Python Practical’s

TASK 6

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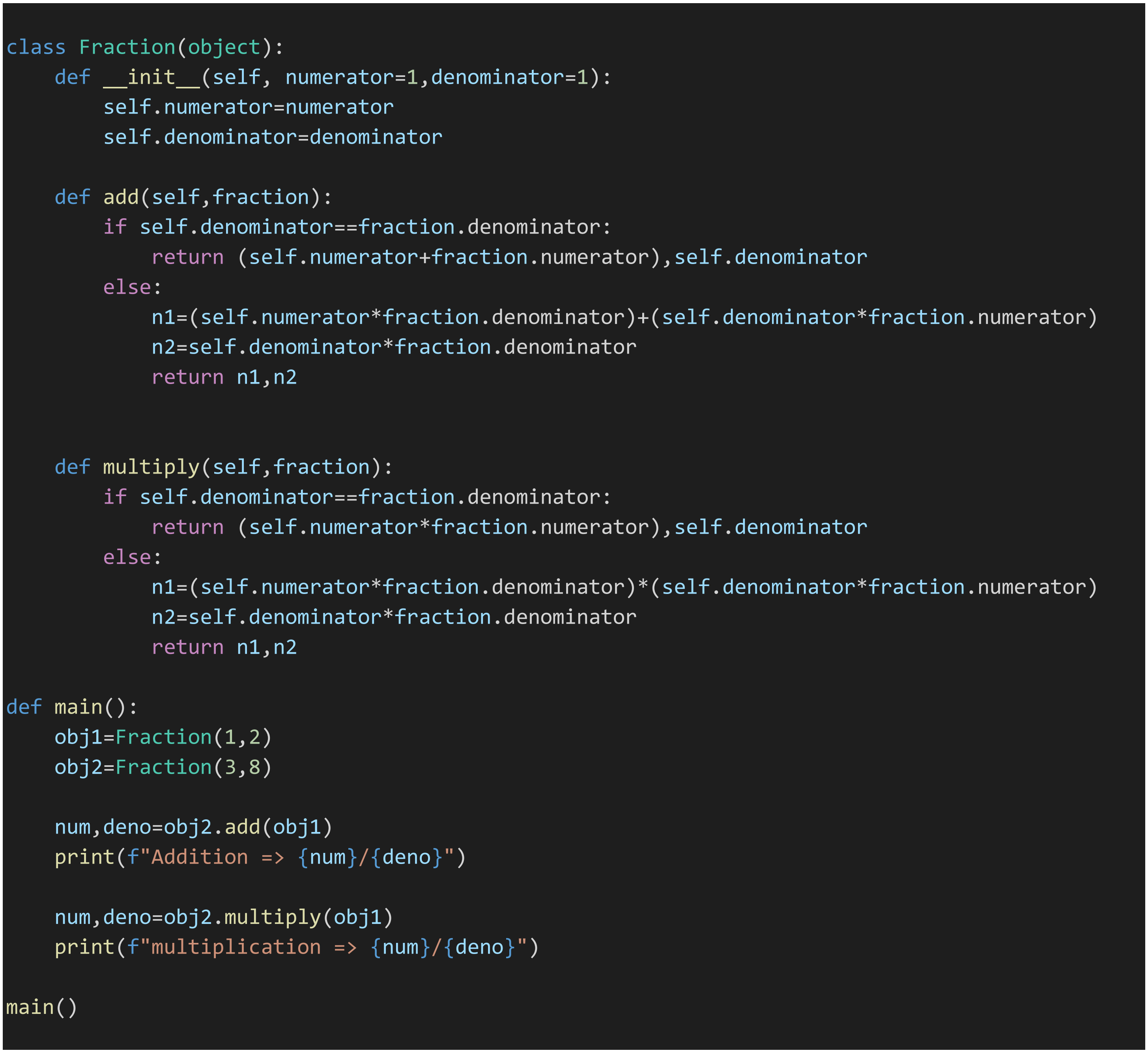
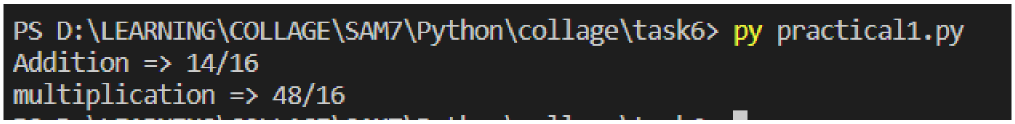
Practical 1

