Collections

str

bytes

list

dict

for-loops

python™

str

immutable sequences of Unicode codepoints

String Literals

‘This is a string’

“This is also a string”

Moment of Zen

Practicality beats purity

Beautiful text strings
Rendered in literal form
Simple elegance

Strings with Newlines

1. **Multiline** strings

2. **Escape** sequences

Windows

‘\r\n’

carriage-return newline

Linux

OS X

‘\n’

newline

Universal Newlines

‘\n’

PEP 278

http://www.python.org/dev/peps/pep-0278/

Escape Sequences

Sequence	Meaning
`\newline`	Backslash and newline ignored
`\\`	Backslash (\)
`\'`	Single quote (')
`\a`	ASCII Bell (BEL)
`\b`	ASCII Backspace (BS)
`\f`	ASCII Formfeed (FF)
`\n`	ASCII Linefeed (LF)
`\r`	ASCII Carriage Return (CR)
`\t`	ASCII Horizontal Tab (TAB)
`\v`	ASCII Vertical Tab (VT)
`\ooo`	Character with octal value ooo
`\xhh`	Character with hex value hh
Only recognized in string literals	
`\N{name}`	Character named name in the Unicode database
`\uxxxx`	Character with 16-bit hex value xxxx
`\Uxxxxxxxx`	Character with 32-bit hex value xxxxxxxx

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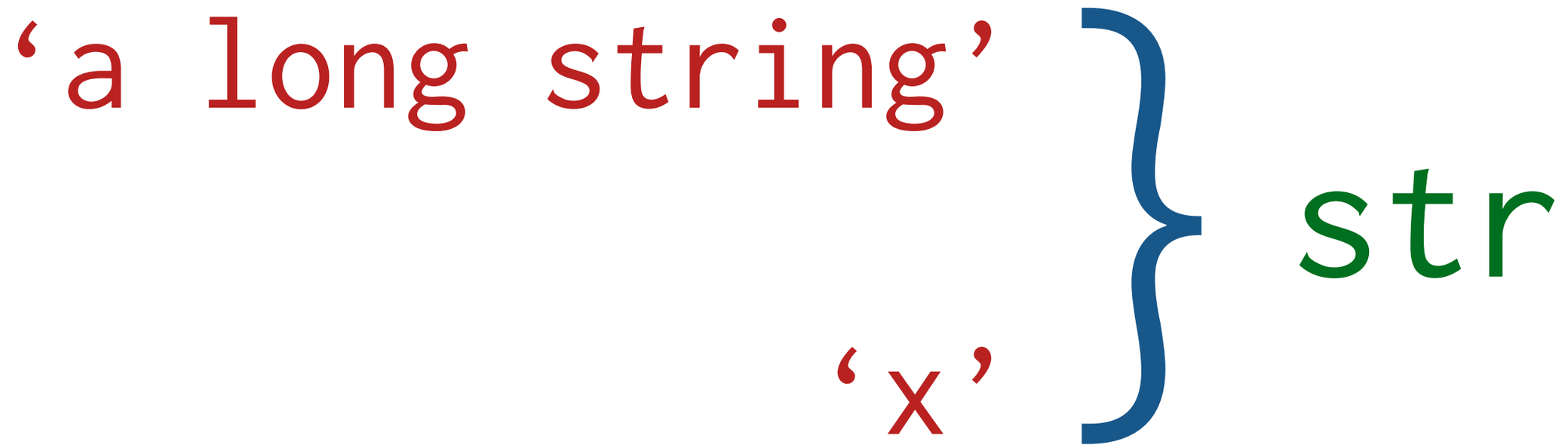
http://docs.python.org/3/reference/lexical_analysis.html#strings

