CS 142 – In-class Exercise Name 1_____

Ice Cream Inheritance Name 2_____

You are the owners of an ice cream parlor. With so many places now passing laws that restaurants have to post calorie counts for their products, you decide to write a program to help you calculate these numbers.

1. Write a class to represent an ice cream sundae. This class should contain:
    a. A private variable to represent the number of scoops in a sundae.
    b. A constructor that takes in 1 integer argument representing the number of scoops desired in the sundae.
    c. A method called get_calories that returns the number of calories in the sundae. Google says that 1 scoop of ice cream has 137 calories.

    Example of using this class:

```
yummy = Sundae(2)    #creates a 2-scoop sundae
print(yummy.get_calories()) #prints 274 calories
```

2. Create a class to represent a banana split. This class should inherit from your ice cream sundae class. A banana split is simply an ice cream sundae that also contains a number of sliced bananas. This class should contain:
    a. A private variable representing the number of bananas in the sundae.
    b. A constructor that takes in two arguments that represent the number of desired ice cream scoops and bananas, respectively, in the sundae.
        - Hint: to implement this, you will need to have the banana split constructor explicitly call the sundae constructor, because you cannot directly set the number of scoops (it's private).
    c. A method that overrides the get_calories() method in sundae, to return the correct number of calories in a banana split. Google says that one small banana is 90 calories.
        i. Hint: to implement this, you should have the banana split get_calories method call the sundae get_calories method, because you cannot access the number of scoops of ice cream from the banana split class. (use super() keyword).

    Example of using this class:

```
tasty = BSplit(3, 1)          #Creates a 3-scoop, 1 banana sundae
print(tasty.get_calories())   #Prints 501 calories
```

3. Override the `__str__` operator to allow sundaes and banana splits to be printed:
```
print(yummy, tasty)
#This above line might print something like:
        This sundae has 274 calories.
        This banana split has 501 calories.
```

4. Override the __add__ operator to allow sundaes to be added together:

```
gonna_be_sick = yummy + yummy + yummy  #6-scoop sundae
```

Answer the following questions.

1. Write the code you used for the BSplit constructor and the get_calories() method. (you may print your code and attach it if you'd prefer.)

2. For each pair of items below, fill in whether the relationship between the two things is best described as "is-a" or "has-a." (Some pairs may make more sense if you swap the left side and right side.)

   Coffee mug _____ Handle

   Fruit _____ Apple

   Circle _____ Shape

   Menu _____ Restaurant

3. What will be displayed by the following code?

```
class A(object):
    def __init__(self, i = 1):
        self.i = i

class B(A):
    def __init__(self, j = 2):
        super().__init__()
        self.j = j

def main():
    b = B()
    print(b.i, b.j)

main()
```