Write a python program for creating class Fraction with members numerator and denominator to represent rational numbers like 1/2 and -3/8. Create a constructor to initialize the objects and write the method for addition and multiplication of two fractions and display the result in proper fraction format.



```python
class Fraction(object):
    def __init__(self, numerator=1,denominator=1):
        self.numerator=numerator
        self.denominator=denominator

    def add(self,fraction):
        if self.denominator==fraction.denominator:
            return (self.numerator+fraction.numerator),self.denominator
        else:
            n1=(self.numerator*fraction.denominator)+(self.denominator*fraction.numerator)
            n2=self.denominator*fraction.denominator
            return n1,n2


    def multiply(self,fraction):
        if self.denominator==fraction.denominator:
            return (self.numerator*fraction.numerator),self.denominator
        else:
            n1=(self.numerator*fraction.denominator)*(self.denominator*fraction.numerator)
            n2=self.denominator*fraction.denominator
            return n1,n2

def main():
    obj1=Fraction(1,2)
    obj2=Fraction(3,8)

    num,deno=obj2.add(obj1)
    print(f"Addition => {num}/{deno}")

    num,deno=obj2.multiply(obj1)
    print(f"multiplication => {num}/{deno}")

main()
```

Output:



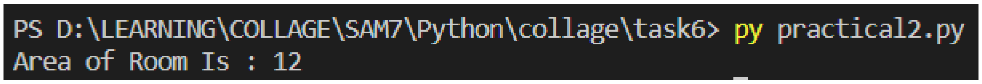
```
PS D:\LEARNING\COLLAGE\SAM7\Python\collage\task6> py practical1.py
Addition => 14/16
multiplication => 48/16
PS D:\LEARNING\COLLAGE\SAM7\Python\collage\task6>
```

Practical 2

Write a python program to create a class Room with members length and breadth. Initialize the attributes and find the area of the room and display the result.

```
class Area(object):
    def __init__(self, length,bredth):
        self.length=length
        self.bredth=bredth

    def area(self):
        return self.bredth*self.length

def main():
    obj1=Area(4,3)
    print(f"Area of Room Is : {obj1.area()}");

main()
```

Output:



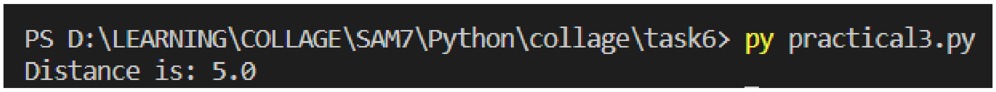
```
PS D:\LEARNING\COLLAGE\SAM7\Python\collage\task6> py practical2.py
Area of Room Is : 12
```

Practical 3

Create class point with members x and y. Create method for finding the euclidian distance between two points.

```
import math

class PointOperations(object):
    def __init__(self, x,y):
        self.x=x
        self.y=y

    def getX(self):
        return self.x
    def getY(self):
        return self.y

    def distance(self,point):
        return math.sqrt(((self.x-point.x)**2)+((self.y-point.y)**2))

def main():
    obj1=PointOperations(4,3)
    obj2=PointOperations(0,0)
    print(f"Distance is: {obj2.distance(obj1)}")

main()
```

