In [1]:

```
#Task-01

class Marks:
    def __init__(self, mark):
        self.mark = mark

    def __add__(self, other_mark):
        self.mark = self.mark + other_mark.mark
        return self

Q1 = Marks(int(input("Quiz 1 (out of 10): ")))
Q2 = Marks(int(input("Quiz 2 (out of 10): ")))
Lab = Marks(int(input("Lab (out of 30): ")))
Mid = Marks(int(input("Mid (out of 20): ")))
Final = Marks(int(input("Final (out of 30): ")))
total = Q1 + Q2 + Lab + Mid + Final
print("Total marks: {}".format(total.mark))
```

```
Quiz 1 (out of 10): 10
Quiz 2 (out of 10): 10
Lab (out of 30): 30
Mid (out of 20): 20
Final (out of 30): 30
Total marks: 100
```

In [2]:

```
#Task-02

class Teacher:
    def __init__(self, *info):
        self.__name = info[0]
        self.__department =info[1]
        self.__course = []

    def addCourse(self, course_name):
        if course_name.name in self.__course:
            pass
        else:
            self.__course.append(course_name.name)

    def printDetail(self):
        print("====================================")
        print("Name: ",self.__name)
        print("Department: ",self.__department)
        print("List of courses")
        print("====================================")
        for k in self.__course:
            print(k)
        print("====================================")

class Course:
    def __init__(self, name):
        self.name = name

t1 = Teacher("Saad Abdullah", "CSE")
t2 = Teacher("Mumit Khan", "CSE")
t3 = Teacher("Sadia Kazi", "CSE")
c1 = Course("CSE 110 Programming Language I")
c2 = Course("CSE 111 Programming Language-II")
c3 = Course("CSE 220 Data Structures")
c4 = Course("CSE 221 Algorithms")
c5 = Course("CCSE 230 Discrete Mathematics")
c6 = Course("CSE 310 Object Oriented Programming")
c7 = Course("CSE 320 Data Communications")
```

```
c8 = Course("CSE 340 Computer Architecture")
t1.addCourse(c1)
t1.addCourse(c2)
t2.addCourse(c3)
t2.addCourse(c4)
t2.addCourse(c5)
t3.addCourse(c6)
t3.addCourse(c7)
t3.addCourse(c8)
t1.printDetail()
t2.printDetail()
t3.printDetail()
```

```
====================================
Name:  Saad Abdullah
Department:  CSE
List of courses
====================================
CSE 110 Programming Language I
CSE 111 Programming Language-II
====================================
====================================
Name:  Mumit Khan
Department:  CSE
List of courses
====================================
CSE 220 Data Structures
CSE 221 Algorithms
CCSE 230 Discrete Mathematics
====================================
====================================
Name:  Sadia Kazi
Department:  CSE
List of courses
====================================
CSE 310 Object Oriented Programming
CSE 320 Data Communications
CSE 340 Computer Architecture
====================================
```

In [3]:

```
#Task-03

class Team:
    def __init__(self, country = None):
        self.__country = country
        self.__list = []

    def addPlayer(self, new):
            if new.name in self.__list:
                pass
            else:
                self.__list.append(new.name)

    def setName(self, country):
        self.__country = country

    def printDetail(self):
        print("====================")
        print("Team:",self.__country)
        print("List of Players:")
        print(self.__list)
        print("====================")

class Player:
    def __init__(self, name):
        self.name = name


b = Team()
b.setName('Bangladesh')
mashrafi = Player("Mashrafi")
b.addPlayer(mashrafi)
tamim = Player("Tamim")
b.addPlayer(tamim)
b.printDetail()
a = Team("Australia")
ponting = Player("Ponting")
a.addPlayer(ponting)
```

```
lee = Player("Lee")
a.addPlayer(lee)
a.printDetail()
```

```
====================
Team: Bangladesh
List of Players:
['Mashrafi', 'Tamim']
====================
====================
Team: Australia
List of Players:
['Ponting', 'Lee']
====================
```

