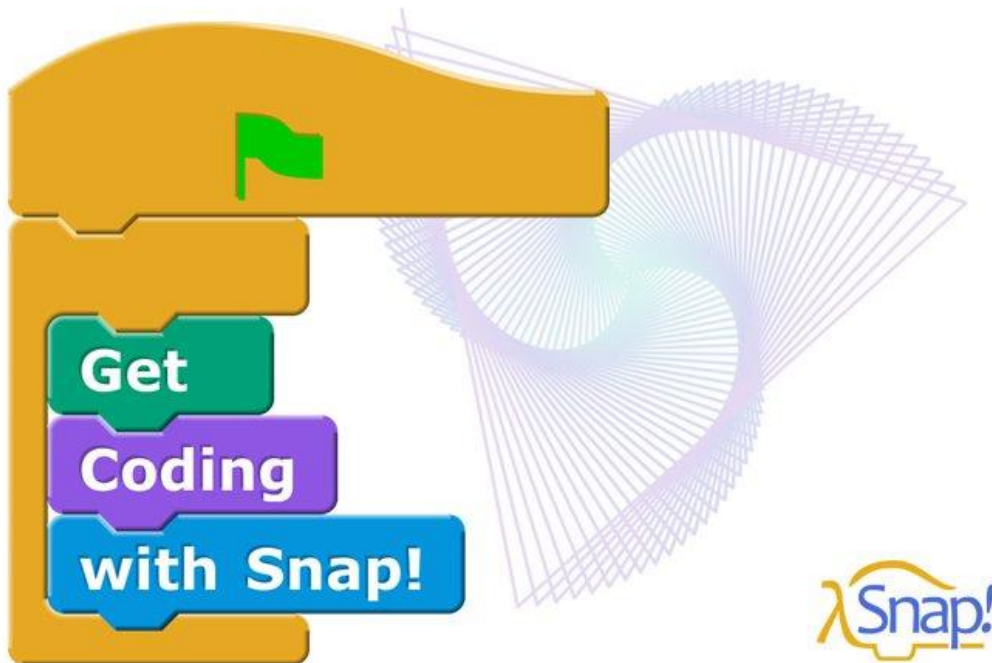


# openSAP Get Coding with Snap!

## Exercises Week 1 Unit 4



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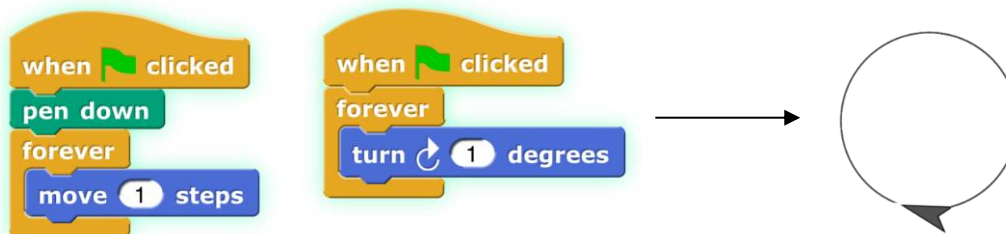


## WHAT YOU HAVE LEARNED THIS WEEK

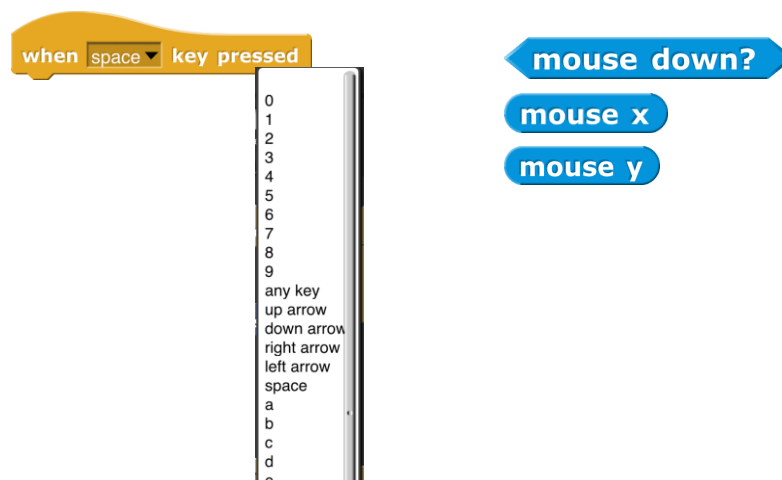
In this unit, you learned about parallelism. You can have multiple sprites that run scripts at the same time. You can add new turtle sprites, draw additional sprites or create new sprites with a picture from your webcam as a costume with buttons in the sprite corral or you can duplicate your existing sprite by right-clicking it and select “duplicate” from its context menu



Additionally, you can run scripts simultaneously within one sprite, when they get triggered by the same hat block.



You learned how to interact with users' keyboards or mice. Snap! provides hat blocks, that trigger the scripts below them on user action, like “when (key) key pressed”, and predicates and reporters that report the mouse's position or if it is pressed. If you are interested in more user interaction, check out the “Sensing” category.









Moreover, you learned how to use conditionals. Snap! has two types of conditionals, “if...” and “if...else...”. The blocks inside their c-shaped slot are executed depending on the condition that is used as an input to the hexagonal slot. The condition in the hexagonal slot reports either “true” or “false”, so-called Boolean values.



Last but not least, you learned about the term “abstraction”. Abstraction means hiding what’s really going on behind a more convenient interface. If you want to know more about abstraction and where you can find it in our everyday life, check out Prof Brian Harvey’s abstraction lecture from UC Berkeley’s “the Beauty and Joy of Computing” course:  
[https://www.youtube.com/watch?v=ok\\_KcxqVrOk](https://www.youtube.com/watch?v=ok_KcxqVrOk)

## Useful Blocks

|  |  |
|--|--|
| This hat block is triggered from user input via keyboard and the scripts below it get executed, whenever a certain key (in this case space) is pressed.  |  |
| This hat-block triggers the scripts below, whenever the green flag is clicked  |  |
| This loop executes the blocks inside its c-shaped input slot indefinitely  |  |
| If and if-else are called conditionals. The scripts inside their c-shaped input slots are executed depending on the condition in the hexagonal slot. The if part is executed, when the condition is met, the else part only if the condition is not met. |   |
| These blocks report the mouse’s x- and y-position and can be used as input for other blocks  |   |
| This predicate reports “true” when the mouse is pressed and “false” when the mouse is not pressed. It can be used as input for other blocks and is useful for programs with user interaction.  |  |
| These blocks report the x- and y-position of a sprite. They can be used as input for other blocks.   |   |

## YOUR TURN

- Create a rainbow-color feature for your sketching program. It should slowly change the color of your pen whenever a specific key is pressed.
- Right now, your program is mirroring left/right. Add two more sprites which mirror your mouse in different directions (up/down) to make it a kaleidoscope.



## Coding Samples

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