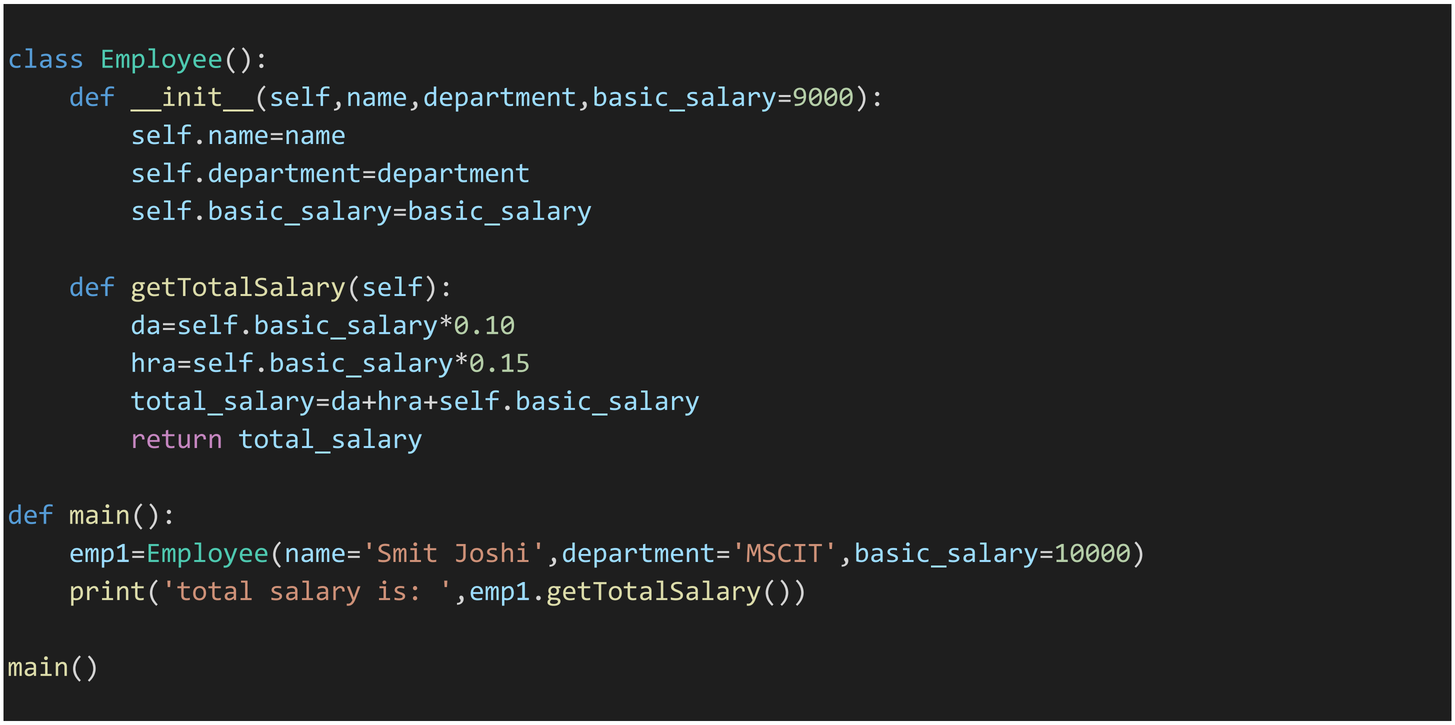
Output:



```
PS D:\LEARNING\COLLAGE\SAM7\Python\collage\task6> py practical3.py
Distance is: 5.0
```

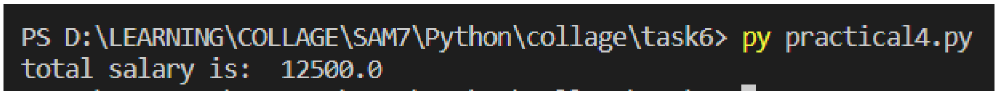
Practical 4

Write a python program to demonstrate the concept of default arguments. Create the employee class: name, department and basic_salary. Write a function to to calculate total salary of the employee where total salary is sum of basic salary, DA and HRA. DA is 10% of basic salary and HRA is 15% of basic salary. If basic salary is missing, take default argument of basic salary as Rs. 9000.



```python
class Employee():
    def __init__(self,name,department,basic_salary=9000):
        self.name=name
        self.department=department
        self.basic_salary=basic_salary

    def getTotalSalary(self):
        da=self.basic_salary*0.10
        hra=self.basic_salary*0.15
        total_salary=da+hra+self.basic_salary
        return total_salary

def main():
    emp1=Employee(name='Smit Joshi',department='MSCIT',basic_salary=10000)
    print('total salary is: ',emp1.getTotalSalary())

main()
```

