



# CoBlocks cheat sheet

PRO



Last updated: May 2021

All CoBlocks simply  
described and  
represented

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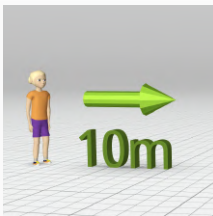
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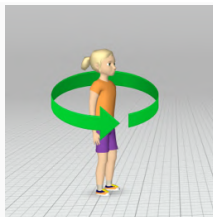
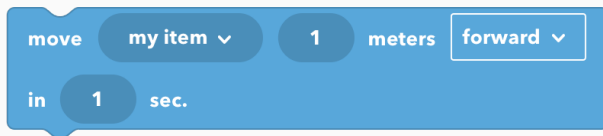
# Transform

## Transitions

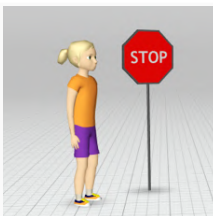
### BASIC



Make an object **move a certain distance** in a certain direction over time



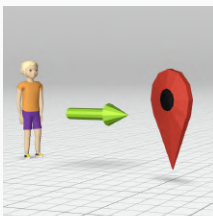
Make an object or a character **turn** over time



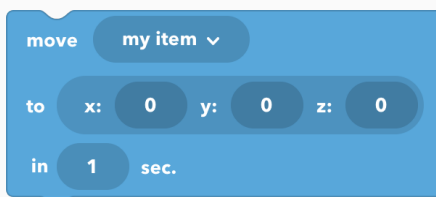
**Stop** an object or a character

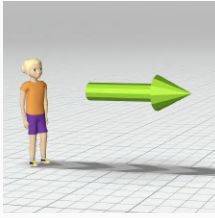


### PRO



Make an object **move to a certain point** over time

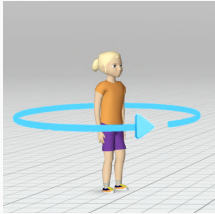




Make an object **move on a path** over time

```

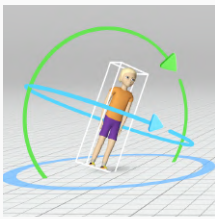
move my item v on path my path v
in 5 sec.
    
```



Make an object **turn of a certain angle** over time

```

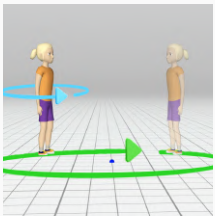
turn my item v clockwise v by 180°
with radius 1 meters in 1 sec.
    
```



Make an object **turn around an axis** over time

```

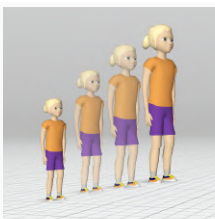
turn my item v clockwise v
around axis x: 0 y: 1 z: 0
in 90° in 1 sec.
    
```



Make an object **turn relative to a point** in a certain direction

```

turn my item v clockwise v
origin x: 0 y: 0 z: 0 local v
direction x: 0 y: 0 z: 1 local v
angle 90° in 1 sec.
    
```



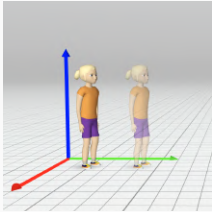
**Change the size** of an object over time

```

scale my item v by 2 in 1 sec.
    
```

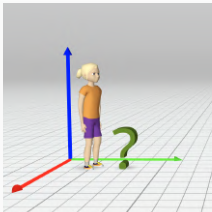
# Position

PRO



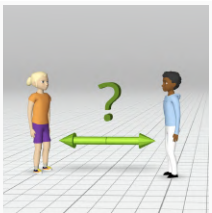
**Change the position** of an object

```
set position of my item v
to x: 0 y: 0 z: 0
```



**Get the position** of an object

```
position of my item v
```

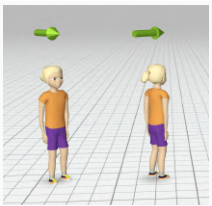


**Get the distance** between 2 objects

```
distance between item 1 v and item 2 v
```

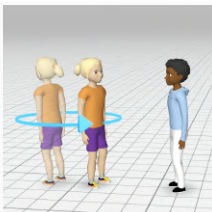
# Rotation

PRO



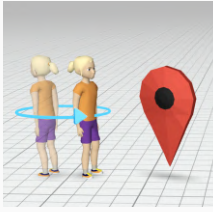
**Change the direction** of an object

```
set direction of my item v
to x: 0 y: 0 z: 0
```



