Programming Ideas Simplified

Nested Loops

Terms and condition of use are on the last slide

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Prior Knowledge

Sequence

A **simple sequence** is one instructions following another

An **input** is how we put information into a program (keyboard, mouse, trackpad inputs) or digital device

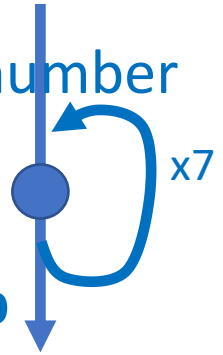
digital devices run programs (oven, kettle, fridge, computer etc)

Repetition

A loop is a set of instructions that are repeated

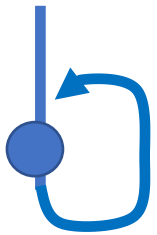
A count-controlled-loop

- Is controlled by the number
- Ends after the number of repeats are complete



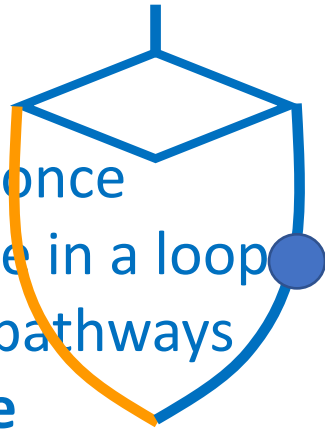
An indefinite loop

- we do not know how many times it will repeat or when it will end



Selection

A condition is a state we can check to see if it is true or false



Conditions

- Only checked once unless they are in a loop
- Two possible pathways **True** and **False**
- Are only checked when reached in flow of control
- Can be used to stop a loop

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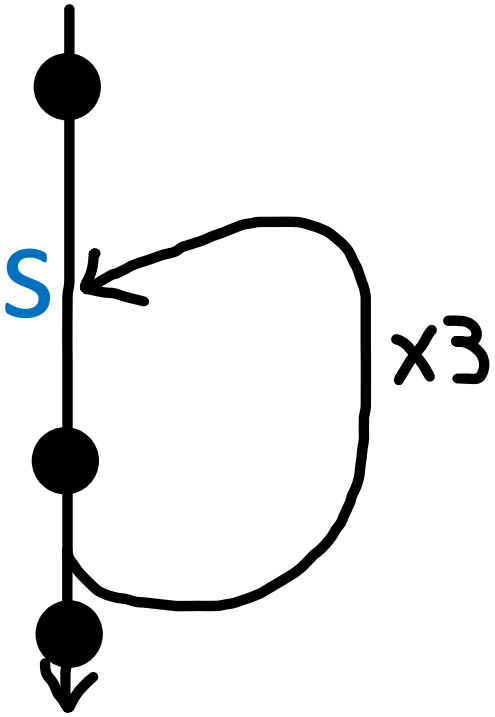
Revising Count controlled loop

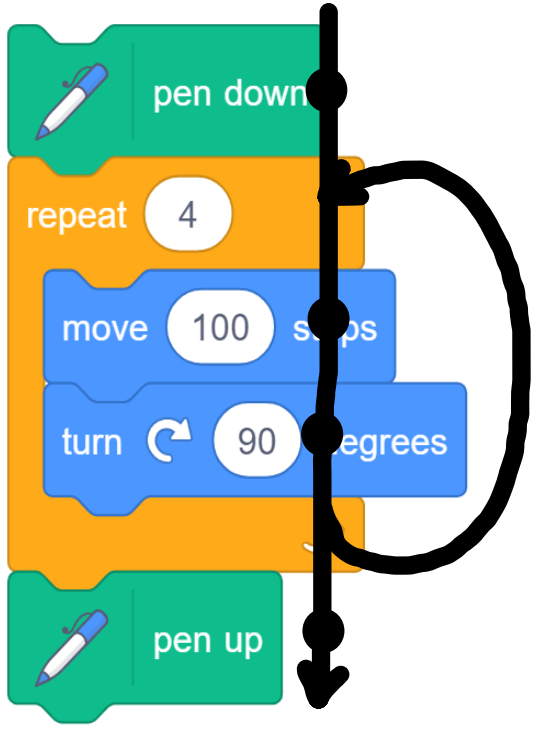
Stand

do 3 times

wave

Sit





Algorithm

Code

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Nested Loop Definition

One loop inside another loop

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Nested Loop Algorithm

```
Stand
Loop 3 times
        bow
        Loop 2 times
                wave
                nod
Sit
```

