

Introduction to Programming with Python 2/3

DUCSS - Dublin University Computer Science Society

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

```
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

```
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

```
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')
```

Further resources

- The official Python tutorial:
<https://docs.python.org/3/tutorial/>
- Contact DUCSS:
ducss@csc.tcd.ie
fb.ducss.ie
- Visit the DUCSS room:
Ground floor in the Hamilton > Door besides the vending machines > Code on your membership card > Follow the <ducss/> signs