

# Day 12: Inheritance



## Objective

Today, we're delving into Inheritance. Check out the attached tutorial 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 ( <i>a</i> )
O	$90 \leq a \leq 100$
E	$80 \leq a < 90$
A	$70 \leq a < 80$
P	$55 \leq a < 70$
D	$40 \leq a < 55$
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

- $1 \leq |\textit{firstName}|, |\textit{lastName}| \leq 10$
- $|\textit{id}| \equiv 7$
- $0 \leq \textit{score}, \textit{average} \leq 100$

## 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, Herald  
ID: 8135627  
Grade: O

## Explanation

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