |  |
| Execute |  |
|  |  |
|  |  |
|  |  |
| Add | Remove |
|  |  |

### Outward and Inward Connections

An Object Set connection is an outward connection.

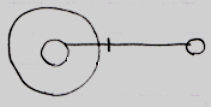


Outward connections do not have access marks. Inward connections do have access marks:



This is not only because outward connections are more common, but also because an outward connection is more passive than an inward connection.

When a symbol is inward connected:



each consult of the symbol on the right, that connects inwards, results in a call to to the Get of the target symbol. So the connection is more active in that each consult of the source object requires a Get on the target object. Inward connections are also called Get connections.

When a symbol is outward connected:



the symbol is directly connected to the target object. It stores the ID of the target object and refers to it directly, without executing a Get on each consult. The outward directed connection may have been established through acccess to a Set command, but that call is history. The connection does not have to pass through to the insides of another object. Outward connections are called Set connections. However, the Set action is history and all that matters is the result, not how it was established.

Passing through to the inside of another object requires the Get command of the target symbol to be executed.

This also conforms to the idea of automatic containment. In automatic containment, outward directed connections are automatically established: automatically drawn out in the diagram without an intervention of a programmer. Inward directed connects were actively established by the programmer. They follow a qualification before getting to the final object. They are more active and display an access symbol and result in active Get’s taking place all the time.

### Remarks

#### Class Connections

Use As Class and Class Set are mentioned here. Class Get is not covered here, because that is only used in active assignments, not in connections.

#### Value Connections

Note that the indication of *direction* for Get and Set is switched for the Value aspect, compared to the Object aspect: Object Get is inward, while Value Get is outward.

What you can also notice, is that outward Value connections do have access marks, while outward connections for the Object and Class aspects do *not* show access marks. This is because *outward* Object and Class connections are passive connections and outward Value connections are *active* connections, because an Value connection is always an assignment.

Value connections are assignments, even though they do not have an ‘assignment notation’.

#### Data Connections

A Data connector such as the following:

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| --- |
| Data Get |
|  |

is an abstract connector: it represents any possible Get connection to any sub-sub-object. Even though there is a Data *connector*, there are no Data *connections*. Any Get connection to a sub-object is be considered a Data Get connection.

#### Clone Connections

The diagrams above show access connections for cloning at a depth of 2. That is just an example. Any cloning depth other than 2 could be used.

Cloning has the exact same notation as the Value aspect, but then with a number near the access mark. Cloning is *that* closely related to the Value aspect.

#### Existence, Execute & List

This part of the documentation displays connections that are a result of accessing system aspects. For the Object aspect that means an actual connection. But for the Existence, Execute and List aspects it means something different: more like a *call* or sometimes more like a *state*.