

## CS 161 Workshop for 12/6-12/8

During the workshop, students should work on these problems in small groups. Every student should take home a copy of these exercises and solutions, and finish any problems that were not finished during workshop. **The material in this workshop will be on the final exam.**

1. Discussion questions:
  - a. How are a string, a list, and a tuple the same? How are they different?
  - b. How can any definite loop (using **range**) be turned into a while loop?
  - c. How can any program that uses **elif** be turned into one that does not use **elif** (i.e., that only uses **if** and **else**)?
  - d. What is the important difference between the effect of

```
x = [1, 2, 3]
y = x
```

and

```
x = [1, 2, 3]
y = list(x)
```
2. Imagine you are writing a program that will run a computerized cash register. The register includes a scanner that reads 12 digit UPC codes from labeled items. Your program will need to convert a UPC code into the name and price of an item.
  - a. What data structure should you choose to represent the relationship between UPC codes and (name, price) tuples?
  - b. Write a function **receipt(database, upc\_list)**. The parameter **database** is the data structure representing the relationship describe above. The parameter **upc\_list** is a list of UPC codes. The function should return a list of corresponding (name, price) tuples.
3. Noise cancelling headsets make use of the principle that one sound wave can cancel out another sound wave, creating silence. Suppose the data from a sound file has been read into an array A. Assume that an empty array B (initial length 0) has been created. Write the code that fills out the values in array B, such that if B is converted to a sound file, and A and B are played simultaneously, silence results. You will need to use the **append** method.
4. Write a function named **get(url)** that works as follows: the parameter url is a string such as 'http://www.henrykautz.org/index.html'. The function should return a string containing the file, or if some error occurs, the string 'Sorry!' You will need to import the **urllib** module and use the **urlopen** function. Your function will need to use Python's **try** and **except** constructs.
5. Write a function named **roll()** that simulates rolling two dice. Calling **roll()** should return a random number between 2 and 12. The probability of a particular value should be equal to the probably of getting that total if you rolled two dice. Note that simply calling **randrange(2,13)** would not be correct.