Variables, Expressions, and Statements

Chapter 2

Python for Everybody
www.py4e.com

Constants

- Fixed values such as numbers, letters, and strings, are called "constants" because their value does not change
- Numeric constants are as you expect
- String constants use single quotes (') or double quotes (")

```
>>> print(123)
123
>>> print(98.6)
98.6
>>> print('Hello world')
Hello world
```

Reserved Words

- You cannot use reserved words as variable names / identifiers

```
False      await      else       import     pass
None       break      except     in         raise
True       class      finally    is         return
and        continue   for        lambda     try
as         def        from       nonlocal   while
assert     del        global     not        with
async      elif       if         or         yield
```

Variables

- A variable is a named place in the memory where a programmer can store data and later retrieve the data using the variable "name"
- Programmers get to choose the names of the variables
- You can change the contents of a variable in a later statement

```
x = 12.2
y = 14
x = 100
```

Python Variable Name Rules

Must start with a letter or underscore _

Must consist of letters, numbers, and underscores

Case Sensitive

```
Good:       spam     eggs     spam23      _speed
Bad:        23spam       #sign   var.12
Different:      spam     Spam     SPAM
```

Sentences or Lines

```
x = 2
```
Assignment statement

```
x = x + 2
```
Assignment with expression

```
print(x)
```
Print function

Variable (e.g., x)

Operator (e.g., = +)

Constant (e.g., 2)

Function (e.g., print ())

Mnemonic Variable Names

- Since we programmers are given a choice in how we choose our variable names, there is a bit of “best practice”
- We name variables to help us remember what we intend to store in them (“mnemonic” = “memory aid”)
- This can confuse beginning students because well-named variables often “sound” so good that they must be keywords

http://en.wikipedia.org/wiki/Mnemonic

```
x1q3z9ocd = 35.0
x1q3z9afd = 12.50
x1q3p9afd = x1q3z9ocd * x1q3z9afd
print(x1q3p9afd)
```

```
a = 35.0
b = 12.50
c = a * b
print(c)
```

What are these bits of code doing?

```
hours = 35.0
rate = 12.50
pay = hours * rate
print(pay)
```