In [5]:

```
#Task-04

class Color:
    def __init__(self, fc):
        self.clr = fc

    def __add__(self, sc):
        if self.clr == "red" and sc.clr == "yellow" or self.clr == "yellow" a
            self.clr = "Orange"
            return self
        elif self.clr == "red" and sc.clr == "blue" or self.clr == "blue" an
            self.clr = "Violet"
            return self
        elif self.clr == "yellow" and sc.clr == "blue" or self.clr == "blue"
            self.clr = "Green"
            return self
        else:
            pass

C1 = Color(input("First Color: ").lower())
C2 = Color(input("Second Color: ").lower())
C3 = C1 + C2
print("Color formed:", C3.clr)
```

```
First Color: red
Second Color: yellow
Color formed: Orange
```

In [6]:

```python
#Task-05

class Circle:
    def __init__(self, radius = None):
        self.__radius = radius

    def getRadius(self):
        return self.__radius

    def setRadius(self, radius):
        self.__radius = radius

    def __add__(self, new):
        self.__radius = self.__radius + new.getRadius()
        return self

    def area(self):
        import math
        return math.pi * self.__radius**2


c1 = Circle(4)
print("First circle radius:" , c1.getRadius())
print("First circle area:" ,c1.area())
c2 = Circle(5)
print("Second circle radius:" ,c2.getRadius())
print("Second circle area:" ,c2.area())
c3 = c1 + c2
print("Third circle radius:" ,c3.getRadius())
print("Third circle area:" ,c3.area())
```

```
First circle radius: 4
First circle area: 50.26548245743669
Second circle radius: 5
Second circle area: 78.53981633974483
Third circle radius: 9
Third circle area: 254.46900494077323
```

In [7]:

```
#Task-06

class Triangle:
    def __init__(self, *value):
        self.__base = value[0]
        self.__height = value[1]

    def getBase(self):
        return self.__base

    def getHeight(self):
        return self.__height

    def setBase(self, base):
        self.base = base

    def setHeight(self, height):
        self.height = height

    def __sub__(self, new):
        self.__base = self.__base - new.getBase()
        self.__height = self.__height - new.getHeight()
        return self

    def area(self):
        return 0.5 * self.__base * self.__height


t1 = Triangle(10, 5)
print("First Triangle Base:" , t1.getBase())
print("First Triangle Height:" , t1.getHeight())
print("First Triangle area:" ,t1.area())
t2 = Triangle(5, 3)
print("Second Triangle Base:" , t2.getBase())
print("Second Triangle Height:" , t2.getHeight())
print("Second Triangle area:" ,t2.area())
t3 = t1 - t2
print("Third Triangle Base:" , t3.getBase())
```

```
print("Third Triangle Height:" , t3.getHeight())
print("Third Triangle area:" ,t3.area())
```

```
First Triangle Base: 10
First Triangle Height: 5
First Triangle area: 25.0
Second Triangle Base: 5
Second Triangle Height: 3
Second Triangle area: 7.5
Third Triangle Base: 5
Third Triangle Height: 2
Third Triangle area: 5.0
```

