Assignment 2: Classes and Objects

Submit by Feb 11, 2022 11:59 PM (midnight) upload to D2L dropbox
Points: 5
Assignment must be done individually

Supporting material:
- Music.py
- Histogram.py
- analyze_book1.py
- feynman.txt
- words.txt

1. Music Room (2.5pt)

A MusicRoom object holds a list of Instrument objects. Instruments are specialized in child classes inheriting the Instrument parent class. Instruments can play a song which sounds different if the instrument is not tuned. Different instruments de-tune differently. The following instruments are available:

1. Guitar, de-tunes after every song.
2. Bass, de-tunes after playing 2 songs.
3. Drums, always stay in tune.

MusicRoom allows to tune all instruments not currently tuned.

In Music.py you find skeleton code. Complete this code according to the documentation.
Code sections needing implementation are marked with # TODO:

Human-readable representation of an instrument should be:

```
"a {} {} {}".format(self.year, self.brand, self.kind)
```

Playing an instrument should return a string:

```
"{} plays: {}".format(self.kind, song)
```

if instrument is tuned and use song.swapcase() otherwise. Running python Music.py should produce the following output:

```
Bass   plays: Metallica      -       Nothing       Else   Matters
Guitar plays: Metallica      -       Nothing       Else   Matters
Drums plays: Metallica       -       Nothing       Else   Matters
Bass   plays: Metallica      -       Nothing       Else   Matters
Guitar plays: mETALLICA      -       nOTHING       eLSE   mATTERS
Drums plays: Metallica       -       Nothing       Else   Matters
Bass   plays: mETALLICA      -       nOTHING       eLSE   mATTERS
Guitar plays: mETALLICA      -       nOTHING       eLSE   mATTERS
Drums plays: Metallica       -       Nothing       Else   Matters
              Tuning         a       2001   Ibanez Bass
              Tuning         a       1998   Fender        Guitar
Done   tuning
Bass   plays: Metallica      -       Nothing       Else   Matters
Guitar plays: Metallica      -       Nothing       Else   Matters
Drums plays: Metallica       -       Nothing       Else   Matters
```

2. Analyze Book with Histogram Class (2.5pt)

In   Histogram.py   and   analyze_book1.py   you find skeleton code. Complete this code according to the documentation. Code sections needing implementation are marked with
#
TODO: .
Use   http://thinkpython2.com/code/analyze_book1.py   as a reference and help.

Running   python Histogram.py   should produce the following output:

```
***     Test   Initialize     with   count()
                       PASS
***     Test   int    hist    most_common        all
                       PASS
***     Test   char   hist    most_common        n=3
                       PASS
***     Test   word   hist    most_common        n=5
                       PASS
```

Running   python analyze_book1.py   with   feynman.txt   and   word.txt   should produce the following output:

```
Total   number      of      words:         1078
Number      of      different     words:       379
The    most  common      words are:
67                                          the
```

Count	Word
44	of
36	to
35	is
25	we
22	and
22	a
21	that
21	in
17	it
13	but
12	so
11	you
11	laws
11	be
11	are
10	first
9	this
9	law
9	all

The words in the book that aren't in the word list are: a euclidean relativity

Here are some random words from the book

there another every example appreciable are then grasp easier piece kind
two from of and things spinning of this at the it knowledge we let you
the first big as training has three of at page hints entire outline
first are law or be you constant possible significant to labor more a let
knowledge more all physics is the light ideas for years and of basic
science of and so arises now so in background mass was fact in our
velocity we is the knowledge to conceptual is how so fun an known
therefore there truth it concentrate how again

Note that the random words will likely be different.

What to hand in

Upload three python files to D2L dropbox with solutions to the above exercises:

1. Music.py
2. analyze_book1.py
3. Histogram.py