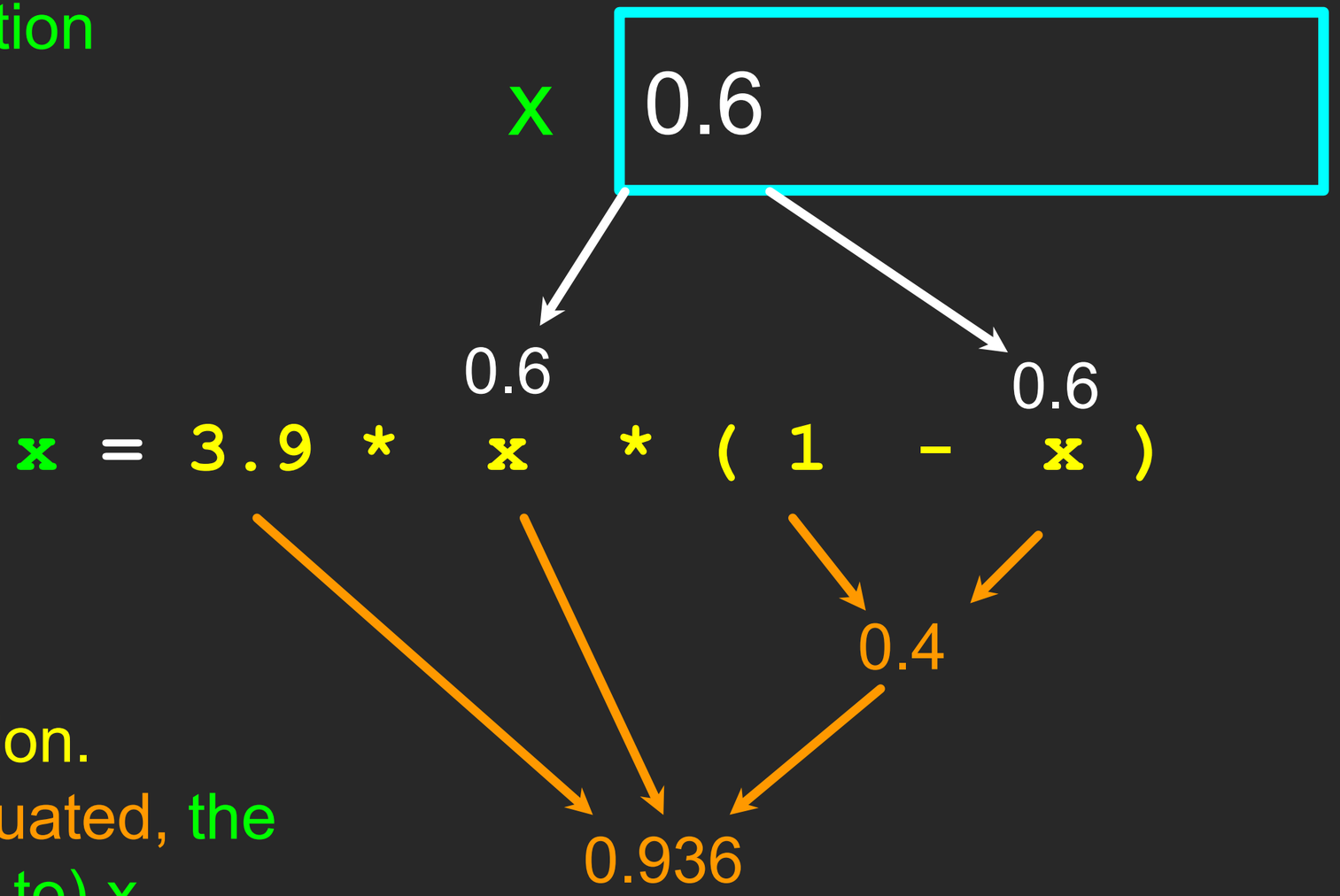
Assignment Statements

We assign a value to a variable using the assignment statement (=)

An assignment statement consists of an expression on the right-hand side and a variable to store the result

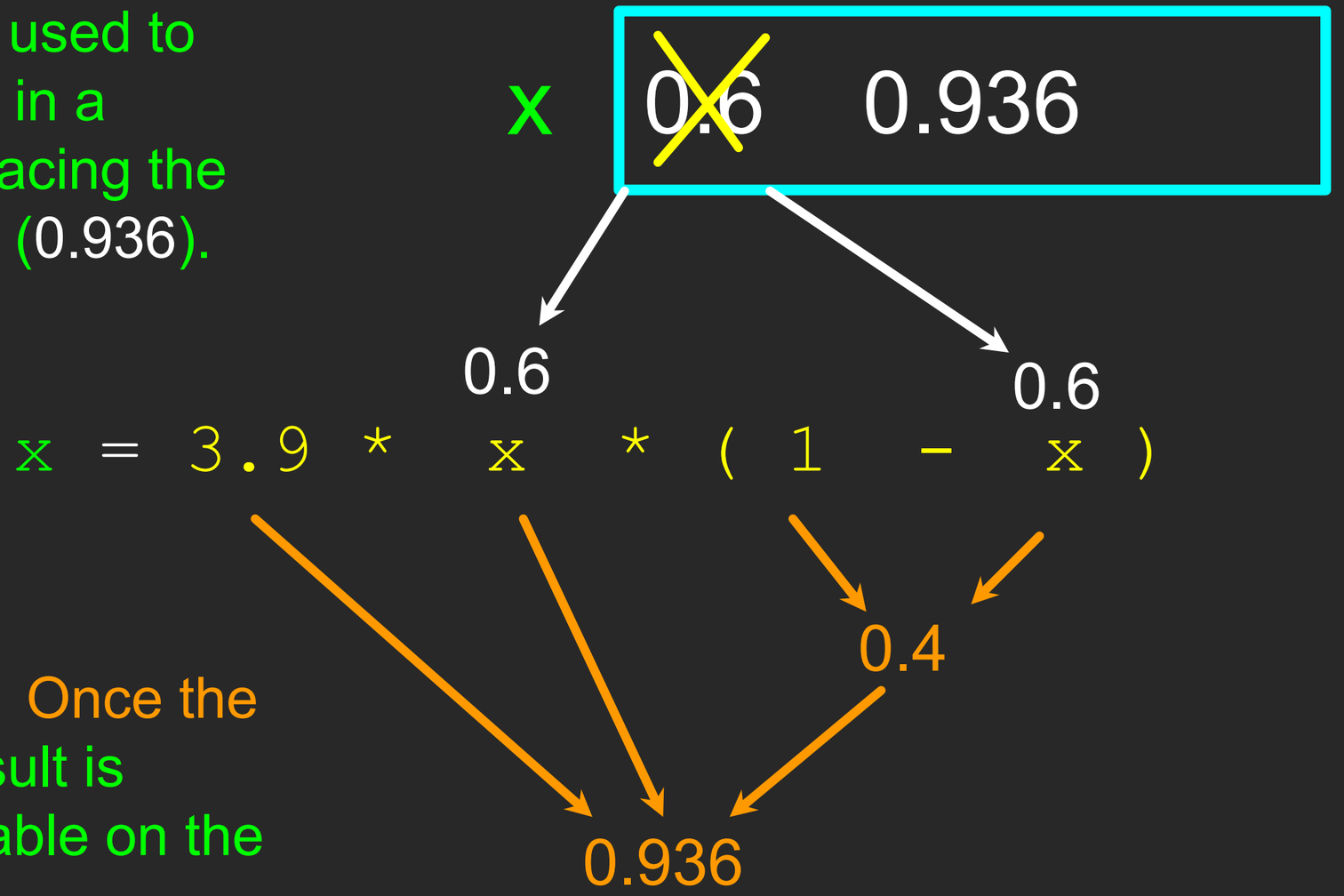
```
x = 3.9 * x * ( 1 - x )
```

A variable is a memory location used to store a value (0.6)



The right side is an expression.
Once the expression is evaluated, the result is placed in (assigned to) x.

A variable is a memory location used to store a value. The value stored in a variable can be updated by replacing the old value (0.6) with a new value (0.936).



The right side is an expression. Once the expression is evaluated, the result is placed in (assigned to) the variable on the left side (i.e., x).

Expressions