Programming in Python Lecture 6- Packages

Plan for today

- Random
- Datetime
- OS&Shutil

Homework

1. Create a Python function get 1 argument a returns 3 results(number+1' number*3 and (number*3)**number

Input:

```
>>> 5
```

Output:

```
>>>  (6, 15, 759375)
```

2. Create a Python function get amount of loan ,rate, a 2 durations,

and if the gap between the monthly payments is less than 200 and the

gap between the total returns are more than 1000, the first loan in better

Monthly payment Formula =round((amount*(1+rate)**duration_1)/(duration_1*12))

Total payment Formula =round(amount*(1+rate)**duration_1)

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Random

- The **Random** package provides to generate the pseudo-random variables. It can be used perform some action randomly such as to get a random number, selecting a random elements from a list, shuffle elements randomly, etc.

randrange

```
>>> import random as rd
>>> rd.randrange(100)
```

Random number

```
>>> rd.randrange(10,100)
```

Random number between 10 and 100

```
>>> rd.randrange(10,100,3)
```

Random number between 10 and 100 and with 3 steps

Between the numbers

Choice/ choices

```
>>> import random
```

```
>>> rd.choice(["apple", "banana", "cherry"])
```

Random argument form a list

```
>>>rd.choice('Pink Floyd')
```

Random argument form a string

```
>>> rd.choices([97,34,44] ,weights = [5, 2, 1], k = 140)
```

Random selection from the given sequence

Shuffle/ sample

```
>>> import random
```

```
>>> rd.shuffle (["apple", "banana", "cherry"])
```

Random order sequence from a list

```
>>>rd.sample('Pink Floyd’,ratio)
```

Random sample of a sequence

Random Methods

Function	Description
seed()	Initialize the random number generator
getstate()	Returns the current internal state of the random number generator
setstate()	Restores the internal state of the random number generator
getrandbits()	Returns a number representing the random bits
randrange()	Returns a random number between the given range
randint()	Returns a random number between the given range
choice()	Returns a random element from the given sequence
choices()	Returns a list with a random selection from the given sequence
shuffle()	Takes a sequence and returns the sequence in a random order
sample()	Returns a given sample of a sequence
random()	Returns a random float number between 0 and 1

Questions?

Hands On

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Datetime

- The **Datetime** module supplies classes for manipulating dates and times.it helps us identify and process time-related elements like dates, hours, minutes, seconds, days of the week, months, years, etc. It offers various services like managing time zones and daylight savings time. It can work with timestamp data. It can extract the day of the week, day of the month, and other date and time formats from strings.

Datetime

```
>>> import datetime
>>> datetime.date(Year, Month ,Day)
“Year - Month – Day”
>>> Date.replace(day=7/ Month=10/ Year=1992)
“1992 - 10 – 7”
>>> datetime.date.today()
“Year - Month – Day”(Today)
```

Datetime

```
>>> Today-/+datetime.timedelta((weeks=5)/
(days=8)/(hours=24)/ (minutes=3000))
```

```
“Year – Month – Day”(Arter operation)
```

Date formats

```
>>>Today.strftime('%d/%m/%Y’)
```

```
“7/10/1992”
```

Datetime

Time

```
>>> import time
>>>for x in range(n):
    time.sleep(3)
    print("Sorry, Slept for 3 seconds…")
```

“Sorry, Slept for 3 seconds…”*n times

Datetime Methods

https://docs.python.org/3/library/datetime.html

https://www.w3schools.com/python/python_datetime.asp

Questions?

Hands On

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- **OS & Shutil**

OS

- This module provides a portable way of using operating system dependent functionality. If you just if you want to manipulate paths, see the os.path module, and if you want to read all the lines in all the files on the command line see the fileinput module. For creating temporary files and directories see the tempfile module, and for high-level file and directory handling see the shutil module.

OS

```
>>> import OS

>>> os.walk(path)

Names of files for path

>>> os.path.split(path)

(‘Dir’,’file’)

>>> os.path.join(‘Dir’,’file’))

(Path)
```

OS

```
>>> os.listdir(path)
```

List of files for path

```
>>> os.path.isdir(path)
```

True if Dir/file/link, Fales if not

```
>>> os.scandir(root)
```

List of object in dictatory

```
>>> os.rename(path1, path2)
```

Rename the file or directory path1 to path2. If path2 exists, the operation will fail with an OSError subclass in a number of cases.

OS Methods

https://docs.python.org/3/library/os.html#os-file-dir

Shutil

- The **shutil** module offers a number of high-level operations on files and collections of files. In particular, functions are provided which support file copying and removal. For operations on individual files, see also the os module.