In [8]:

```
#Task-07

class Dolls:
    def __init__(self, name, price):
        self.name = name
        self.price = price

    def __gt__(self, another):
        if self.price > another.price:
            return self
        else:
            pass

    def __add__(self, new):
        self.name = self.name + " " + new.name
        self.price = self.price + new.price
        return self

    def detail(self):
        return "Doll: {} \nTotal Price: {} taka".format(self.name, self.pric


obj_1 = Dolls("Tweety", 2500)
print(obj_1.detail())
if obj_1 > obj_1:
    print("Congratulations! You get the Tweety as a gift!")
else:
    print("Thank you!")
print("=========================")
obj_2 = Dolls("Daffy Duck", 1800)
print(obj_2.detail())
if obj_2 > obj_1:
    print("Congratulations! You get the Tweety as a gift!")
else:
    print("Thank you!")
print("=========================")
obj_3 = Dolls("Bugs Bunny", 3000)
```

```
print(obj_3.detail())
if obj_3 > obj_1:
    print("Congratulations! You get the Tweety as a gift!")
else:
    print("Thank you!")
print("=========================")
obj_4 = Dolls("Porky Pig", 1500)
print(obj_4.detail())
if obj_4 > obj_1:
    print("Congratulations! You get the Tweety as a gift!")
else:
    print("Thank you!")
print("=========================")
obj_5 = obj_2 + obj_3
print(obj_5.detail())
if obj_5 > obj_1:
    print("Congratulations! You get the Tweety as a gift!")
else:
    print("Thank you!")
```

```
Doll: Tweety
Total Price: 2500 taka
Thank you!
=========================
Doll: Daffy Duck
Total Price: 1800 taka
Thank you!
=========================
Doll: Bugs Bunny
Total Price: 3000 taka
Congratulations! You get the Tweety as a gift!
=========================
Doll: Porky Pig
Total Price: 1500 taka
Thank you!
=========================
Doll: Daffy Duck Bugs Bunny
Total Price: 4800 taka
Congratulations! You get the Tweety as a gift!
```

In [9]:

```
#Task-08

class Coordinates:
    def __init__(self, xaxis = None, yaxis = None):
        self.x = xaxis
        self.y = yaxis
        self.coords = (self.x, self.y)

    def __sub__(self, new):
        return Coordinates(self.x - new.x, self.y - new.y)

    def __mul__(self, new):
        return Coordinates(self.x * new.x, self.y * new.y)

    def __eq__(self, new):
        if self.x == new.x and self.y == new.y:
            return "The calculated coordinates are the same."
        else:
            return "The calculated coordinates are NOT the same."

    def detail(self):
        return self.coords

p1 = Coordinates(int(input()),int(input()))
p2 = Coordinates(int(input()),int(input()))
p4 = p1 - p2
print(p4.detail())
p5 = p1 * p2
print(p5.detail())
point_check = (p4 == p5)
print(point_check)
```

```
1
2
3
4
(-2, -2)
(3, 8)
The calculated coordinates are NOT the same.
```

In [2]:

```
#Task-09

from PIL import Image
img = Image.open("task 9.jpg")
img
```

