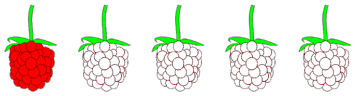
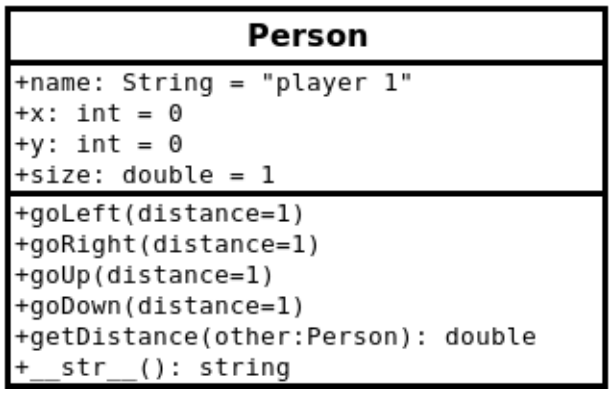
Program: Person Class.



Your task in this assignment is to implement a Person class in python. A class diagram showing some details of the Person class is provided below.



- A Person has a `name`, `x` and `y` coordinates, and a `size`. The `name` is a string, the x and y coordinates are integers, and the size is a double
- The default values for those instance variables are "player 1", 0, 0, and 1 respectively.
- The constructor of the Person class can take up to 3 arguments for the `name`, `x` and `y` values.
- The class should have appropriate accessors and mutators that ensure that the instance variables have valid values
  - `name` should be a string with at least 2 characters in it
  - `x` and y should not be negative values. The lowest either can be is 0 and the highest either can be is provided using constants provided in the template. If a user attempts to set either `x` or `y` to a negative value, they are set to 0 instead. If a user attempts to set either `x` or `y` to a value larger then their maximum, they are set to their maximum instead.
  - `size` can be any value larger than or equal to 1. If a user attempts to set `size` to something smaller than that, the `size` is left as is.
- A Person can `goLeft`. This will reduce the `x` value of a Person by the provided value. If the value is not provided, the `x` value is reduced by 1.
- A Person can `goRight`. This will increase the `x` value of a Person by the provided value. If the value is not provided, the `x` value is increased by 1.
- A Person can `goUp`. This will decrease the `y` value of a Person by the provided value. If the value is not provided, the `y` value will decrease by 1.
- A Person can `goDown`. This will increase the `y` value of a Person by the provided value. If the value is not provided, the `y` value will increase by 1.
- A Person can calculate the distance between them and another Person object using `getDistance`. This function uses the euclidean distance formula with their `x` and y coordinates to find the distance between the two objects..

- A Person can be printed. This will just produce a string that contains their `name`, and the values of their instance variables as shown in the provided sample output.

You are provided with a test file (**`PersonTest.py`**)that will import and use your Person class. To use the test file, make sure that both your submission and the test file are in the same folder and that your submission is named **`Person.py`**. Additionally, you will only need to execute the test file. Executing the test file will automatically use your Person file and produce the output shown below.

```
------------------------------------------------------------
--People with correct inputs--
p1:Person(player 1):     size = 1,      x = 0     y = 0
p2:Person(John Doe):     size = 1,      x = 0     y = 0
p3:Person(Jane Doe):     size = 5,      x = 3     y = 0
p4:Person(James Doe):    size = 15,     x = 4     y = 67
------------------------------------------------------------
--People with wrong inputs--
p5:Person(player 1):     size = 1,      x = 0     y = 0
p6:Person(player 1):     size = 1,      x = 800   y = 0
p7:Person(player 1):     size = 1,      x = 0     y = 600
------------------------------------------------------------
--Testing basic movement--
p1:Person(player 1):     size = 1,      x = 0     y = 0
p2:Person(John Doe):     size = 1,      x = 10    y = 0
p3:Person(Jane Doe):     size = 5,      x = 3     y = 0
p4:Person(James Doe):    size = 15,     x = 4     y = 77
------------------------------------------------------------
--Testing Distance measurement--
The distance between p1 and p2 is 10.0
The distance between p1 and p3 is 3.0
The distance between p1 and p4 is 77.10382610480494
------------------------------------------------------------
--Testing more movement--
p1:Person(player 1):     size = 1,      x = 82    y = 0
p2:Person(John Doe):     size = 1,      x = 53    y = 0
p3:Person(Jane Doe):     size = 5,      x = 3     y = 82
p4:Person(James Doe):    size = 15,     x = 4     y = 53
------------------------------------------------------------
--Testing Distance measurement--
The distance between p1 and p2 is 29.0
The distance between p1 and p3 is 113.86395390991831
The distance between p1 and p4 is 94.30270409696638
------------------------------------------------------------
--Testing extreme movement--
p1:Person(player 1):     size = 1,      x = 800   y = 0
p2:Person(John Doe):     size = 1,      x = 0     y = 0
p3:Person(Jane Doe):     size = 5,      x = 3     y = 600
p4:Person(James Doe):    size = 15,     x = 4     y = 0
------------------------------------------------------------
--Testing Distance measurement--
```

```
The distance between p1 and p2 is 800.0
The distance between p1 and p3 is 997.6016238960319
The distance between p1 and p4 is 796.0
------------------------------------------------------------
```

To help clarify, here are some specifics and/or constraints:

(1) Make sure that your Person class addresses all the requirements listed above;
(2) Use the decorator method discussed in class for accessors and mutators to properly wrap the instance variables;
(3) You must include a meaningful header, use good coding style, use meaningful variable names, and comment your source code where appropriate;
(4) Your output should be **exactly** like the sample run shown above;
(5) You must use the provided source code template (it contains helpful comments that can help you structure your code); and
(6) You must submit your source code as a single .py file.