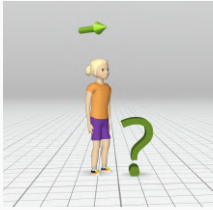
Make an object **turn towards another object**

```
turn my item v to look at my item v
```



Make an object  
**turn towards certain position**

turn  to look at x:  y:  z:

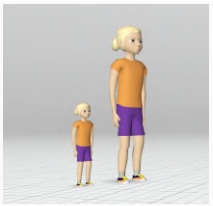


**Get the direction**  
of an object

direction of

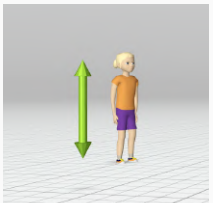
## Scale

PRO



**Set the size** of an object

set scale of  to



**Get the size** of an object

scale of

# Actions

## Generic

### BASIC



Make a character **say** or **think** something

my item ▾ say " Hi! "

my item ▾ think " Hm... "



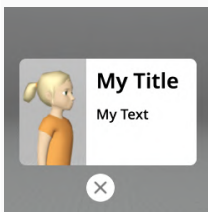
Change the **color** of an item

set color of my item ▾ to



Change the **opacity** of an item

set opacity of my item ▾ to 100 %



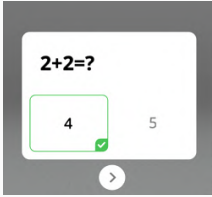
Show an **info panel** with a title, text (and an image)

show info panel with title " Title "

text " Text "

image no images ▾





Show a **quiz panel** with a question and answers that can be clicked and will trigger an action when the selected answer is correct or incorrect.

show quiz panel with question "question"

"answer 1"

"answer 2"

correct answer 1

when correct

when incorrect



Show a **choice panel** with a question and options that can be clicked and that trigger different actions.

show choice panel with question "question"

when "answer 1" selected

when "answer 2" selected

**PRO**



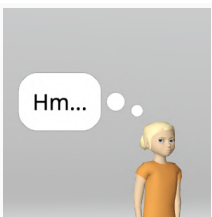
Play the **animation** of an object

set animation of my item to don't animate



Make an object **say** something for a certain duration

my item say "Hi!" for 2 seconds



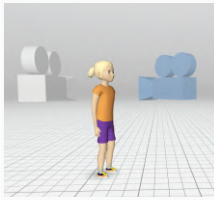
Make an object **think** something for a certain duration

my item think "Hm..." for 2 seconds



**Define** the **text** of a text object

set text of  to " "

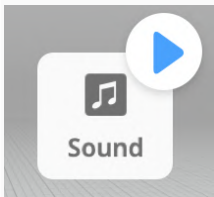


**Switch** to a different **camera** in your scene

switch to camera

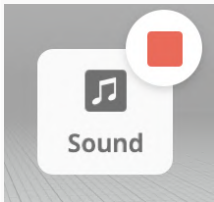
## Sound

### BASIC



**Play** a **sound** file

play sound   
wait until finished

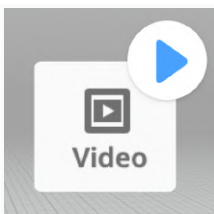


**Stop** playing the **sound** file

stop sound

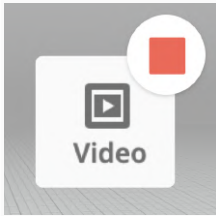
## Video

### PRO



**Start** playing a video and choose to wait for the video to end or not before next actions

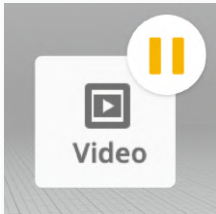
play video   
wait until finished



**Stop** playing a certain video

stop video

my video item ▾



**Pause** a certain video

pause video

my video item ▾

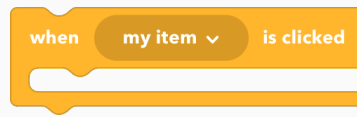
# Events

## Input

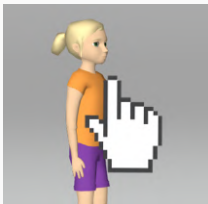
### BASIC



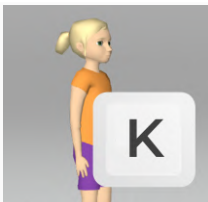
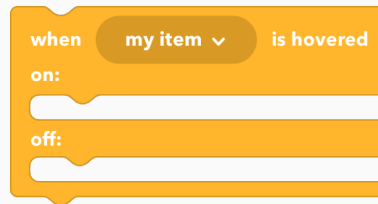
Make something happen **when** an item is **clicked**



