

Tuesday Sep 10, 2024

In-class Handout

COSC 101C Intro to Computing I

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Name:

Discuss and complete the following questions with the person nearest you. You **may** be asked to share your thoughts with the class.

1. Your aim is to write a function that calculates your weekly pay called `calculatePay`. Your function should take three parameters representing: hourly rate, hours worked, and overtime hours. Overtime pay is 1.5 times your hourly rate. For example, `calculatePay(7.40, 40, 10)` must return 407.0.

```
def calculatePay(rate: float, hours: float, over: float) -> float:
    basePay = rate*hours
    overTime = rate*1.5*over
    return basePay + overTime
```

```
calculatePay(7.40, 40, 10)
```

2. Write a function called `randPow` which takes two arguments that are ints. The first argument is raised to a random number between 0 and the second argument. For example, `randPow(2, 4)` may return 8.

```
import random
def randPow(a: int, b: int) -> int:
    rand = random.randint(0, b) # Get a number between 0 and b
    return a**rand
```

```
randPow(2, 4)
```

3. Imagine you are really into running. You want to apply your new computer science knowledge to build a program to help you determine your average mile pace over a week of running. Sketch out a possible algorithm on a piece of paper or on a whiteboard with the people near you. Note, this is at the algorithm level not the implementation level, so you **should not** be writing python code. Rather, articulate the information you need, the steps your computation should do, and what types of functions you will need (for example).

This is just one idea. You can have others!

Things I need:

- A range of running events which are an amount of time and a distance

Steps:

1. Get each running event from the user
2. Collect them in some data structure
3. Compute the average over the period by
  - First, convert from the whole amount of time and distance for an event to the per mile time for that event
  - Sum up all the per mile times
  - Divide by the number of running events
  - Return that average
4. Display the average to the user

Functions I'll need:

- a `main` to organize my logic
- a function to gather the running events

- a function to convert the events to per mile times
  - a function to calculate the average
4. Write a function called `countVowels` that takes as input a string. The program should return the number of vowels in the word. In `main` determine the percentage of the word that is a vowel.

Hint: Consider the following code snippet

```
s = 'ab'
print(s.count('a')) # should be 1
print(len(s)) # should be 2

def countVowels(word:str) -> int:
    """Gets the number of vowels in the word"""

    a = word.count('a')
    e = word.count('e')
    i = word.count('i')
    o = word.count('o')
    u = word.count('u')

    return a+e+i+o+u

def main() -> None:
    word = 'hello'
    count = countVowels(word)
    p = round(count/len(word)*100, 2)
    print(f"The word '{word}' is {p}% vowels")

main()
```