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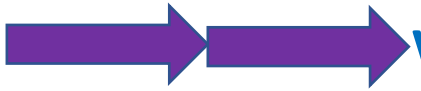
Nested Loop Algorithm

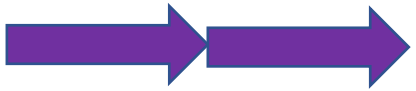
Stand

Loop 3 times

bow

Loop 2 times


wave


nod

Sit

Inside one loop
single indent

Inside two loops
double indent

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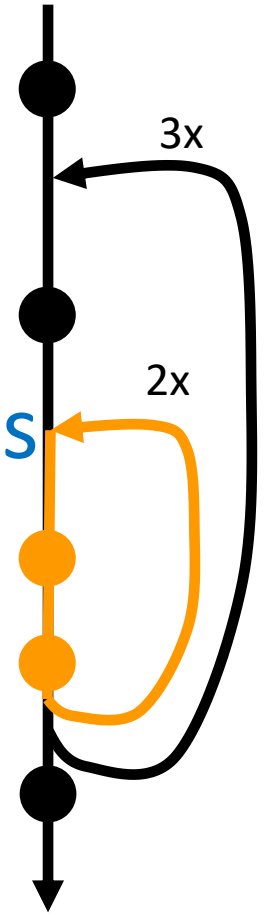
Nested Loop Algorithm

Stand
Loop 3 times
    bow
    Loop 2 times
        wave
        nod
Sit



Flow of Control

Inner Loop

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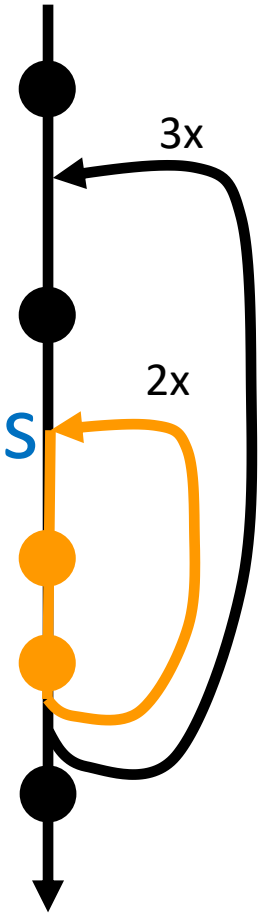
Nested Loop Algorithm

Stand
Loop 3 times
    bow
    Loop 2 times
        wave
        nod
Sit



Actions
Stand
Bow
Wave
Nod
Wave
Nod
Bow
Wave
Nod
Wave
Nod
Bow
Wave
Nod
Wave
Nod
sit

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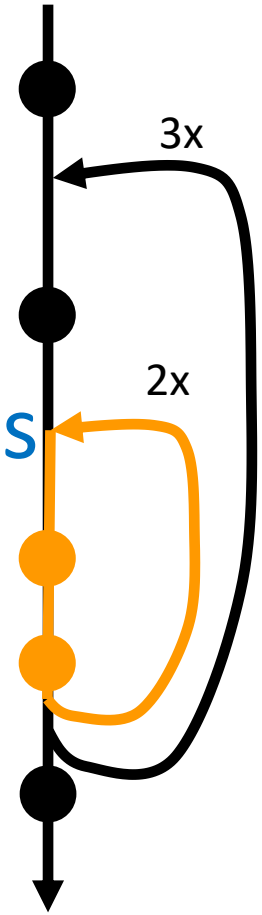
Nested Loop Algorithm

Stand
Loop 3 times
    bow
    Loop 2 times
        wave
        nod
Sit



Act it out together

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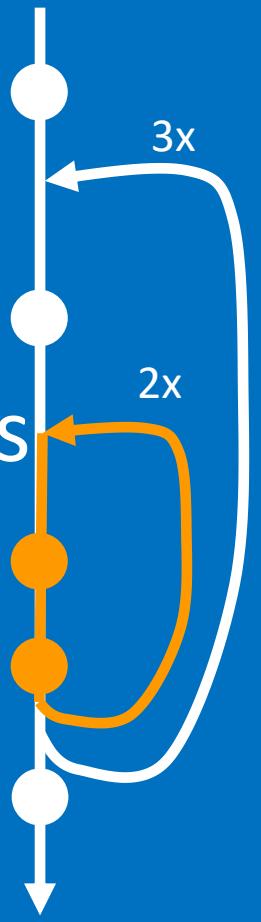
Nested Loop Algorithm

Stand
Loop 3 times
bow
Loop 2 times
wave
nod
Sit



Which loop is the outer loop?