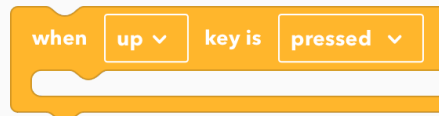
### PRO



Define what happens when a certain **object** is **hovered** and **not hovered**

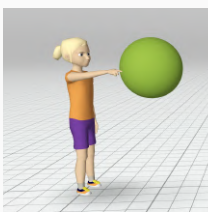


Define what happens when a certain **key** is **pressed**

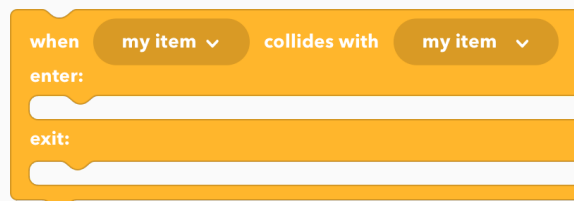


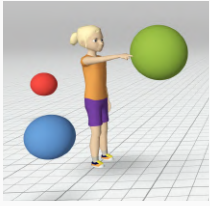
## Collision

### PRO



Define what happens when a certain **object** **collides** **with another object** and no longer collides with it



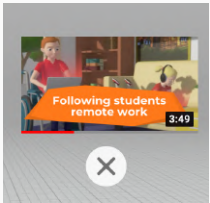


Define what happens when a certain **object collides with any other object** and no longer collides with it

when **my item** ↓ collides with **anotherItem**  
 enter: \_\_\_\_\_  
 exit: \_\_\_\_\_

## Web

PRO



Show a YouTube video when the object is **clicked**.

*Not supported in VR mode*

when **myItem** ↓ is clicked  
 show YouTube video " URL "



Open a website when the object is **clicked**

*Not supported in VR mode*

when **myItem** ↓ is clicked  
 open link " URL "

## Other

PRO



**Removes** existing **events** on an object (e.g. when this object is clicked or hovered)

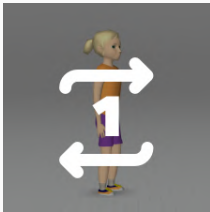
remove **when item clicked** ↓ event from **my item** ↓



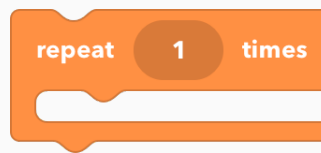
# Control

## Loops

### BASIC



Make one or more actions **repeat** a certain amount of times



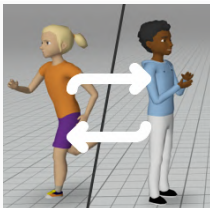
### PRO



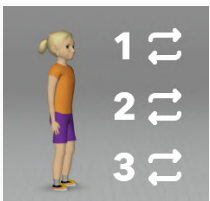
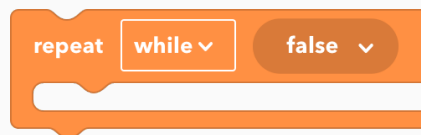
Make an action happen **forever** as a **loop**



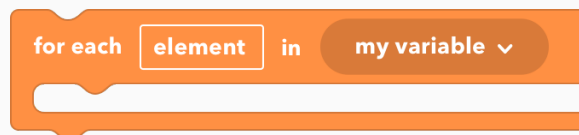
Make an action **repeat** as a loop for a **certain amount** of times. Use every repetition step as a **variable**.

