

Computer Science 110H

Individual Task: Python

These tasks are a remix of those from Harvard's cs50 course.

Part 1: M&Ms

You have probably seen candy machines like these:



How many M&Ms do you think are in there?

You are going to implement, in a file called `mm.py`, a program that first picks a random number between 0 and 1023 inclusive, and then asks you to guess what it is. The program should keep asking you to guess until you guess right at which point it should congratulate you for guessing the correct number.

Here are a few puzzle pieces to help you get started.

Random numbers

Someone else has already written code to generate random numbers. Code that has already been written and ready for you to use is organized in a set of libraries. In your code you need to tell Python which library to use and then call the function to generate a random number. Here is the code

```
import random
mm = random.randint(0, 1023)
```

The randint function generates a random integer between the specified 0 and 1023 including the endpoints.

Output

The output of your program is totally up to you, but here is one possible design. Assume that the boldfaced text is what some user has typed in.

I am thinking of a number between 0 and 1023. What is it?

> 0

Too low. Guess again.

> 512

Too High. Guess again.

> 256

...

Too High. Guess again.

> 430

Too High. Guess again.

> 428

You guessed it!

>>>

Part 2: (regular edition and hacker edition)

Regular Edition

We've polled a few students about the best college radio band: Dinosaur Jr., Divine Fits, Passion Pit, Beirut, or Cat Power.

In a file called chart.py you are going to implement a program that generates ASCII bar charts from the data. Your program should first ask the user how many votes each actress received.

How many votes for:

Dinosaur Jr.: 5

Divine Fits: 7

Passion Pit: 3

Beirut: 6

Cat Power: 5

It should then generate a horizontal bar chart depicting those values. Each bar should be represented by a horizontal sequence of 0 or more pound signs (#) up to a maximum of 80. The length of the bar should be proportional to the corresponding value and relative to the sum of the five values. For example, if the user types in 10, 0, 0, 0, 0 the first bar should be 80 characters and the remaining zero, since the first bar is 100% of the sum. If the user types in 15, 15, 0, 0, 0 then the first and second bar should be 40 in length. Remember, the sum of all the hash marks should total 80. Be sure to test your code to make sure this is the case.

Here is a sample of the output:

How many votes for:
Dinosaur Jr: 5
Divine Fits: 8
Passion Pit: 3
Beirut: 5
Cat Power: 2

Dinosaur Jr.
#####

Divine Fits
#####

Passion Pit
#####

Beirut
#####

Cat Power
#####

Hacker Edition

The hacker edition is the same as the regular version except that instead of horizontal bars you will have vertical ones.

How many votes for Dinosaur Jr: 15 Divine Fits: 10 Passion Pit: 15 Beirut: 5 Cat Power:
0

Votes:

```
##      ##  
##      ##  
##      ##  
##  ##  ##  
##  ##  ##  
##  ##  ##  ##  
##  ##  ##  ##  
DJ  DF  PP  B   CP
```

DJ: DinosaurJr.
DF: Divine Fits
PP: Passion Pit
B: Beirut
CP: Cat Power

Each bar is represented by zero or more pound signs up to a max of 20. The length of each bar should be proportional to the corresponding value and relative to the five value's sum. For example, if the input is 10, 0, 0, 0, 0 the leftmost bar will be twenty units high. If the input is 7, 7, 0, 0, 0 the height of the first and

second bar should 10.

Submit

Submit your two programs as email attachments sent to submit.o.bot_AT_gmail.com. The subject line should be Python1. The body of the email should contain your name.