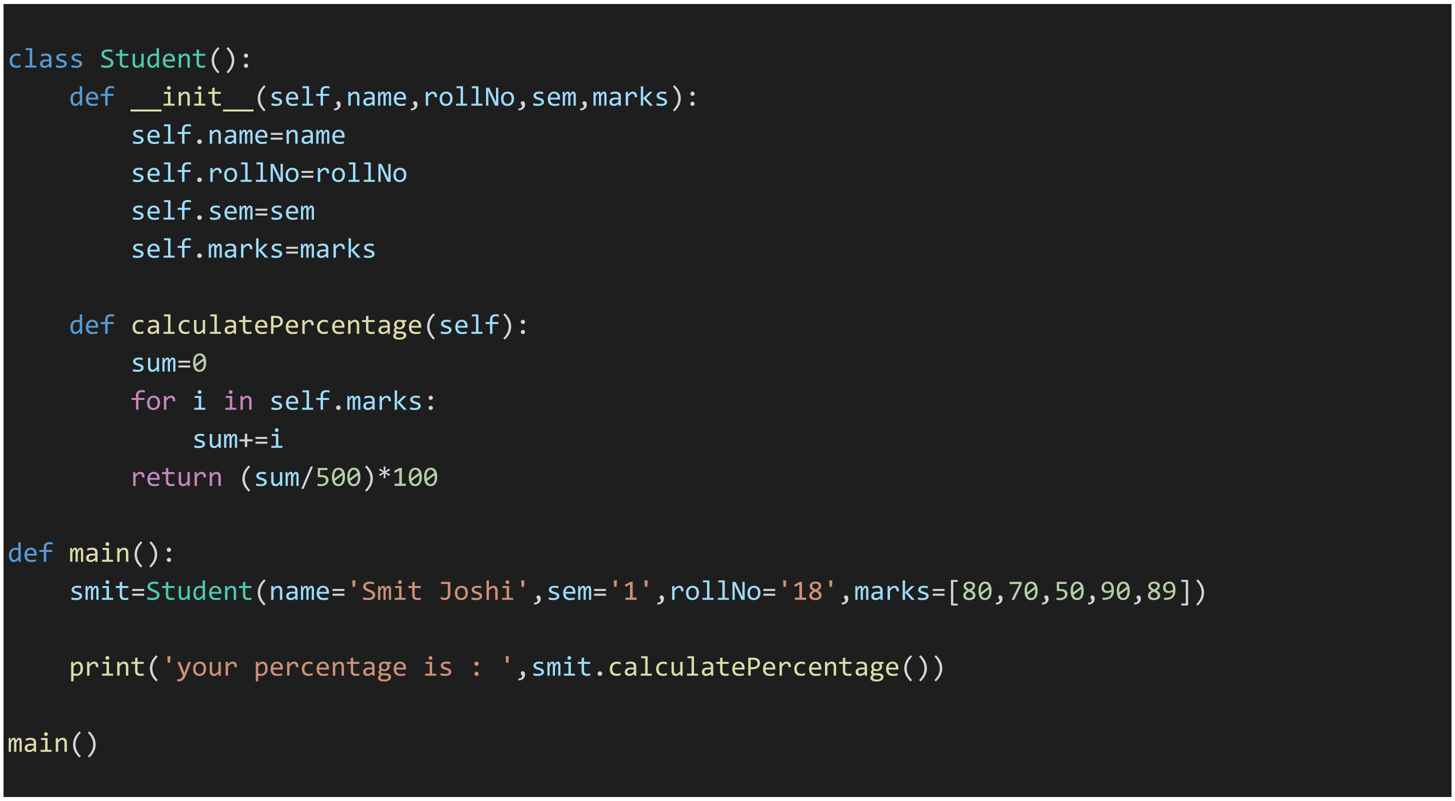
Output:



```
PS D:\LEARNING\COLLAGE\SAM7\Python\collage\task6> py practical4.py
total salary is:  12500.0
```

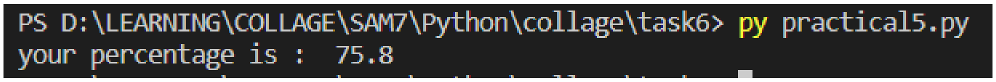
Practical 5

Write a python program to create class student with data name, roll no, sem, marks of 5 subject. Create a method to calculate percentage of the student



```python
class Student():
    def __init__(self,name,rollNo,sem,marks):
        self.name=name
        self.rollNo=rollNo
        self.sem=sem
        self.marks=marks

    def calculatePercentage(self):
        sum=0
        for i in self.marks:
            sum+=i
        return (sum/500)*100

def main():
    smit=Student(name='Smit Joshi',sem='1',rollNo='18',marks=[80,70,50,90,89])

    print('your percentage is : ',smit.calculatePercentage())

main()
```

