CSP1150/CSP5110: Programming Principles

Reading 1.4: Variable Assignment Shortcuts

As we covered in this module, assignment statements (i.e. lines of code that assign a value to a variable) typically have the structure of "<variable name> = <value>":

```python
num = 5  # assign a value of 5 to a variable named 'num'
```

Python

It is quite common that you will want to add something to a variable containing a numeric value, e.g. "add 10 to num", which can be achieved like so:

```python
num = num + 10  # add 10 to the 'num' variable
```

Python

This concept also makes sense for other operations such as subtraction and multiplication, and also concatenation – "add this text to the end of the text in a variable", for example:

```python
num = num - 5  # subtract 5 from a variable named 'num'
num = num * 2  # multiply 'num' by 2

text = 'We are the knights who say...'
text = text + 'Ni!'  # add 'Ni!' to the end of the 'text' variable
```

Python

Since this is such a common need, most languages (including Python) offer a shorthand version of these statements. They involve placing the operator (+, -, etc) just before the equals sign:

```python
num = 5
num += 10 # add 10 to 'num'
num -= 5  # subtract 5 from 'num'
num *= 2  # multiply 'num' by 2

text = 'We are the knights who say...'
text += text + 'Ni!'  # add 'Ni!' to the end of 'text'
```

Python

This table summarises it all – assume that x contains a number and y contains a string (text):

Shortcut	Longer Equivalent	Definition
`x += 5` `y += 'dog'`	`x = x + 5` `y = y + 'dog'`	Add 5 to x Add "dog" to the end of y
`x -= 5`	`x = x - 5`	Subtract 5 from x
`x *= 5`	`x = x * 5`	Multiply x by 5
`x /= 5`	`x = x / 5`	Divide x by 5

Most languages (but not Python) also allow a shorthand way to add or subtract 1 from a number:

`x++` and `x--`

Feel free to use the shortcuts above (except for the ++ and -- ones) in your Python code, but they are by no means required. Regardless, it is useful to be aware of them since you will often find yourself reading someone else's code and they may prefer to use such shortcuts even if you don't!