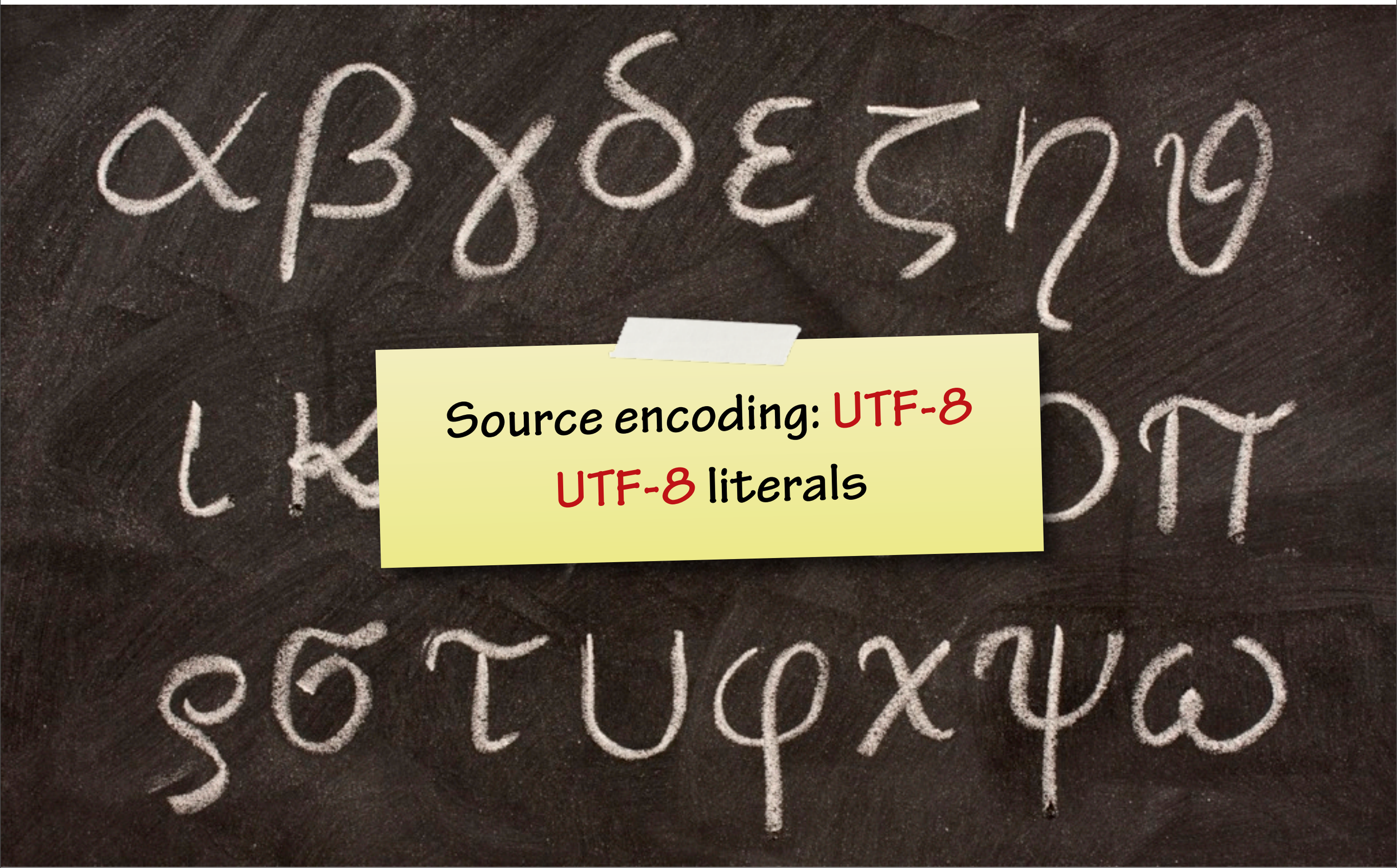
No Separate Character Type



No separate character type

"characters" are simply one element strings

Python Strings Are Unicode



python™

bytes

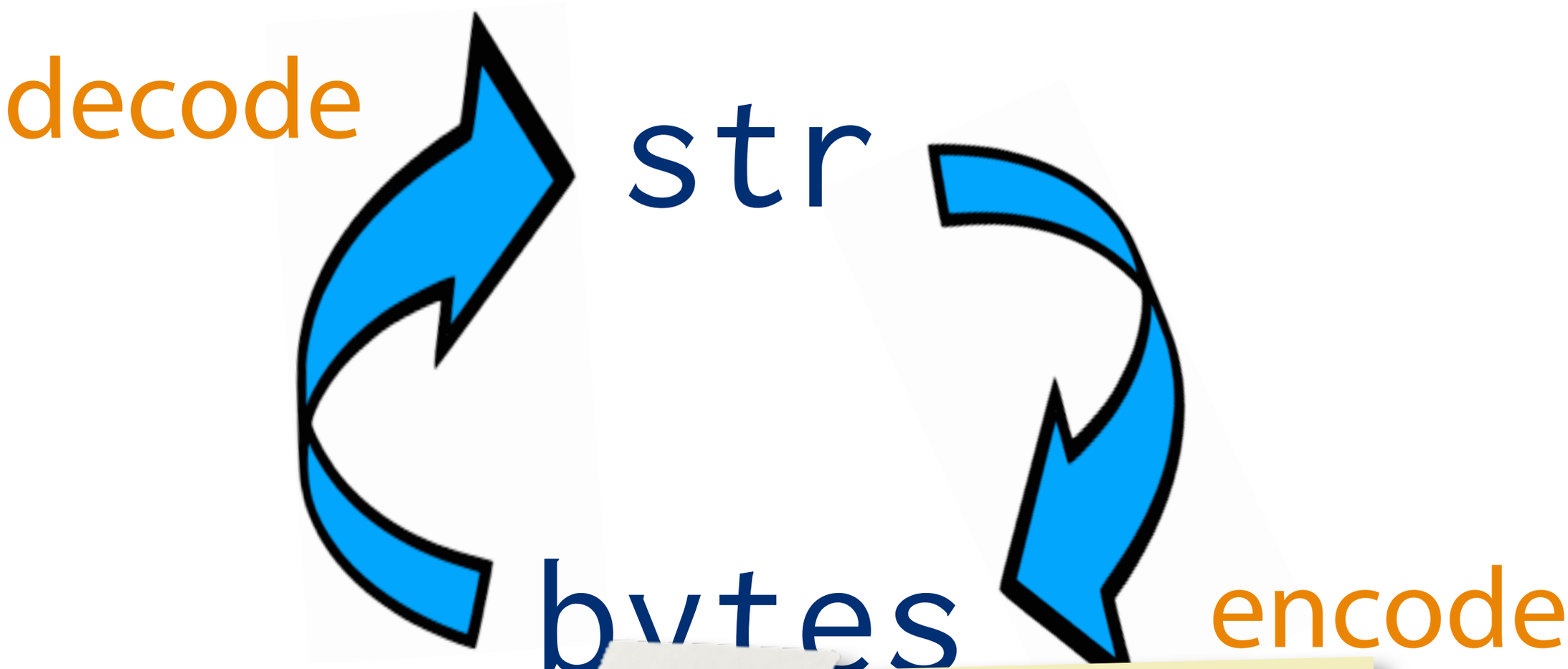
immutable sequences of bytes

Bytes Literals

```
b‘data’
```

```
b“data”
```

Converting Between Strings and Bytes



Encodings

http://docs.python.org/3/library/codecs.html#standard-encodings

list

mutable sequences of objects

List Literals

[a, b, c, d]