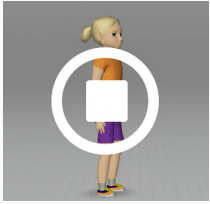


Make an action **repeat** as a loop **while** a condition is **true**



Make an action **repeat for each entry** in a list





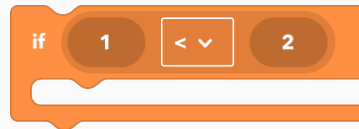
Stop a loop from **repeating**

break out of loop

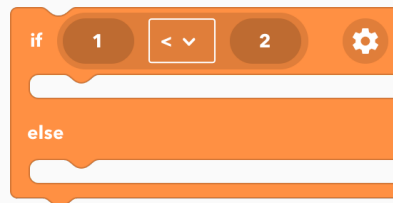
## If

### PRO

Make an action **happen only if** a certain condition is true

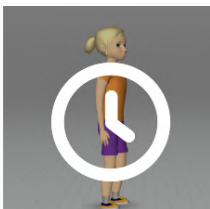


Make an action **happen only if** a certain condition is true. **Else**, make **another action** happen



## Other

### BASIC



Make my program **wait** for some time

wait for **1** sec.




**Start** the scene again from the beginning

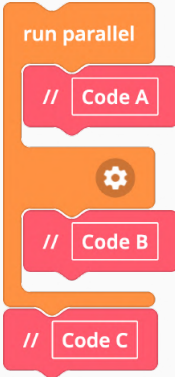
restart scene

**PRO**


**Perform multiple actions together at the same time**




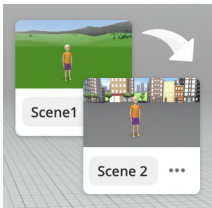
**Example:** Code A and B will start at the same time. When they both finish, code C will start.



**Start several action sequences separately and at the same time**



**Example:** Code A and B will start at the same time separately from each other. This CoBlock structure makes sense when code B consists of several CoBlocks. This is similar to the “run parallel” example above if code C was empty.

**Switch** to a different **scene**



**Quit the CoSpace** and optionally show an image



**Hide or show** arrows to **switch scenes**





# Operators

## Logic

PRO

Enter an **arithmetic condition**

1 = 10

Enter a **logical condition**

false and false

**Check if** something **isn't true**

not false

Check if something is **true** and **return a certain value if it is or isn't**

test false  
if true 1  
if false 2

## Math

PRO

Enter an **arithmetic condition**

1 + 1

Get a **random integer number** within a certain range

random integer from 0 to 100

Get a **random number** within a certain range

random number from 0 to 1

Limit a number **within a certain range of numbers**

constrain 1 from 1 to 100

Check if a certain number is **even or odd**.  
Returns true for even, false for odd.

0 is even ▾

Check if a certain number is **divisible by another number**. Returns true if it is.

0 divisible by 3

Get the **remainder of a division**

remainder of the division 0 by 2

Get the **rounded value** of a certain number

round ▾ 0

Gets the **rounded to n decimals value** of a certain number

round 0 to 2 decimals

Get the **square root** of a certain number

square root ▾ 0

Get the result of a **trigonometric operation**

sin ▾ 0

Get the **sum** of a list of variables

sum ▾ of list my variable ▾

# Items

## Modify

PRO

**Add** the **child** of an object to another object

add child my item ▼ to my item ▼

**Attach** an object to another object

attach my item ▼ slot Top ▼ to my item ▼ slot Top ▼

**Detach** an object from the object it's attached to

detach my item ▼ from parent

**Delete** an object

delete my item ▼

**Delete** all children of an object

delete all children of my item ▼

**Activate** physics on an object

add physics to my item ▼

**Disable** physics on an object

remove physics from my item ▼

**Add** an **object** at a certain position and with a certain name

create item Capsule ▼ at x: 0 y: 0 z: 0 with " Item name "

Change the **name** of an object

set name of  to

## Get

### BASIC

Get a certain **item**

item

Get a certain **group item**

group item

### PRO

Get a certain **camera** object

camera

Get a certain **path** object

path item

Get a certain **text** object

text item

Get a certain **3D text** object

text 3D item

Get a certain **video**

video item

Get a certain **object with physics**

physics item

Get an object of a certain **name**

get item " Item name "

Get the name of a certain **object**

name of my item ▾

**Duplicate** a certain object

create copy of my item ▾

Get the **parent** of a certain object

parent of my item ▾

Get the **number of children** of a certain object

children count of my item ▾

Get a certain **object's child**

child with index 0 of my item ▾

**Create an object** at a certain position and with a certain name

create item Capsule ▾ at x: 0 y: 0 z: 0 with " Item name "

**Check** whether a certain **video is playing**

is video item my video item ▾ playing?

