



SKILLPILLS

Skill Pill: Programming with Python

Reading and writing files

Jeremie Gillet



- Python can read and write any file
- One more useful function for later: map
- ```
>>> a=[1, "hello", [5,9]]
```
- ```
>>> map(type,a)
```

 - ★

```
[<type 'int'>, <type 'str'>, <type 'list'>]
```
- ```
>>> map(str,a)
```

  - ★ 

```
['1', 'hello', '[5, 9]']
```



# open() and write()

- `f = open("filename.txt", "mode")`

- modes:

| mode | purpose             |
|------|---------------------|
| r    | reading             |
| w    | writing             |
| a    | appending           |
| r+   | reading and writing |

- `f.write("things you want to write")`
- `f.close()` # important!
- You can only write strings

# Reading text files

- `f.read()` # reads the entire file
- `f.seek(5)` # goes to the 6th byte in the file
- `f.read(10)` # reads 10 bytes
- `f.readline()` # reads one line (until '\n')
- lines in `f` can be iterated:
  - `for line in f:`
  - `print line`

# Reading and writing binary files

- `from struct import *`
- `pack(format, v1, v2,...)` # packs values acc. to format
- Format example:
  - “iii”: 3 signed 4-bit integer
  - ‘<H’: little-endian 2-bit unsigned integer
- `unpack(format, string)` # unpacks string acc. to format

| First Character | Byte order       |
|-----------------|------------------|
| @               | native (default) |
| <               | little-endian    |
| >               | big-endian       |

| Format | C Type             | Python type        | Standard size |
|--------|--------------------|--------------------|---------------|
| c      | char               | string of length 1 | 1             |
| b      | signed char        | integer            | 1             |
| B      | unsigned char      | integer            | 1             |
| ?      | _Bool              | bool               | 1             |
| h      | short              | integer            | 2             |
| H      | unsigned short     | integer            | 2             |
| i      | int                | integer            | 4             |
| l      | unsigned int       | integer            | 4             |
| l      | long               | integer            | 4             |
| L      | unsigned long      | integer            | 4             |
| q      | long long          | integer            | 8             |
| Q      | unsigned long long | integer            | 8             |
| f      | float              | float              | 4             |
| d      | double             | float              | 8             |
| s      | char[]             | string             |               |
| p      | char[]             | string             |               |



- Go to <http://rosalind.info/>
- Register
- First: Python village
- Second: Bioinformatics Stronghold