dict

mutable mappings of keys to values

Dict Literals

```
{k1: v1, k2: v2}
```

Dict Literals

keys

{k1: v1, k2: v2}

Dict Literals

keys

{k1: v1, k2: v2}

values

for-loop

visit each item in an iterable series

For-Loop Syntax

```
for item in iterable:
    ...body...
```

Exit the REPL

Ctrl-Z

Ctrl-D

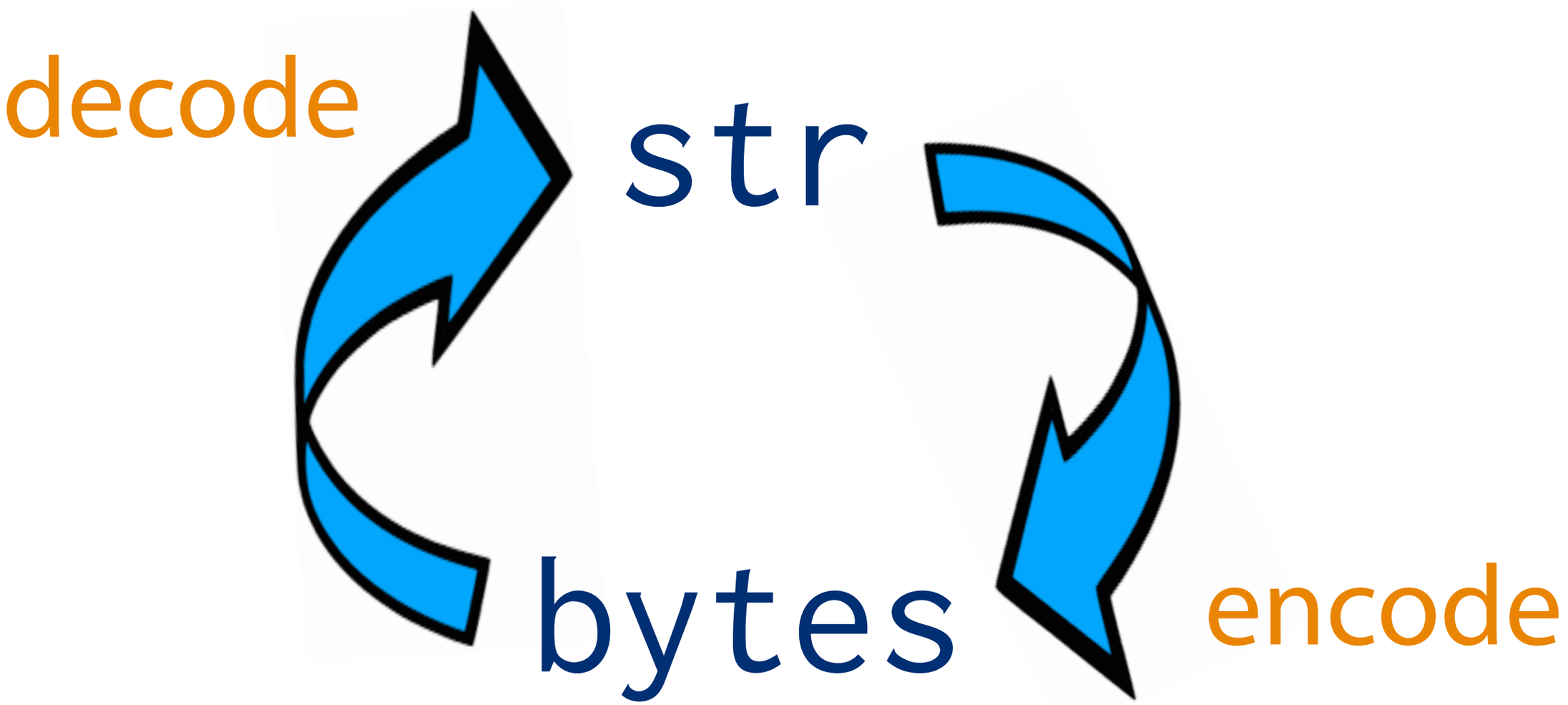

Putting it all together
• urllib.urlopen()
• with-statement
• list
• for-loop
• bytes.split()

Recall: Bytes Literals

```
b‘data’
```

```
b“data”
```

Recall: Converting Between Strings and Bytes




Putting it all together
• urllib.urlopen()
• with-statement
• list
• for-loop
• bytes.split()
• bytes.decode()
• str.split()

Summary: Strings and Bytes

- Single- and multi-line string quoting
- Adjacent string literal concatenation
- Universal newlines
- Escape sequences for control characters
- Raw strings suppress the escaping mechanism
- Convert other types with the `str()` constructor
- Zero-based square-bracket indexing of strings
- Rich variety of string methods
- Python 3 source encoding is UTF-8
- `bytes` is a sequence of bytes, `str` is a sequence of Unicode codepoints
- `bytes` literals prefixed with a lowercase `b`

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- Single- and multi-line string quoting
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- Python 3 source encoding is UTF-8
- `bytes` is a sequence of bytes, `str` is a sequence of Unicode codepoints
- `bytes` literals prefixed with a lowercase `b`
- Convert `str` to `bytes` with `encode()`, `bytes` to `str` with `decode()`

Summary: Lists

- Lists are mutable, heterogeneous sequences of objects
- List literals delimited by square brackets, items separated by commas
- Zero-based, square-bracket indexing to retrieve objects
- Square-bracket assignment to replace objects
- Grow lists with `append()`
- Construct from other sequences using `list()` constructor

```
[a, b, c, d]
```

Summary: Dictionaries

- Dictionaries associate keys with values
- Literal dicts delimited by curly braces
- Literal key-value pairs separated by commas, with a colon between each key and value

```
{k1: v1, k2: v2}
```

Summary: For-loops

- Take items one-by-one from an iterable object, binding a name to the current item
- Correspond to *for-each* loops in other languages

```
for item in iterable:
    ...body...
```