# Data

## Variables

**PRO**

Create a **variable** with a certain initial value

set variable  to

**Store** a certain **CoSpace variable** under a certain name in order to reuse it in another scene

set CoSpace property  to

Get the **stored CoSpace value**

CoSpace property

**Increase** or **decrease** the value of a **variable**

change  by

**Use** a certain **variable**

## Values

**PRO**

Use **false** or **true**

Use a **certain number**



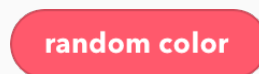
Use a certain **mathematical constant**



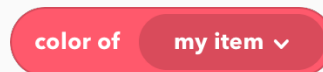
Use **no value**



Use a **random color**



Get the **color** of a certain object



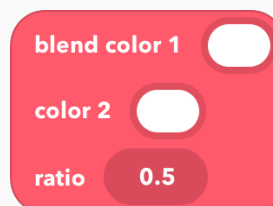
Use a certain **color** you pick



Use a certain **color** you define with its **RGB** values



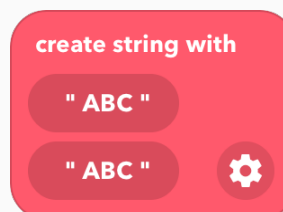
**Mix 2 colors** together at a certain ratio



**Use a text** that you define



**Create a text string** with certain texts that you define



Use certain **coordinates**

x: 0 y: 0 z: 0

Use a certain **coordinate**

x  of x: 0 y: 0 z: 0

Use the **length** of a certain **variable**

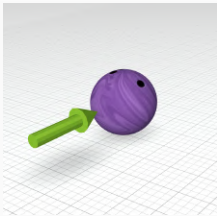
length of my variable



# Physics

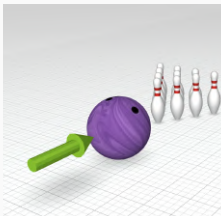
## Simple

PRO



**Push** a certain object **in** a certain **direction** at a certain speed

push my physics item ▾ forward ▾ with velocity 1



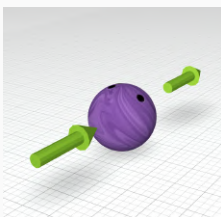
**Push** an object **towards** another **object** at a certain speed

push my physics item ▾  
to my physics item ▾  
with velocity 1



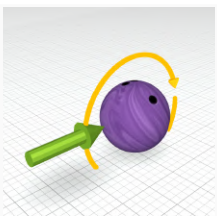
**Push** an object **towards** a certain **position** at a certain speed

push my physics item ▾  
to x: 0 y: 0 z: 0  
with velocity 1



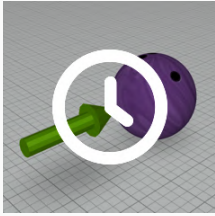
**Push** an object **in** a certain **direction** at a certain speed

push my physics item ▾  
to direction x: 0 y: 0 z: 0  
with velocity 1



Make a certain object **spin** in a certain direction at a certain speed

spin my physics item ▾ forward ▾ with velocity 1



Define a **duration for physics CoBlocks** to get executed

set physics blocks duration to **0.5** sec

## Advanced

PRO

**Set the local or global speed** for a certain physics object

set  local  velocity of my physics item

to x: 0 y: 1 z: 0

**Set the local or global angular speed** for a certain physics object

set  local  angular velocity of my physics item

to x: 0 y: 1 z: 0

## Properties

PRO

**Restrict** the **movement** of an object on axes

restrict my physics item  movement  to axis X  Y  Z

**Define** whether an object is **static** or not

set my physics item  static

**Define** whether an object can **collide** with other objects

set my physics item ▾ collisions with other items on ▾

**Define** the **friction** level of a certain object

set my physics item ▾ friction to 0

**Define** the **weight** (mass) of a certain object

set my physics item ▾ weight to 1 kg

**Define** the **bounciness** level of a certain object

set my physics item ▾ bounciness to 0

**Define** the **gravity** level in your scene

set gravity pull to 0.5

Change the **speed** at which **physics** happen (1 = standard speed)

