Day 12: Inheritance

by AllisonP

Objective

Today, we're delving into Inheritance. Check out the Tutorial tab for learning materials and an instructional video!

Task

You are given two classes, *Person* and *Student*, where *Person* is the base class and *Student* is the derived class. Completed code for *Person* and a declaration for *Student* are provided for you in the editor. Observe that *Student* inherits all the properties of *Person*.

Complete the *Student* class by writing the following:

- A *Student* class constructor, which has 4 parameters:
  1. A string, $firstName$.
  2. A string, $lastName$.
  3. An integer, id.
  4. An integer array (or vector) of test scores, $scores$.
- A *char calculate()* method that calculates a Student object's average and returns the grade character representative of their calculated average:

Grading Scale

Letter	Average (a)
O	$90 \le a \le 100$
E	$80 \le a < 90$
A	$70 \le a < 80$
P	$55 \le a < 70$
D	$40 \le a < 55$
T	$a < 40$

Input Format

The locked stub code in your editor calls your *Student* class constructor and passes it the necessary arguments. It also calls the *calculate* method (which takes no arguments).

You are not responsible for reading the following input from stdin:
The first line contains $firstName$, $lastName$, and id, respectively. The second line contains the number of test scores. The third line of space-separated integers describes $scores$.

Constraints

- $4 \le |firstName|, |lastName| \le 10$
- $|id| \equiv 7$
- $0 \le score, average \le 100$

Output Format

This is handled by the locked stub code in your editor. Your output will be correct if your *Student* class constructor and *calculate()* method are properly implemented.

Sample Input

```
Heraldo Memelli 8135627
2
100 80
```

Sample Output

```
Name: Memelli, Heraldo
ID: 8135627
Grade: O
```

Explanation

This student had $\mathbf{2}$ scores to average: $\mathbf{100}$ and $\mathbf{80}$. The student's average grade is $\frac{(100+80)}{2} = \mathbf{90}$. An average grade of $\mathbf{90}$ corresponds to the letter grade $\boldsymbol{O}$, so our *calculate()* method should return the character `'O'`.

Submissions: 8074

Max Score: 30

Difficulty: Easy

More

Current Buffer (saved locally, editable)

Python 2

```
class Person:
    def __init__(self, firstName, lastName, idNumber):
        self.firstName = firstName
        self.lastName = lastName
        self.idNumber = idNumber
    def printPerson(self):
        print "Name:", self.lastName + ",", self.firstName
        print "ID:", self.idNumber
class Student(Person):
    def __init__(self,firstName, lastName, idNumber,Scores):
        Person.__init__(self,firstName,lastName, idNumber)
        self.Scores=Scores
    def calculate(self):
        ave=sum(self.Scores)/len(self.Scores)
        if ave<=100:
            if ave>=90:
                grade='O'
            elif ave>=80:
                grade='E'
            elif ave>=70:
                grade='A'
            elif ave>=55:
                grade='P'
            elif ave>=40:
                grade='D'
            elif ave<40:
                grade='T'
        return grade
```

```
line = raw_input().split()
firstName = line[0]
lastName = line[1]
idNum = line[2]
numScores = int(raw_input()) # not needed for Python
scores = map(int, raw_input().split())
s = Student(firstName, lastName, idNum, scores)
s.printPerson()
print "Grade:", s.calculate()
```

Line: 28 Col: 21

Upload Code as File Test against custom input Run Code Submit Code

Congrats, you solved this challenge!

- ✔ Test Case #0
- ✔ Test Case #1
- ✔ Test Case #2
- ✔ Test Case #3
- ✔ Test Case #4
- ✔ Test Case #5
- ✔ Test Case #6
- ✔ Test Case #7

Next Challenge