

Worksheet 4: Function Practice

Part 1: Yet more exercise

Write a function that first displays a simple exercise menu (see example below), asks the user to enter the number of a choice and asks the user for the number of minutes she exercised, then prints the number of calories burned.

Example output (user input shown in bold):

```
>>> exercise()
1. Walking 2.0 mph, slow
2. Walking 3.5 mph, brisk
3. Running 5.0 mph (12 min. mile)
4. Running 7.5 mph (8 min. mile)
Select exercise # 3
Enter number of minutes you exercised 45
You burned 422 calories Running 5.0 mph (12 min. mile) for 45 minutes
```

Here is the start of the function.

```
def exercise():
    # you can enter the following statement all on one line
    exerciseTypes = ['Walking 2.0 mph, slow',
                     'Walking 3.5 mph, brisk',
                     'Running 5.0 mph (12 min. mile)',
                     'Running 7.5 mph (8 min. mile)']
    caloriesPerMinute = [2.93, 4.45, 9.38, 14.67]
    # print exercise menu
    ex = input('Select exercise # ')
    ex = int(ex) - 1 # why did I subtract one?
    print("You burned %i calories %s for %i minutes" %
          (0, exerciseTypes[ex], 0))
```

Part 2: Remainder

Remember grade school math? In integer math if we divide 10 by 3 we get 3 with a remainder of 1. If we divide 5 by 2 we get 2 with a remainder of 1. In Python we can get the remainder with the % operator:

```
>>> 10 % 3
1
>>> 5 % 2
1
>>> 5 % 3
2
```

1. Write a function `isDivisible` that takes two integers, `m` and `n`. The method returns `True` if `m` is divisible by `n`, and returns `False` otherwise. Use 'return' rather than 'print'. As an example, consider the following function:

```
def isNegative(x):
    if x < 0:
        return True
    else:
        return False
```

Here's an example of the output it should produce:

```
>>> isDivisible(5, 2)
False
>>> isDivisible(6, 2)
True
```

2. Here's the start of another function:

```
def countBy(n):
    for i in range(1, 101):
        print(i)
```

I would like you to call the function `isDivisible` in this function to produce the following behavior:

```
>>> countBy(25)
25
50
75
100
```

```
>>> countBy(20)
20
40
60
80
100
>>> countBy(12)
12
24
36
48
60
72
84
96
>>>
```

Part 2: Noun Phrase

Here's a function that returns a random noun:

```
from random import choice

def noun():
    nouns = ['dog', 'cat', 'frog', 'poodle', 'toad', 'donkey']
    # choice returns a random item from a list
    return choice(nouns)
```

1) Write a function `det()` that returns a random determiner (*a*, or *the*). Write a function `adj()` that returns a random adjective (*happy*, *sad*, *sleepy*, *grumpy*, *silly*, etc.).

2) Write a function `np()` (short for noun phrase) that uses the functions `noun`, `det`, and `adj`, to return random noun phrases:

```
>>> np()
'a silly frog'
>>> np()
'the happy cat'
>>> np()
'a sad dog'
>>> np()
'a silly poodle'
```