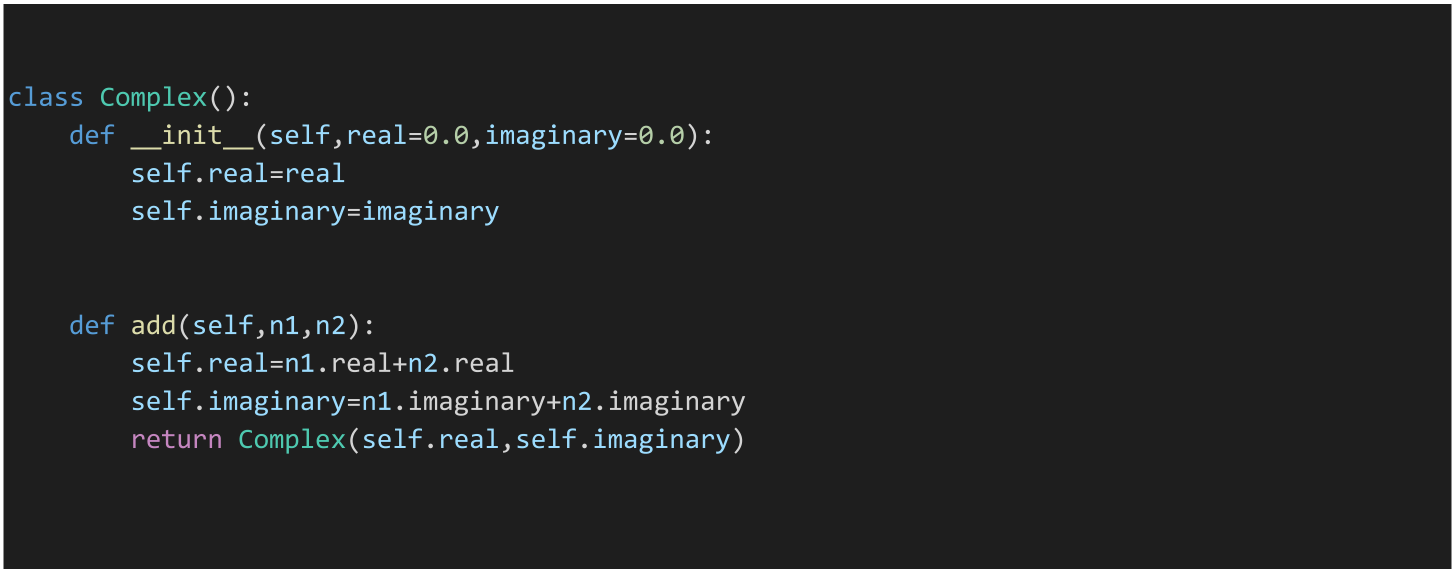
Output:



```
PS D:\LEARNING\COLLAGE\SAM7\Python\collage\task6> py practical5.py
your percentage is :  75.8
```

Practical 6

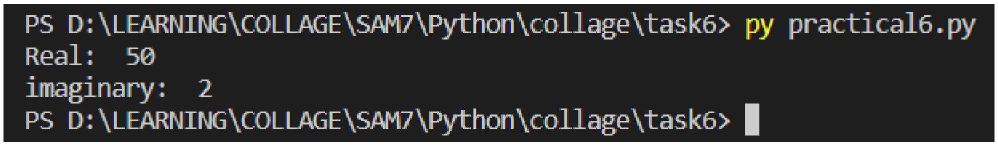
create class complex with members real and imaginary and create a method for addition and multiplication of two complex numbers



```python
class Complex():
    def __init__(self,real=0.0,imaginary=0.0):
        self.real=real
        self.imaginary=imaginary


    def add(self,n1,n2):
        self.real=n1.real+n2.real
        self.imaginary=n1.imaginary+n2.imaginary
        return Complex(self.real,self.imaginary)
```

```python
def main():
    n1=Complex(20,1)
    n2=Complex(30,1)
    temp=Complex()
    temp=temp.add(n1,n2)

    print('Real: ',temp.real)
    print('imaginary: ',temp.imaginary)

main()
```

Output:

