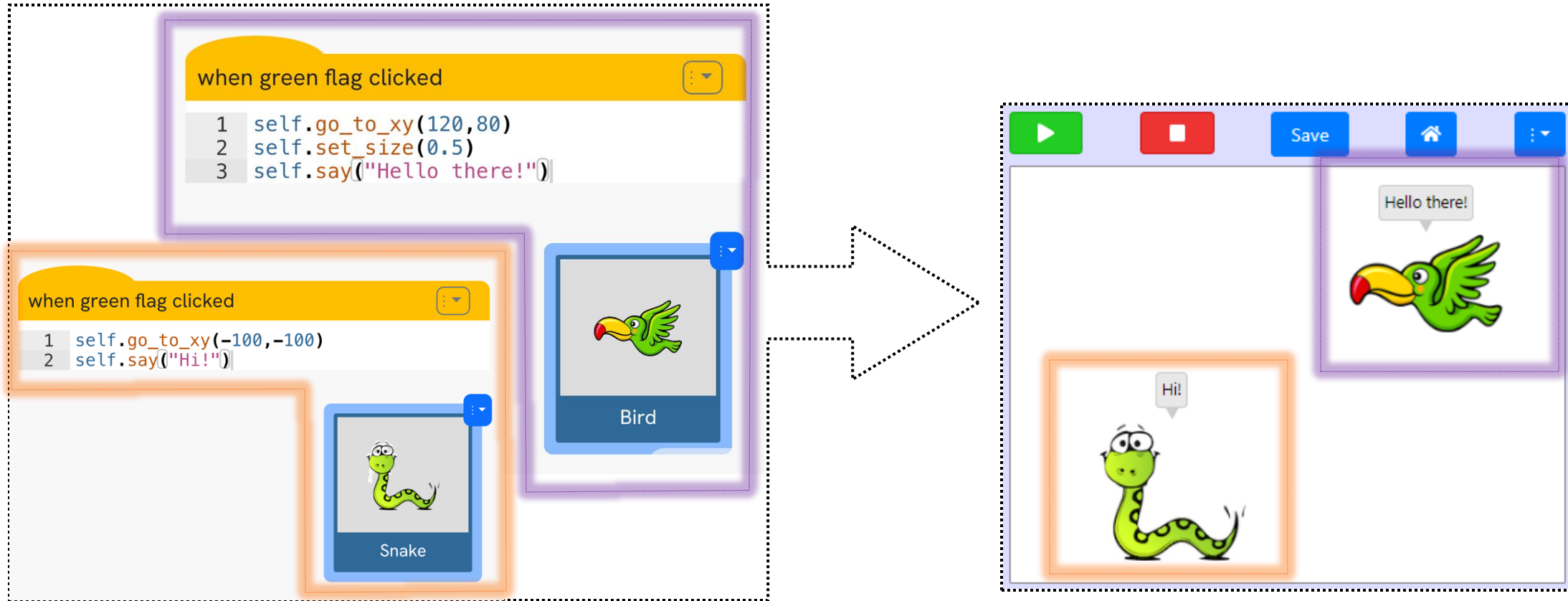# Pytch multiple Sprites
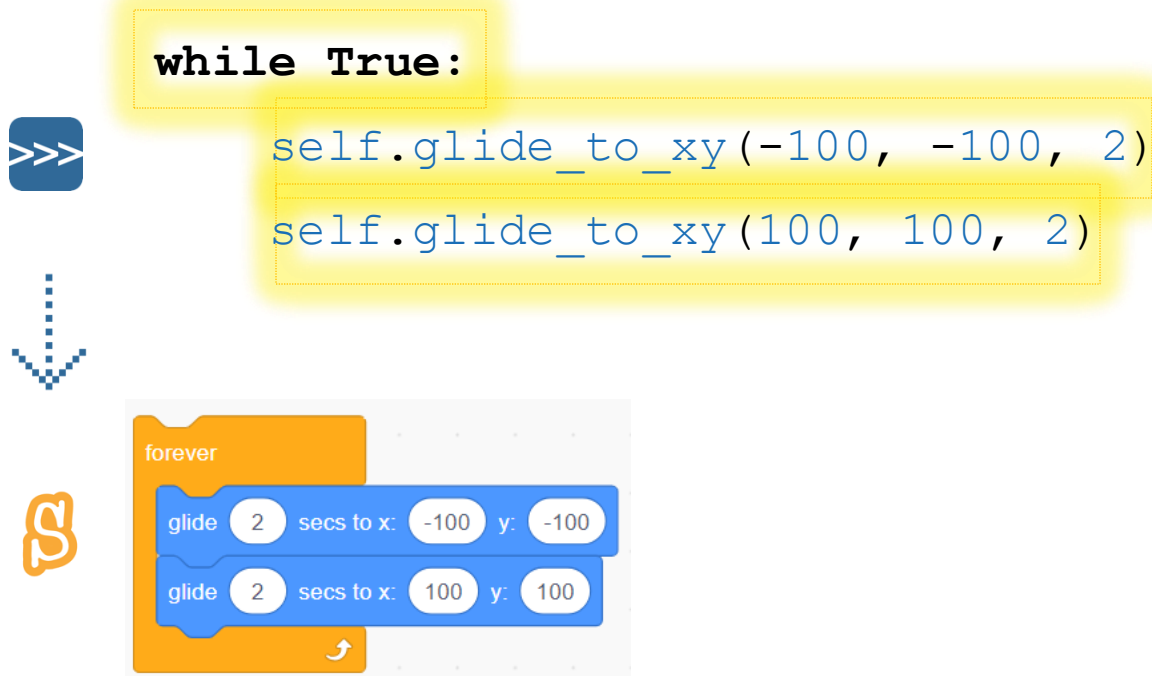
Like in Scratch, in Pytch you can create multiple Sprites. Sprites can do things at the same time.