Task - 09

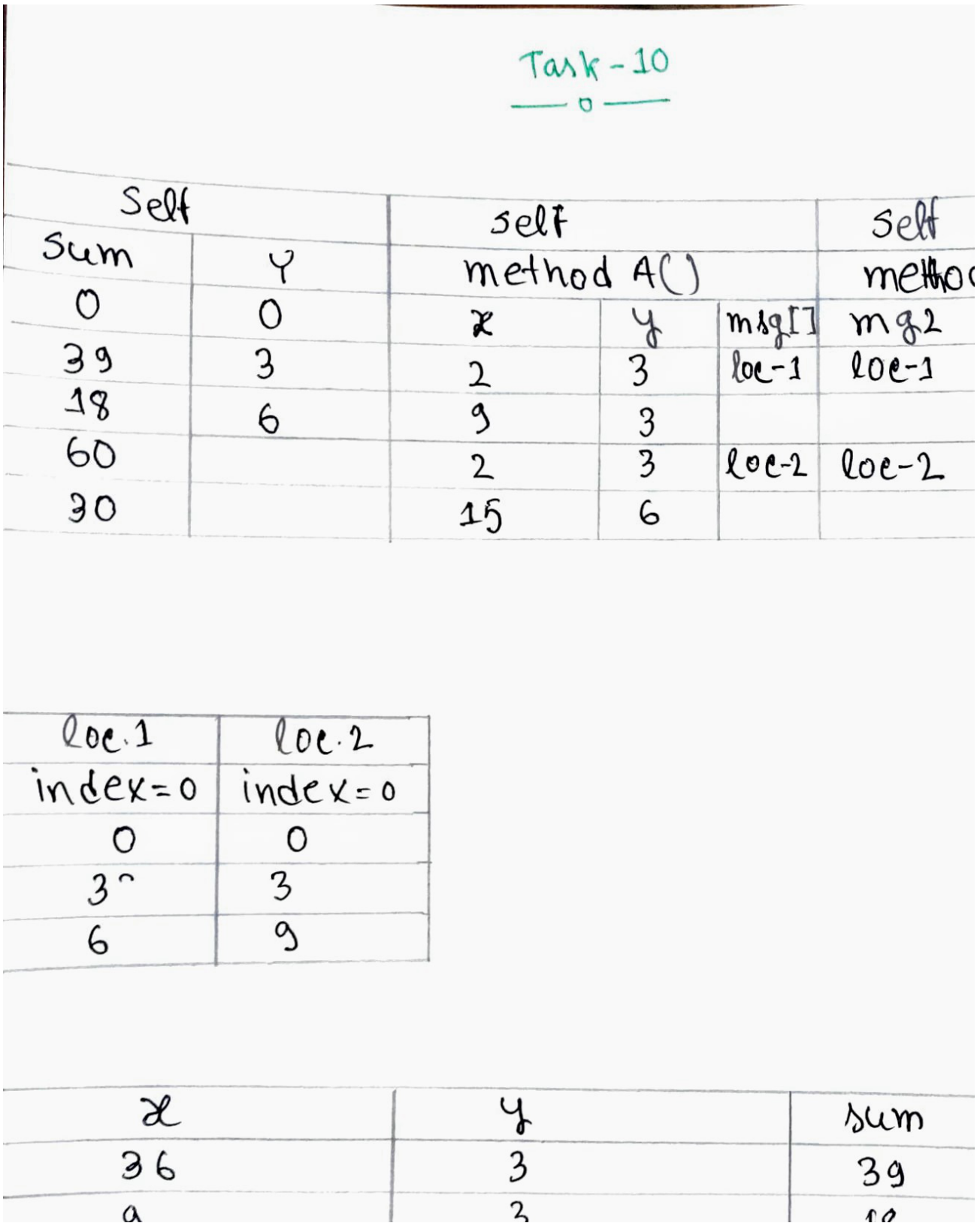
Self		Self		Self
Sum	Y	method A()		metho
0	0	x	Y	x
25	11	0	0	0
25	22	18	7	44
80		0	0	0
157		18	7	55

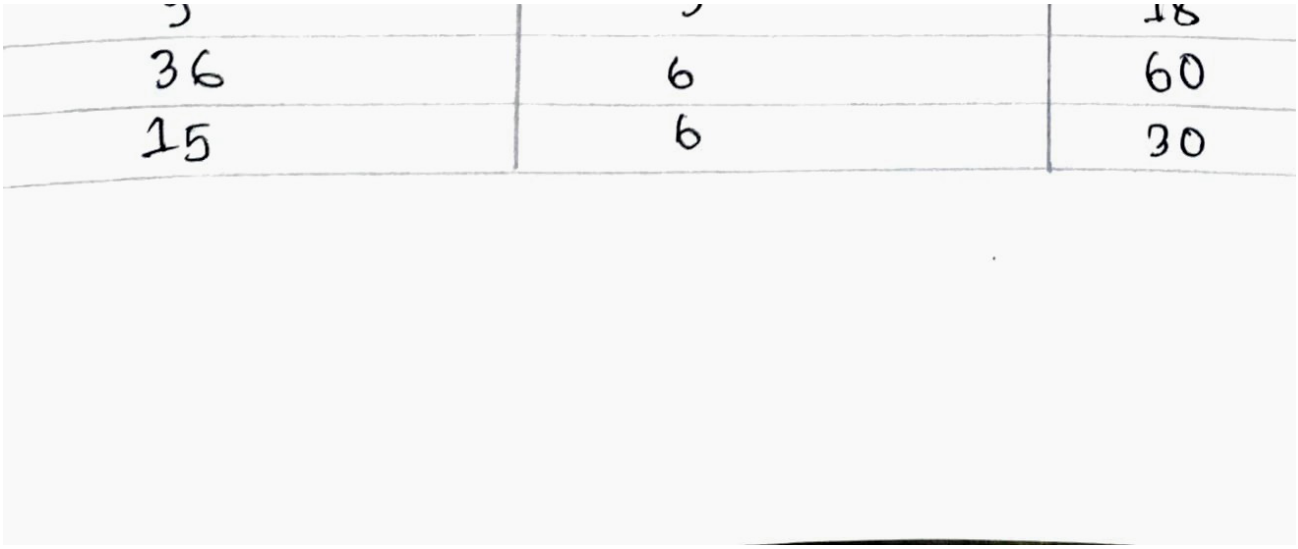
x	Y	Sum
18	7	25
18	7	25
44	11	80
55	22	157

