Introduction to Programming with Python 2/?

DUCSS - Dublin University Computer Science Society

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Volunteers are here to help

Ask Questions

Experiment with the Code

Plan for Today

- Revision (What did we not learn last week?)

- Lists
- Dictionaries

- Exercises

Revision

- Python Tool
    - Open Terminal
    - Run "py" (Windows) or "python" (macOS, Linux)
    - Python interpreter: ">>>"
        - Run individual python commands immediately: `A = 42`
        - Exit with: `exit()`
    - Python scripts (.py files)
        - Run `python path/to/your/python/script.py`
        - Edit scripts with your favorite text editor (Editor, Notepad++, vim, etc.)
- Variables
- Branching
- Loops
- Functions

py not python
on Windows!

Lists

- Store several values in order:

  ```
  movies = ['Interstellar', 'Star Trek', 'Contact']
  ```

- Read items from lists:

  ```
  favorite = movies[2] //'Contact'
  ```
  Note: Computers start indexing at 0!

- Change lists:

  ```
  movies[1] = 'Star Wars'
  ```

Lists

- Extend lists:

  ```
  movies.extend(['2001: A Space Odyssey', 'Alien'])
  ```

- Insert into lists:

  ```
  movies.insert(3, 'The Martian')
  ```

- Remove from lists:

  ```
  movies.remove('Interstellar')
  movies.pop() //removes the last element
  ```

Lists

- And lots more:
  ```
  i = movies.index('Star Wars') //get the first index
  l = len(movies) //get the length of the list
  movies.sort()
  movies.reverse()
  //...
  ```

Lists

```python
movies = ['Interstellar', 'Star Trek', 'Contact']
favorite = movies[2]
movies[1] = 'Star Wars'
movies.extend(['2001: A Space Odyssey', 'Alien'])
movies.insert(3, 'The Martian')
movies.remove('Interstellar')
movies.pop()
i = movies.index('Star Wars')
l = len(movies)
movies.sort()
movies.reverse()
//...
```

Lists

```
//...

print(movies)
print(favorite)
print(i)
print(l)
```

Lists

```
def isPrime(x):
    for y in range(2, x):
        if x % y == 0:
            return False
    return True

//...
```

Lists

```
//...

primes = []

i = 2
while len(primes) < 100:
    if isPrime(i):
        primes.extend([x])
    i += 1

print(primes)
```

Dictionaries

- Dicts assign values to keys:
  ```
  ratings = {'Titanic':4, '500 Days of Summer':3,
  'Twilight':1}
  ```

- Get values for keys:
  ```
  stars = ratings['500 Days of Summer']
  ```

- Set values for keys:
  ```
  ratings['La La Land'] = 3
  ```

Dictionaries

- Deleting Items:

  ```
  del ratings['Twilight']
  ratings.clear()
  ```

Dictionaries

```
ratings = {'Titanic':4, '500 Days of Summer':3, 'Twilight':1}
stars = ratings['500 Days of Summer']
ratings['La La Land'] = 3
del ratings['Twilight']

print(ratings)
print(stars)
```

Dictionaries

```
credentials = {} //stores usernames and passwords
```

Dictionaries

```python
def login():
    print('Username:')
    username = input()
    print('Password:')
    password = input()

    if (username in credentials) == False:
        print('Unknown user!')
    elif password == credentials[username]:
        print('Success!')
    else:
        print('You are a fraudster!')
```

Dictionaries

```python
def newUser():
    print('Username:')
    username = input()
    print('Password:')
    password = input()

    credentials[username] = password

    print('Welcome!')
```

Dictionaries

```
while True:
    command = input()
    if command == 'login':
        login()
    elif command == 'new':
        newUser()
    elif command == 'exit':
        exit()
    else:
        print('Unknown command')
```