

THE NUMPY Linspace FUNCTION

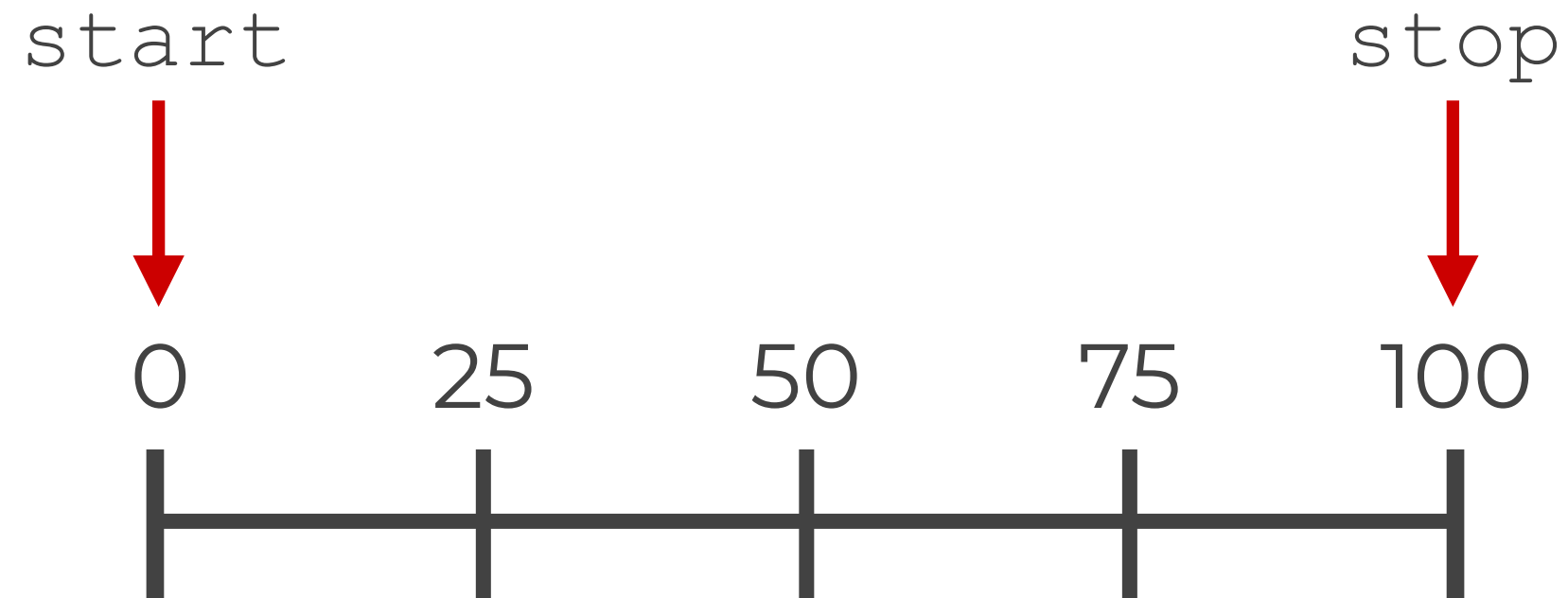
SHARP SIGHT

WHAT YOU'LL LEARN

- How to create arrays with evenly spaced values
- The syntax of `np.linspace`
- Examples of `np.linspace` in action

A QUICK INTRODUCTION TO NUMPY Linspace

NUMPY Linspace CREATES RANGES OF EQUALLY SPACED VALUES



NP.Linspace CREATES NUMPY ARRAYS WITH EVENLY SPACED VALUES WITHIN A RANGE

Five values between
0 and 1

0	.25	.5	.75	1
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Five values between
0 and 100

