

DS2000

9/29 - Friday !!

Admin

- HW2 due 9pm

- 10/4 mini exam #1

Agenda

1. Lists in Python

2. Lists and files

3. Python

0. Review

import random

def main():

```
# step one: initialize starting point for $$
# this is outside the for loop so it happens once
money = 0
for i in range(50):
    # step one cont'd: gather data by rolling two dice and saving values
    # this is inside the for loop so we roll the dice over and over again
    roll1 = random.randint(1, 6)
    roll2 = random.randint(1, 6)

    # step two: computations. figure out how much $$ we added
    # to the pile from the current roll
    if roll1 < roll2:
        money = money + 2
    elif roll1 == roll2:
        money = money + 9
    if roll1 + roll2 >= 10:
        money = money + 20

    # another computation - if we add the values together and > 6
    if roll1 + roll2 > 6:
        money = money + 5

# step three: communicate. Report the dice values each time
# (inside the for loop)
print("Dice were", roll1, roll2)

# step three cont'd: communicate the total amount of money
# after all rounds are completed (outside the for loop so it
# happens only once)
print("And now we have... $", money, sep = "")
```

main()

1. Python Lists

↳ What if we need to remember a lot of values all at once? ~ and ~ not have 50 variables!

Python list ~ one label many values ~ see [] think list!

- How many rounds do we play? 50!

- How much \$ it rolls are  
6, 5 \$5  
3, 3 \$9

- Which lines happen only once?

money = 0  
print \$ at end

lst = [5, 9, 0, 2, 14]  
0 1 2 3 4

label lst, 5 values  
positions

How to use a list?

- create
- add something
- look at one value
- look at all values

lst = []

lst = [2, 4, 6, 8]  
0 1 2 3

lst.append(10) [2, 4, 6, 8, 10]  
0 1 2 3 4

lst[3] 8

for line in file: for i in range(x): for num in lst:

num = 2

num = 4

num = 6

num = 8

num = 10

← Shortcut!

→ repeated  
5 times

### Practice

- prompt user for int
- add to a list

lst = []

var = int(input("num?"))

lst.append(var)

[num]  
0

- prompt user for 10 ints
- add to a list

lst = []

for i in range(10):

var = int(input("num?"))

lst.append(var)

[num, num, num, ..., num]  
0 1 2 ... 9

- prompt user for 10 ints
- add to list if even

```
lst = []
```

```
for i in range(10):
```

```
    var = int(input("num?"))
```

```
    if var % 2 == 0:
```

```
        lst.append(var)
```

## 2. Files + Lists

Today's data: results from die game  
dicemoney.csv

goal: list of integers  
one value for every round  
of game

- How many times is \$ even?
- How many times is \$ > 10?

comma-separated values  
(like an Excel file!)

```
1, 2, 3, 4, 5
```

dicemoney.csv

```
row = infile.readline()
```

# no for loop to read!  
# row is a string

```
lst = row.split(",")
```

# split turns a string into  
list of strings

```
n = int(lst[2])
```

# saves str at position 2  
as int