Python while True loops

You can use a "while True" to keep executing some Python commands/block of code repeatedly forever. Its behaviour is exactly like the "forever" block in Scratch.

```python
while True:
    self.glide_to_xy(-100, -100, 2)
    self.glide_to_xy(100, 100, 2)
```
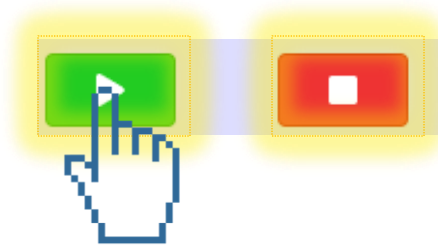
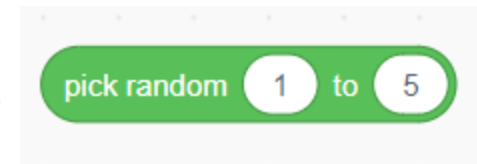# Python random numbers

- To generate random numbers in Python you can use a special command

- **`random.randint(1, 5)`** gives you ("returns") a random integer from 1 to 5 every time you use it.

- Every time you use "random.randint(1, 5)" in your program the computer chooses a new number to use. So you can write that anywhere a number is needed!


```
>>> random.randint(1, 5)
```
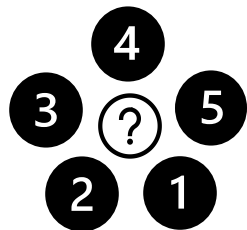
pick random 1 to 5

Exploring random

- How can we see what random numbers we are getting?

If you want your Sprite to say the random number, write:

```
self.say_for_seconds(random.randint(1, 5), 1)
```
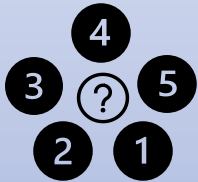
Adding this into your code will help you to check if the value is the one you wanted or if your code is correct because you can see it printed on the screen, in this case within the speech bubble.

If you expect a random number with values between 1 to 5 but the speech bubble say 6 it means you made an error in your code and you have to correct it.

Worksheet 1

Now work in pairs:

- What does this code do?

- Write your answers on worksheet 1

```
when green flag clicked

1   self.go_to_xy(-100,100)
2   self.set_size(0.4)
3   self.say_for_seconds(random.randint(1,5),1)
4
5   while True:
6       self.glide_to_xy(-240,-180,3)
7       self.glide_to_xy(240,180,3)
```

Star

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Try it out

- Follow this link to get a Pytch project that you can run

- Run the program

- Does the star do *exactly* what you thought it would do?

- If not:
  - Look at the differences
  - Correct your answer on worksheet 1

https://pytch.org/app/lesson/sbys/3

INDENTATION

```
when green flag clicked
1  self.go_to_xy(-100,100)
2  self.set_size(0.4)
3  self.say_for_seconds(random.randint(1,5),1)
4
5  while True:
6      self.glide_to_xy(-240,-180,3)
7      self.glide_to_xy(240,180,3)
```

Star

Notice how some things are "**indented**" so they seem to be inside each other.

This is very important to how Python understands what the code means. We will investigate this in the next worksheet!

⟷ one **indentation** level

Questions to do in pairs – Worksheet 2

1. If you put extra spaces *at the start* of some of the lines does it change how (or even *if*) the program works? Why do you think this is?

2. Can you put extra spaces between words? Does it change what the program does? Try some other places (between the punctuation marks or brackets in the code, or between words). What works and what doesn't?

3. Does it matter if the Sprite names change? What happens if we try to change the Sprite name Bird into Star? Now change it to your own first name instead.
Why is this OK?

4. What happens if we write `true` (with a small "t") instead of `True` (with a capital "T")? Does it matter?

5. What happens if you add another line in the while loop to make the star glide to a third location?

6. What happens if you swap the two numbers in `random.randint(1, 5)` ?

7. What happens if you change the numbers in `random.randint` to other values?
For example: try `(10, 20)` and try `(42, 42).`

https://pytch.org/app/lesson/sbys/3

NB: when you're experimenting you can use the keyboard shortcut "`ctrl`" + "`z`" to undo the last changes to go back to the previous version of your code.

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Tasks – Worksheet 3

Work in pairs on these two activities:

1. Make the star begin the movement from a random position on the stage instead of (-100, 100).
   - Remember the Stage size when you select your random numbers.

2. At the moment, the star always moves between the same two locations on the stage. That will make the final game too easy.
   Change the program so that the star moves around the stage unpredictably, choosing different coordinates every time it moves.

3. Take out the code which makes the Star say a random number.

Extension

Finished early? Challenge:

+ 1) Now that you know how to make two sprites, can you add a third sprite, with a different costume? Make it move differently (faster than the star, say, or keeping only to one side of the stage).

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Recap

Today we have

1. Learned about making multiple Sprites in Pytch

2. Learned how to repeat a set of instructions forever using a While loop

3. Learned how to make random numbers in Python

In the next lesson we will continue developing our "Chase Game" project and see some more features of Python.