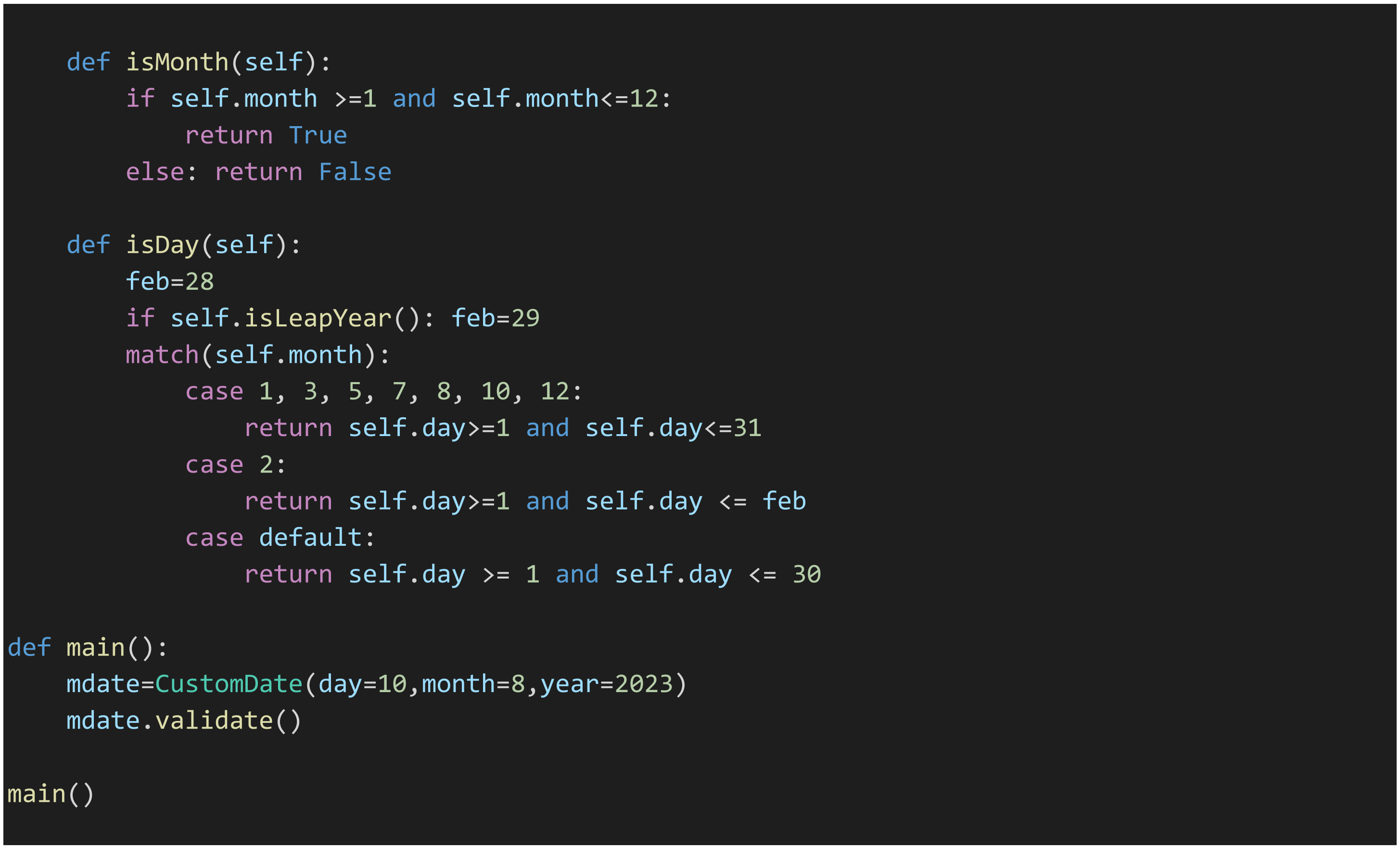


```
PS D:\LEARNING\COLLAGE\SAM7\Python\collage\task6> py practical6.py
Real:  50
imaginary:  2
PS D:\LEARNING\COLLAGE\SAM7\Python\collage\task6> 
```

Practical 7

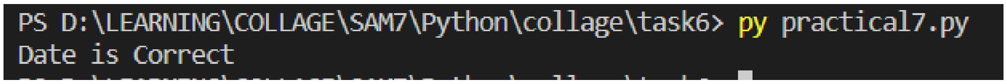
Create class date with members day, month and year. Create constructor for initialising the values. Write a function for validation of the date. If date is not valid display proper message.

```python
class CustomDate():
    def __init__(self,day,month,year) :
        self.day=day
        self.month=month
        self.year=year

    def validate(self):
        if self.isYear() and self.isMonth() and self.isDay():
            print("Date is Correct")
        else:
            print("Invalid Date")

    def isLeapYear(self):
        if self.year%4==0:
            if self.year % 100 != 0 or self.year %400 ==0:
                return True
        else: return False

    def isYear(self):
        if self.year>=1 and self.year<=9999:
            return True
        else: return False
```



```
    def isMonth(self):
        if self.month >=1 and self.month<=12:
            return True
        else: return False

    def isDay(self):
        feb=28
        if self.isLeapYear(): feb=29
        match(self.month):
            case 1, 3, 5, 7, 8, 10, 12:
                return self.day>=1 and self.day<=31
            case 2:
                return self.day>=1 and self.day <= feb
            case default:
                return self.day >= 1 and self.day <= 30

def main():
    mdate=CustomDate(day=10,month=8,year=2023)
    mdate.validate()

main()
```