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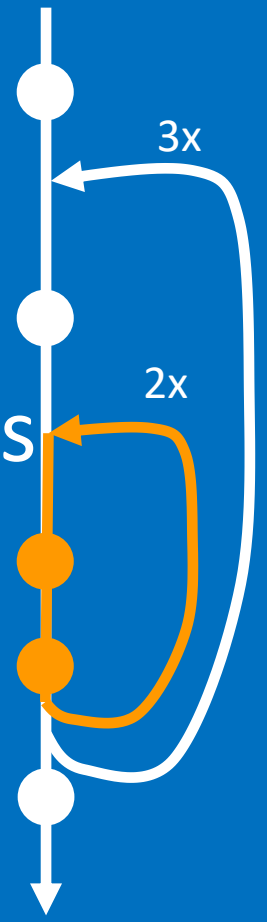
Nested Loop Algorithm

Stand
Loop 3 times
bow
Loop 2 times
wave
nod
Sit



Which loop is the outer loop?

ANSWER
Loop 3 times

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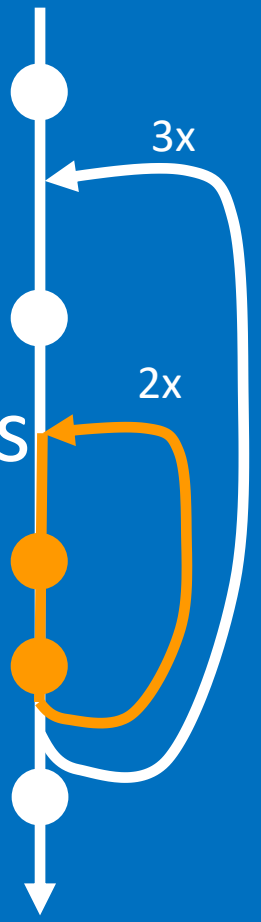
Nested Loop Algorithm

Stand
Loop 3 times
bow
Loop 2 times
wave
nod
Sit



Which loop is the inner loop?

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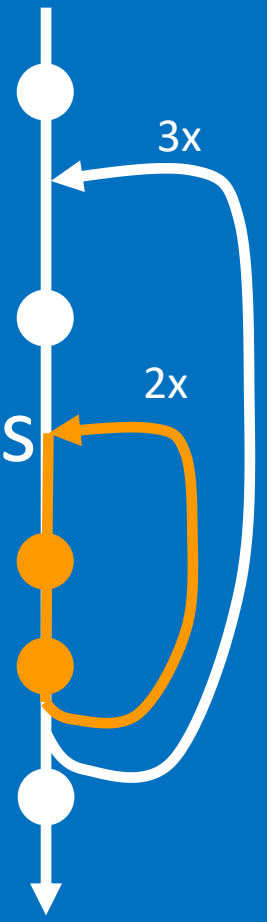
Nested Loop Algorithm

Stand
Loop 3 times
bow
Loop 2 times
wave
nod
Sit



Which loop is the inner loop?

ANSWER
Loop 2 times

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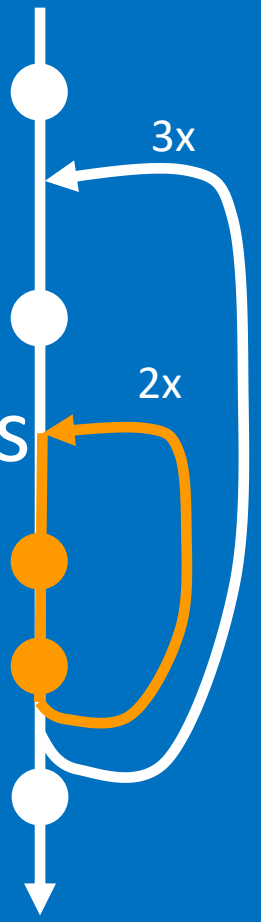
Nested Loop Algorithm

Stand
Loop 3 times
bow
Loop 2 times
wave
nod
Sit



How many times will they nod?