set physics speed to 1

# Functions

## Simple

### PRO

Stop a **function** from executing further

return from function

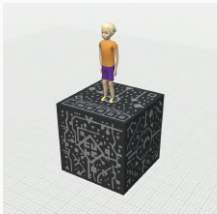
Return a certain **value** from a **function**

return 1

# MERGE Cube

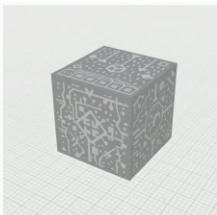
## Actions

PRO



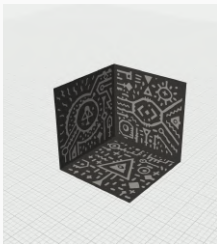
**Place** a certain object **on** a certain **side** of the MERGE Cube

place  of  cube side



**Change** the **opacity** level of the MERGE Cube

set opacity of cube to  %

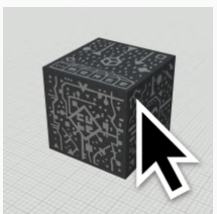


Make the **inside** of the MERGE Cube **visible or invisible**

set cube inside visible

## Events

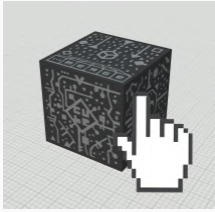
PRO



**Make** an action **happen when** the MERGE Cube **is clicked** and define whether it should happen only once or more

when cube is clicked

run only once



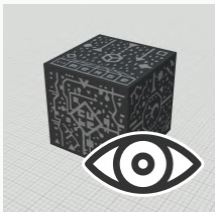
**Make** an action **happen when** the MERGE Cube **is hovered** and define whether it should happen only once or every time it is hovered

when cube is hovered

on: \_\_\_\_\_

off: \_\_\_\_\_

run only once **false** ▾



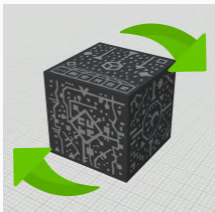
**Make** an action **happen** when **looking** at a certain **side** of the MERGE Cube and define whether it should happen only once or every time it is looked

when **Top** ▾ cube side is looked at

on: \_\_\_\_\_

off: \_\_\_\_\_

run only once **false** ▾

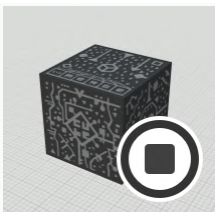


**Make** an action **happen** when the MERGE Cube is **turned** a certain way and define whether it should happen only once or every time the MERGE Cube is turned

when cube turned **up** ▾

on: \_\_\_\_\_

run only once **false** ▾



**Stop** a group of MERGE Cube **actions from happening**

remove **when cube clicked** ▾ events from cube

## Simple

**PRO**

Use a certain **side** of the MERGE Cube

**Top** ▾ cube side

Use the **visible side** of the MERGE Cube (the one the camera is currently looking at)

**visible cube side**

# Notes

## Samples

```

run parallel
  turn Casual girl clockwise
  around axis x: 0 y: 0 z: 1
  by 90° in 1 sec.
  move Casual girl 1 meters forward
  in 1 sec.
set animation of Casual girl to Clap
// all other code

```

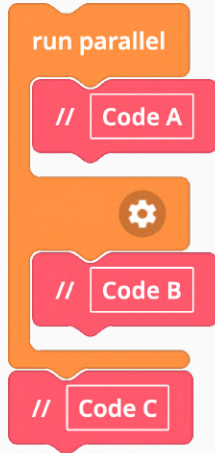
In this case the girl will turn and move at the same time. And when both moves are done, the girl will play clap animation and the flow will continue.

```

run separately
  move Casual girl 1 meters forward
  in 5 sec.
  set animation of Casual girl to Clap
  turn Casual girl clockwise
  around axis x: 0 y: 0 z: 1
  by 90° in 1 sec.
  Casual girl say " Hi! "
// other code

```

In this case, the girl will start moving and also turning at the same time. After movement the girl will also clap, but the turn and main flow of the code will start not waiting for movement to be done.



Code A and Code B will start at the same time. When they both finish, Code C will start.



Code A and code B will start at the same time separately from each other. This CoBlock structure makes sense when "Code B" consists of many CoBlocks. It is similar to previous code if the Code C is empty