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| Circle Language Spec: Execution Control |

## While

The While loop is a form of execution control. Loops are briefly explained in the article *Loops*. This article explains the While loop.

The While loop keeps repeating the same code as long as a Condition is True.

The Condition is usually passed to the While command as a reference to a reference to a Boolean. It needs to be a reference to a reference, because the condition needs to be recalculated every time it is consulted. Why making it a reference to a reference solves that problem is explained in the second last paragraph of the article *Execution Control*, part of which I repeat here:

In a conditional *loop*, the condition must be re-evaluated on every repetition of the loop. Recalculation of the condition, every time the condition is consulted, can be established by making the condition a reference to a reference to a Boolean, rather than a reference to a specific Boolean object.

So the condition argument refers to a *reference*.

The reference, that is referred to, can perform a calculation before it returns the Boolean. It performs the calculation every time the reference is consulted. How a reference can recalculate the value of an object whenever it is retrieved, is explained by the article *System Interface*.

It needs to be said, that you are not obliged to pass a reference to a reference to a Boolean. It’s just that, in order to have a formula be reevaluated on every consult of the Boolean it must be a reference to a reference. The Boolean can also be just a reference to a Boolean. Then the Boolean has to change by some external force. You can also make it a fixed Boolean value, but then the loop will either not start at all or not end unless you explicitly call Exit Loop, based on some other condition (see *Exit Loop*).

Next to the Condition, the While loop is passed a reference to a command as a parameter. The parameter is called Loop. This command is called repeatedly as long as the Condition returns True.

The implementation of the While loop incorporates an object oriented call to the reference to the reference to the Boolean Condition, and a call to a machine instruction to jump back to the call to the Loop procedure when the Condition returns True.