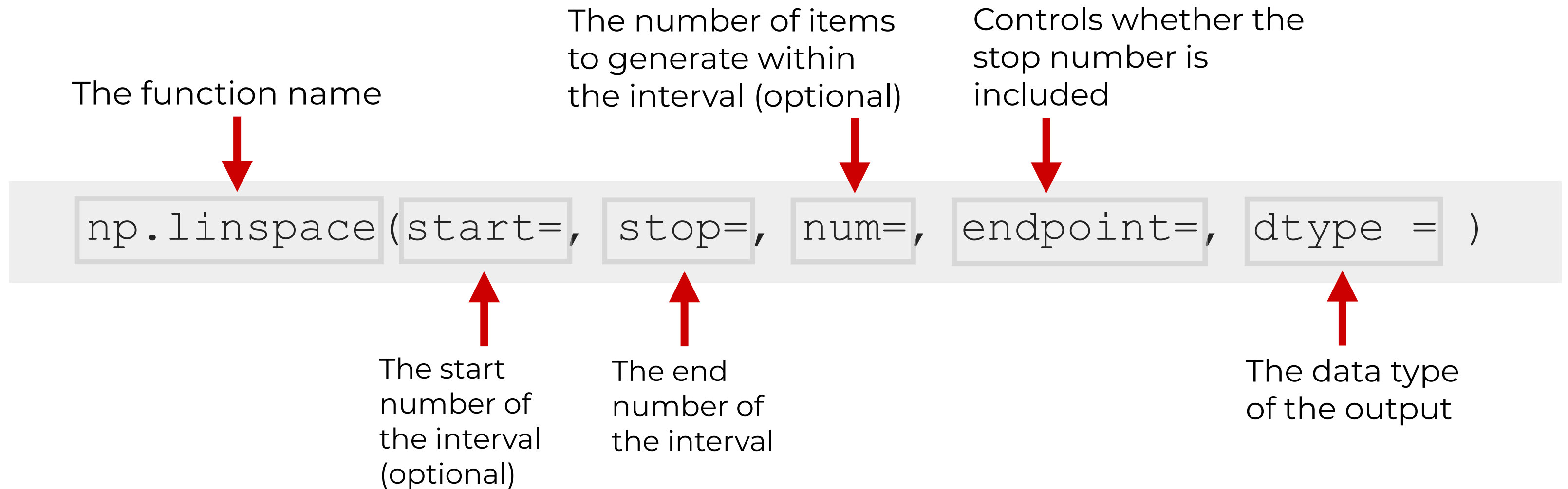
0	25	50	75	100
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Four values between
10 and 40

10	20	30	40
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THE SYNTAX OF NP.Linspace

THE SYNTAX OF NUMPY Linspace



THE PARAMETERS OF NUMPY LINESPACE

Parameter	What it controls	Default	Required?
<code>start</code>	The starting number of the sequence	0	Yes
<code>stop</code>	The end number of the sequence (the sequence <u>will</u> include this number by default)		Yes
<code>num</code>	The total number of elements to generate	50	No
<code>endpoint</code>	Boolean that controls whether the stop number is included	True	No
<code>dtype</code>	The data type of the output	float	No


Note: there's also two other parameters called `retstep` and `axis`, which we won't cover here.

EXAMPLES OF NUMPY Linspace

CREATE FIVE EVENLY SPACED NUMBERS FROM 0 TO 1

The start and stop parameters indicate the start point and end point of the array

The num parameter indicates that the output array will have 5 values



```
np.linspace(start = 0, stop = 1, num = 5)  
array([0.    , 0.25, 0.5  , 0.75, 1.    ])
```

CREATE FIVE EVENLY SPACED NUMBERS FROM 0 TO 100

The start and stop parameters indicate the start point and end point of the array

The num parameter indicates that the output array will have 5 values



```
np.linspace(start = 0, stop = 100, num = 5)  
array([ 0., 25., 50., 75., 100.])
```

The diagram shows two arrows pointing from the explanatory text above to the code below. One arrow points from 'start' to '0' and 'stop' to '100'. The other arrow points from 'num' to '5'.

CREATE FOUR EVENLY SPACED NUMBERS FROM 10 TO 40

The start and stop parameters indicate the start point and end point of the array

The num parameter indicates that the output array will have 4 values



```
np.linspace(start = 10, stop = 40, num = 4)  
array([10., 20., 30., 40.])
```

The diagram shows two arrows pointing from the explanatory text above to the code below. One arrow points from 'start' to '10' and 'stop' to '40'. The other arrow points from 'num' to '4'.

CREATE AN ARRAY WITH A SPECIFIC DATA TYPE

The `dtype` parameter enables us to specify the data type of the output



```
np.linspace(start = 1, stop = 10, num = 5, dtype = int)  
array([ 1,  3,  5,  7, 10])
```

RECAP

RECAP OF WHAT WE LEARNED

- How to create numpy arrays that contain sequences of evenly spaced values
- The syntax of `np.linspace`
 - the parameters
- Examples of how to use `np.linspace`