Exception Handling, List Comprehensions and Distribution

python™

pygame

Recap

- Libraries!
- Questions?
- Homework questions?

Exception Handling

- Easy way to deal with errors
- Caused by many different functions in Python
- If uncaught they'll crash your program
- The code that is likely to throw an exception goes inside the “try” block, the exception is handled inside the “except” block

```
>>> f = open('doesnotexist.txt', 'r')

>>> try:

…    f = open('doesnotexist.txt', 'r')

… except IOError:

…    print(“Can't find file.”)
```

Exception Handling (cont.)

- You can also throw your own exception, using either standard errors or your own.
- You do this by using the “raise” statement.

```
>>> raise ValueError(“This is an error message”)
```

List Comprehensions

- Alternate syntax for creating lists
- Optimized for speed
- Based on constructs found in functional programming languages

```
>>> numbers = [x for x in range(1, 100)]
>>> odd_numbers = [x for x in range(1, 100) if x % 2 != 0]
```

Lambdas

- Simple way to make one time use functions
- Used in conjunction with a lot of functional programming tools (coming later)
- Can be stored in variables

```
>>> CAPS = lambda x: x.upper()
>>> CAPS('testing')
```

Map, Reduce and Filter

- Map takes a function and applies it to each item in a list
- Reduce recursively applies a function to a list until there's only one result
- Filter takes applies a function to a list of objects and returns a list of items for which the function evaluates to True

Map, Reduce and Filter (cont.)

```
>>> map(lambda x: x+3, [1, 2, 3, 4, 5])
>>> reduce(lambda x, y: x + y, [1, 2, 3, 4, 5])
>>> filter(lambda x: x % 2 == 0, [1, 2, 3, 4 ,5])
```

Distribution

- You can turn your code into standalone programs by bundling it up with the python interpreter and required libraries
- cx freeze, py2exe, py2app
- Write a packaging script

cx_Freeze

```
>>> from cx_freeze import setup, Executable
>>> setup(
… name = 'urllib2_example',    # name of program
… version='0.1',   # version
… description='a script that downloads a page',  #a brief description
… executables = [Executable('urllib2_example.py')] # Executable takes the name of your python script
)
```

cx_Freeze (cont.)

- Put that into a setup.py script and place it along with your script.
- Run as “python setup.py build”
- Voila! Your packaged application is in a newly created build directory.

Homework

- Go forth and distribute your code!
- Keep coming to HacDC!
- Read and write code!