

Python CSV module

Inland Empire Python Users Group
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What is “CSV”?

In the strictest sense, CSV is a text based data format where value are separated by commas - in other words: Comma Separated Values. Data values are generally comma delimited and data records are separated by line breaks.

```
John Smith,123 Main Street,951-555-1212,24  
Jane Doe,99 Ownlywon Way,714-867-5309,32
```

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```

In practice however, CSV has come to also encompass variations on this format:

```
"John Smith","123 Main Street","951-555-1212",24  
Jane Doe|99 Ownlywon Way|714-867-5309|32  
"Onik Chormanskivich"~"2 Crown Drive"~"909-747-2112"~"67"
```

What is “CSV”?

- Note that the CSV data format is generally treated as a variable length field format as opposed to a fixed length format (even if the data fields happen to be of fixed length). In other words, one of the key factors is that the data record format uses delimiters to identify where one field ends and the next one starts.

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- Usually you would be working with CSV files, however the format could also be applied to streaming formats or in-memory data structures as well.

What is “CSV”?

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- CSV is a very common data interchange format.
- CSV is a record based format designed to hold “table” type data as opposed to nested (object) data.*

*Nested data can be “faked” with additional program logic

Python CSV Module

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- Is one of Python's “included batteries”
- Simple, but does one thing well

Using the Python CSV module:

```
import csv
```

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```
import csv

f = open('sample.csv')
try:
    reader = csv.reader(f)
    for row in reader:
        print(row)
finally:
    f.close()
```

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- Each CSV record is returned as a Python list:

```
['John Smith', '123 Main Street', '951-555-1212', '24']
```

Writing with the Python CSV module:

```
import csv

f_in = open('sample.csv')
f_out = open('output.csv', 'w')
try:
    reader = csv.reader(f_in)
    writer = csv.writer(f_out, delimiter='|', quotechar='$', quoting=csv.QUOTE_NONNUMERIC)
    for row in reader:
        writer.writerow( (row[0], int(row[3])) )
finally:
    f_out.close()
    f_in.close()

print(open('output.csv').read())
```

CSV Conventions:

Delimiting (Most commonly used delimiters)

- Comma (,)
- Pipe (|)
- Tab ()
- Tilde (~)

CSV Conventions:

Quoting (Usually " is used)

- `csv.QUOTE_ALL`
Quote ALL fields
- `csv.QUOTE_MINIMAL`
Quote only fields with special characters
- `csv.QUOTE_NONNUMERIC`
Quote all non-numeric fields.
- `csv.QUOTE_NONE`
Don't quote anything

CSV Header:

The first line in some CSV files can have column names instead of data:

Name,Address,Phone,Age

John Smith,123 Main Street,951-555-1212,24

Jane Doe,99 Ownlywon Way,714-867-5309,32

You need to be aware if the CSV files you are working with has a header line or not so that you can read them properly.

CSV Header:

```
import csv

f = open('sample_h.csv')
try:
    reader = csv.reader(f)
    header = next(reader)
    for row in reader:
        print(dict(zip(header, row)))
finally:
    f.close()
```


CSV Header:

```
import csv

f = open('sample_h.csv')
try:
    reader = csv.DictReader(f)
    for row in reader:
        print(dict(row))
finally:
    f.close()
```

Miscellaneous

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Python docs: <https://docs.python.org/3.9/library/csv.html>

Discussion