In [3]:

```
#Task-10

from PIL import Image
img = Image.open("task 10.jpg")
img
```

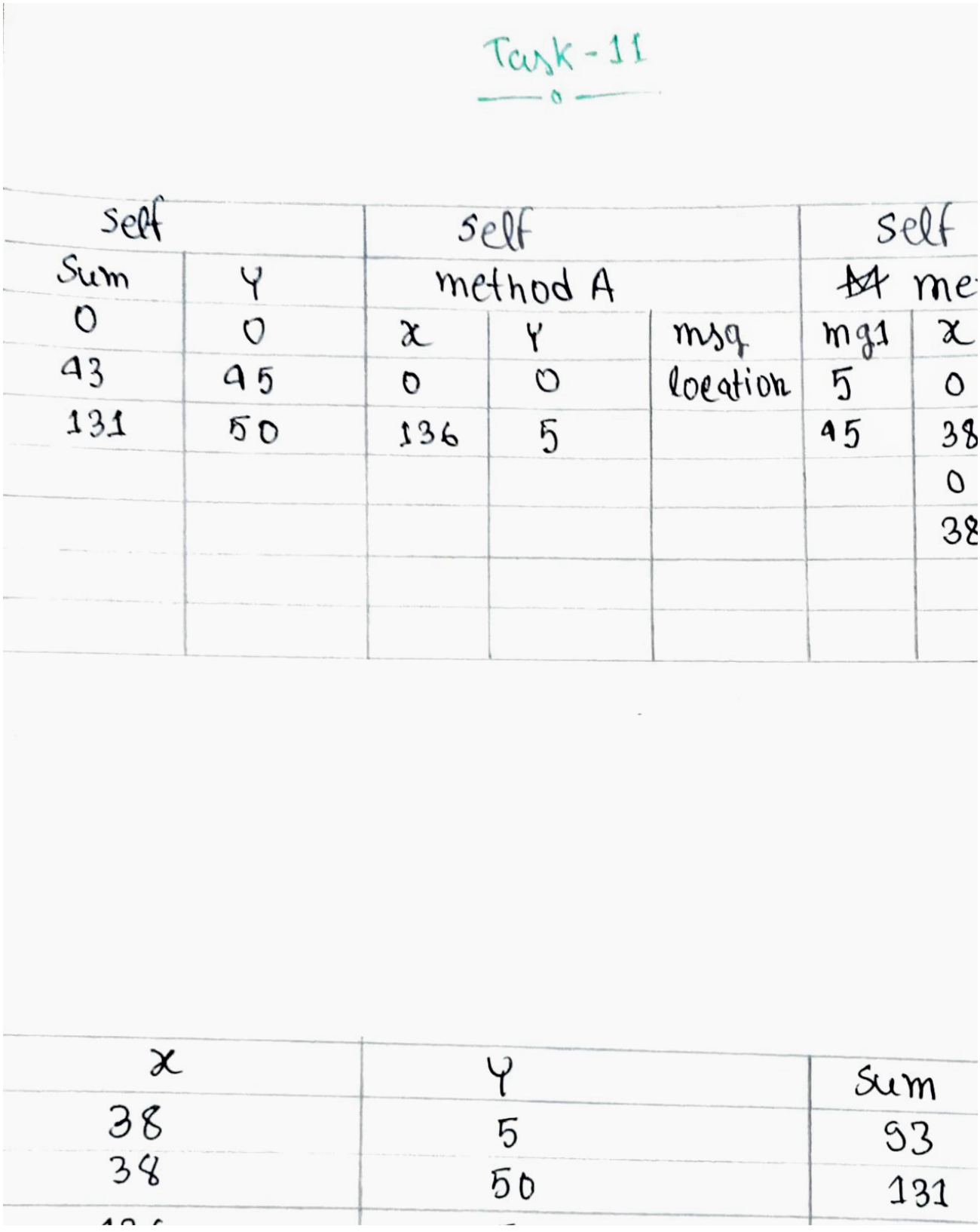