Shutil

```
>>> shutil.copyfile(path1, path2)
```

Copy the contents (no metadata) of the file named path1 to a file named path2 and return path2 in the most efficient way possible.

```
>>> shutil.copy(path1, path2,)
```

Copies the file path1 to the file or directory path2. path1 and dst should be path-like objects or strings. If path2 specifies a directory, the file will be copied into path2 using the base filename from path1. If path2 specifies a file that already exists, it will be replaced. Returns the path to the newly created file

Shutil

```
>>> shutil.move (path1, path2)
```

Recursively move a file or directory (path1) to another location (path2).

```
>>> shutil.copytree (path1, path2)
```

Recursively copy an entire directory tree rooted at path1 to a directory named path2 and return the destination directory. All intermediate directories needed to contain path2 will also be created by default

Shutil Methods

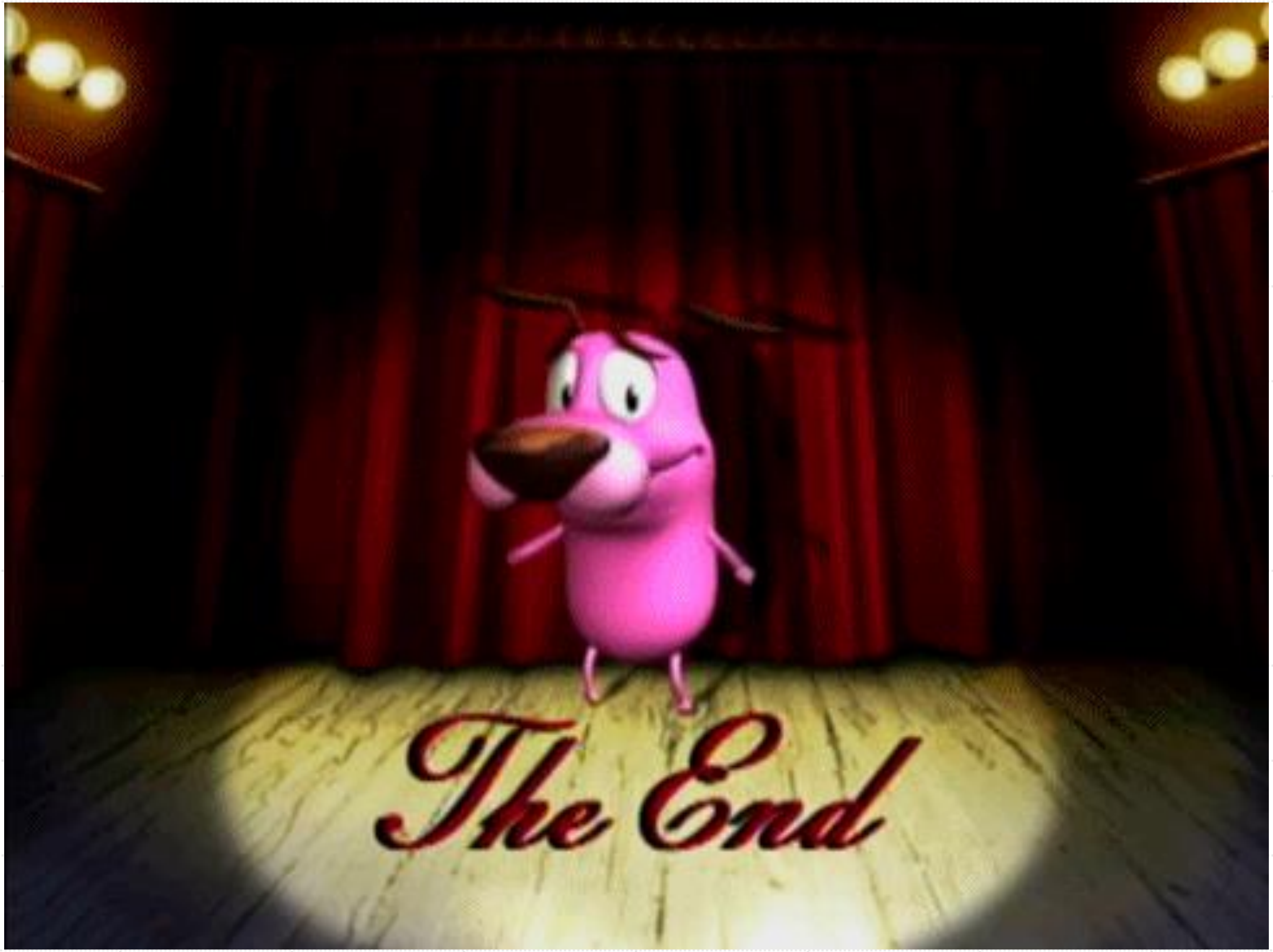
https://docs.python.org/3/library/shutil.html

Questions?

Hands On

Homework

1. Create a Python script to generate a guessing number game, allowing the user a limited number of guesses, using input from user and randint function, and will not work on Wednesdays


The End