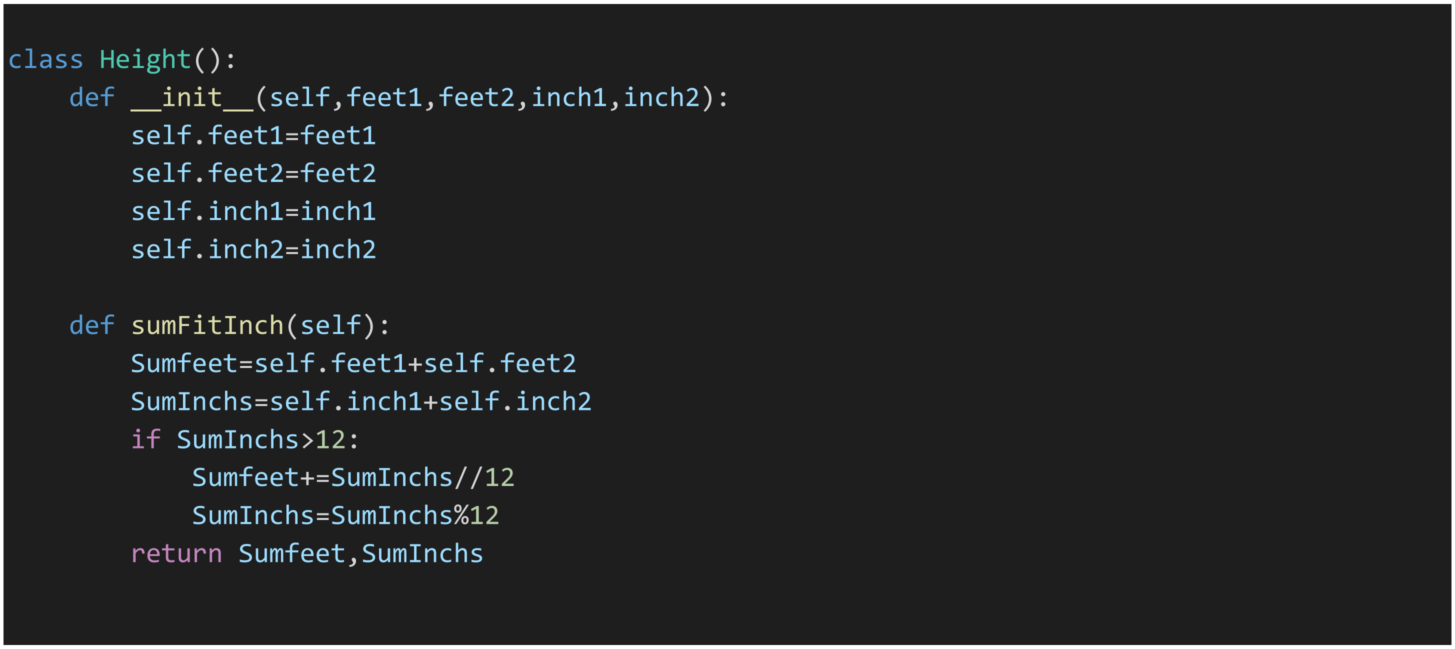
Output:



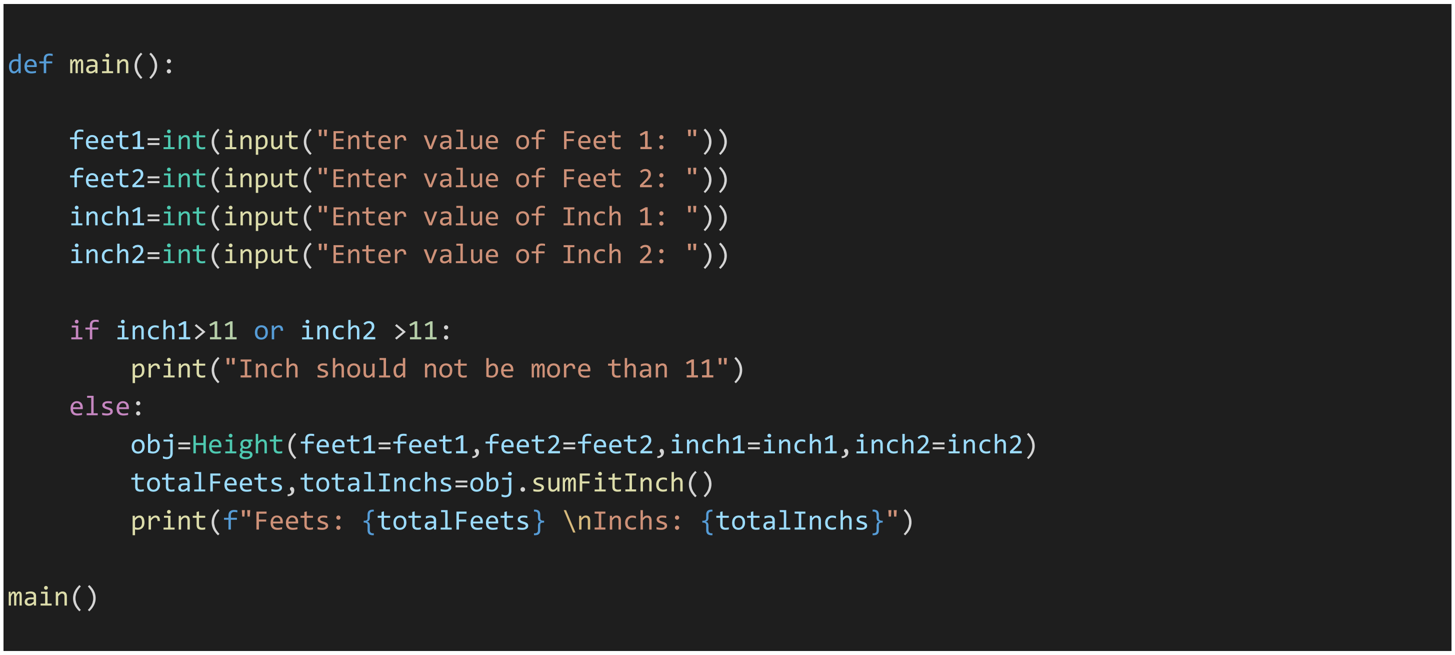
```
PS D:\LEARNING\COLLAGE\SAM7\Python\collage\task6> py practical7.py
Date is Correct
```

Practical 8

Write a python program for creating class Height with members feet and inch. Create a constructor to initialize the objects and write the method for addition of two Height objects , validate and display the result. (For validation: Inch<12).

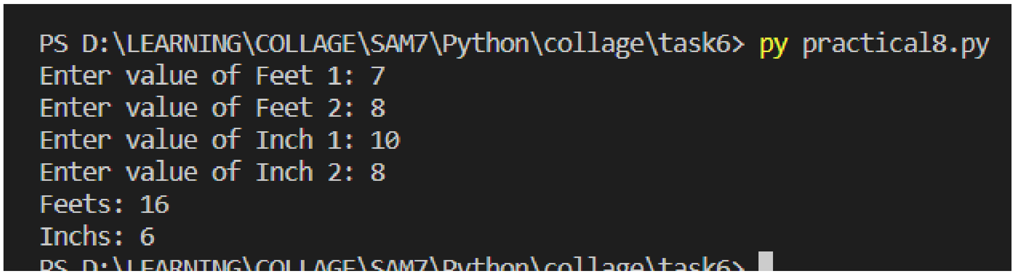


```
class Height():
    def __init__(self,feet1,feet2,inch1,inch2):
        self.feet1=feet1
        self.feet2=feet2
        self.inch1=inch1
        self.inch2=inch2

    def sumFitInch(self):
        Sumfeet=self.feet1+self.feet2
        SumInchs=self.inch1+self.inch2
        if SumInchs>12:
            Sumfeet+=SumInchs//12
            SumInchs=SumInchs%12
        return Sumfeet,SumInchs
```



```python
def main():

    feet1=int(input("Enter value of Feet 1: "))
    feet2=int(input("Enter value of Feet 2: "))
    inch1=int(input("Enter value of Inch 1: "))
    inch2=int(input("Enter value of Inch 2: "))

    if inch1>11 or inch2 >11:
        print("Inch should not be more than 11")
    else:
        obj=Height(feet1=feet1,feet2=feet2,inch1=inch1,inch2=inch2)
        totalFeets,totalInchs=obj.sumFitInch()
        print(f"Feets: {totalFeets} \nInchs: {totalInchs}")

main()
```

Output:



```
PS D:\LEARNING\COLLAGE\SAM7\Python\collage\task6> py practical8.py
Enter value of Feet 1: 7
Enter value of Feet 2: 8
Enter value of Inch 1: 10
Enter value of Inch 2: 8
Feets: 16
Inchs: 6
PS D:\LEARNING\COLLAGE\SAM7\Python\collage\task6>
```