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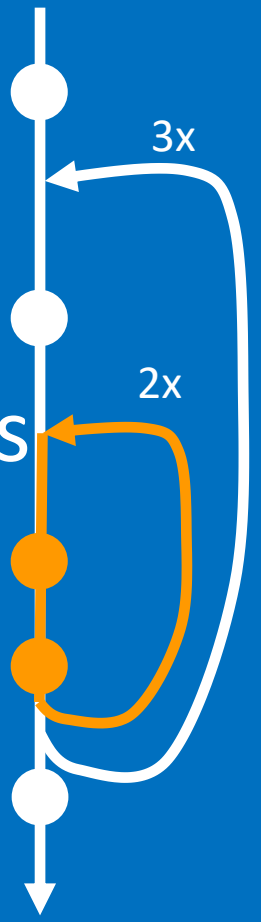
Nested Loop Algorithm

Stand
Loop 3 times
bow
Loop 2 times
wave
nod
Sit



How many times will they nod?

ANSWER
2 x 3 = 6 times

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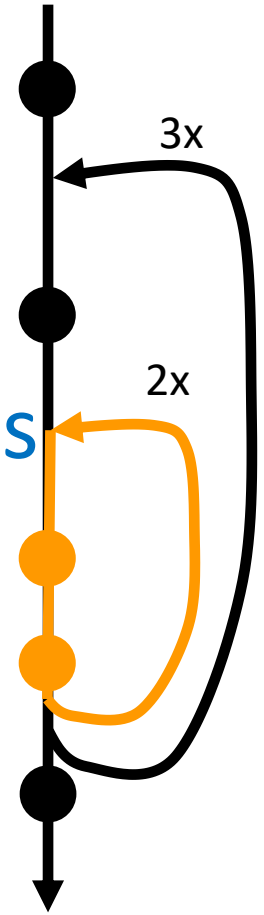
Nested Loop Algorithm

Stand
Loop 3 times
bow
Loop 2 times
wave
nod
Sit



Write your own nested loop algorithm

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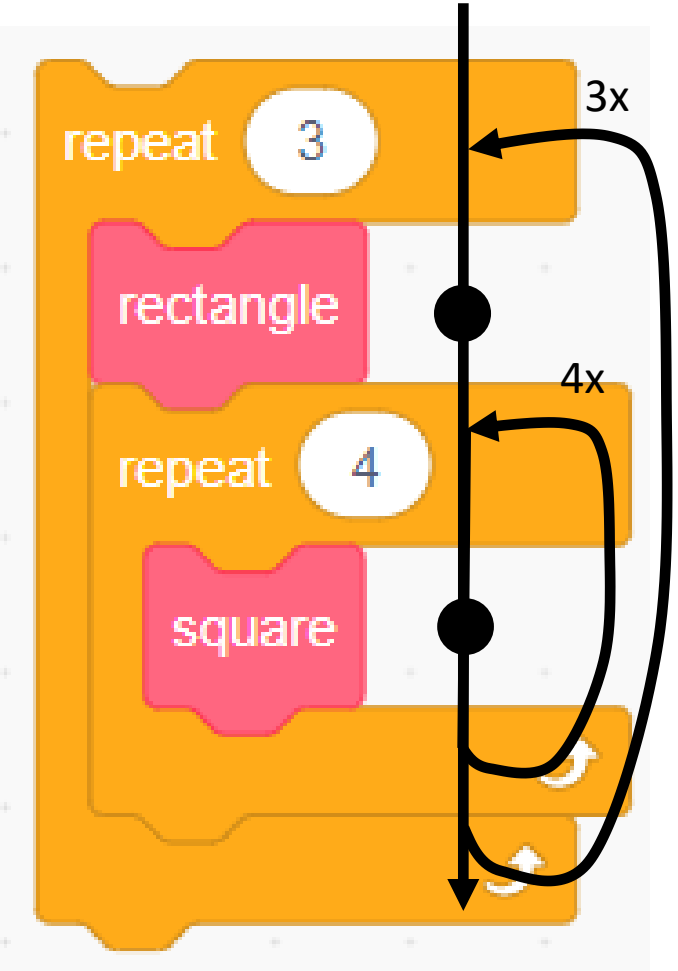
Nested Loop in code



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Nested loop knowledge

A nested loop is

One loop inside another loop

Nested loops

- Actions can be inside multiple loops
- Number of actions = loop A count x loop B count

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