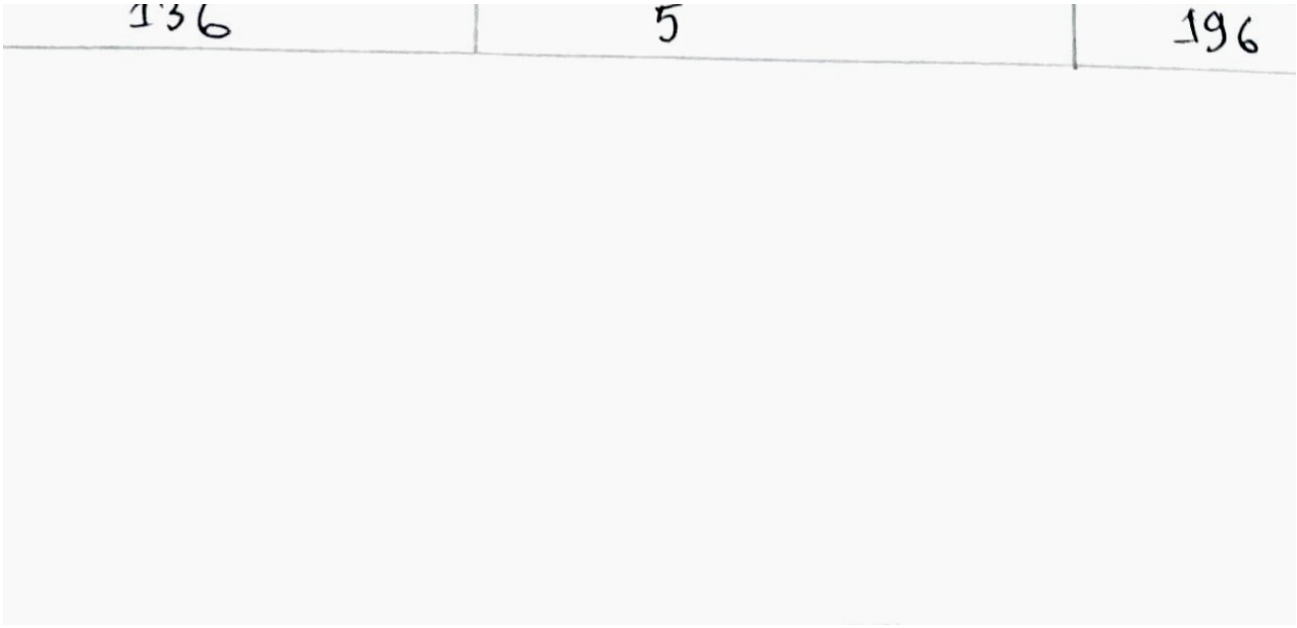

36
6
60
15
6
30

In [4]:

```
#Task-11

from PIL import Image
img = Image.open("task 11.jpg")
img
```





In [ ]:

```
1
```