

Question 1

```
In [1]: class Calculator:

    def __init__(self,first,operator,second):
        self.first=first
        self.operator=operator
        self.second=second
        print("Let's Calculate!")
        print("value 1:",self.first)
        print("operator: ",self.operator)
        print("value 2:",self.second)

    def add(self):
        print("Result: ",self.first+self.second)

    def subtract(self):
        print("Result: ",self.first - self.second)

    def multiply(self):
        print("Result: ",self.first * self.second)

    def divide(self):
        print("Result: ",self.first / self.second)

num1 = int(input("Enter the 1st value = "))
operator = input("Enter the operator = ")
num2 = int(input("Enter the 2nd value = "))

c1 = Calculator(num1,operator,num2)

if c1.operator=="+":
    c1.add()

elif c1.operator=="-":
    c1.subtract()

elif c1.operator=="*":
    c1.multiply()

else:
    c1.divide()
```

Enter the 1st value = 1

```
Enter the operator = +  
Enter the 2nd value = 1  
Let's Calculate!  
value 1: 1  
operator: +  
value 2: 1  
Result: 2
```

Question 2

```
In [2]: class Customer:

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

    def greet(self,name=None):
        if name!=None:
            print('Hello', self.name+'!')
        else:
            print('Hello!')

    def purchase(self,*items):
        print(self.name+',','you purchased',len(items),'item(s):')
        for i in items:
            print(i)

customer_1 = Customer("Sam")
customer_1.greet()
customer_1.purchase("chips", "chocolate", "orange juice")
print("-----")
customer_2 = Customer("David")
customer_2.greet("David")
customer_2.purchase("orange juice")
```

```
Hello!
Sam, you purchased 3 item(s):
chips
chocolate
orange juice
-----
Hello David!
David, you purchased 1 item(s):
orange juice
```

Question 3

```
In [3]: class Panda:

    def __init__(self,name,gender,age):
        self.name = name
        self.gender = gender
        self.age = age

    def sleep(self,hour=None):
        if hour==None:
            return (self.name + "'s duration is unknown thus should have only bambooo leaves ")
        elif hour>=3 and hour<=5 :
            return(self.name+" sleeps "+str(hour)+" hours daily and should have Mixed Veggies ")
        elif hour>=6 and hour <= 8:
            return(self.name + " sleeps " + str(hour) + " hours daily and should have Eggplant & Tofu")
        elif hour>=9 and hour<=11:
            return(self.name + " sleeps " + str(hour) + " hours daily and should have Broccoli Chicken")

panda1 = Panda("Kunfu","Male", 5)
panda2=Panda("Pan Pan","Female",3)
panda3=Panda("Ming Ming","Female",8)
print("{} is a {} Panda Bear who is {} years old".format(panda1.name,panda1.gender,panda1.age))
print("{} is a {} Panda Bear who is {} years old".format(panda2.name,panda2.gender,panda2.age))
print("{} is a {} Panda Bear who is {} years old".format(panda3.name,panda3.gender,panda3.age))
print(panda2.sleep(10))
print(panda1.sleep(4))
print(panda3.sleep())
```

Kunfu is a Male Panda Bear who is 5 years old
Pan Pan is a Female Panda Bear who is 3 years old
Ming Ming is a Female Panda Bear who is 8 years old
Pan Pan sleeps 10 hours daily and should have Broccoli Chicken
Kunfu sleeps 4 hours daily and should have Mixed Veggies
Ming Ming's duration is unknown thus should have only bambooo leaves

Question 4

```
In [4]: class Cat():

    def __init__(self,color="White",work="sitting"):
        self.color=color
        self.work=work

    def printCat(self):
        print(self.color+" Cat is "+self.work)

    def changeColor(self,color):
        self.color=color

c1 = Cat()
c2 = Cat("Black")
c3 = Cat("Brown", "jumping")
c4 = Cat("Red", "purring")
c1.printCat()
c2.printCat()
c3.printCat()
c4.printCat()
c1.changeColor("Blue")
c3.changeColor("Purple")
c1.printCat()
c3.printCat()
```

```
White Cat is sitting
Black Cat is sitting
Brown Cat is jumping
Red Cat is purring
Blue Cat is sitting
Purple Cat is jumping
```

Question 5

```
In [5]: class Vehicle():
        def __init__(self):
            self.X=0
            self.Y=0
        def moveUp(self):
            self.Y=self.Y+1
        def moveDown(self):
            self.Y=self.Y-1
        def moveRight(self):
            self.X=self.X+1
        def moveLeft(self):
            self.X=self.X-1
        def print_position(self):
            print("(" +str(self.X)+", "+str(self.Y)+")")
car = Vehicle()
car.print_position()
car.moveUp()
car.print_position()
car.moveLeft()
car.print_position()
car.moveDown()
car.print_position()
car.moveRight()
```

(0,0)

(0,1)

(-1,1)

(-1,0)

Question 6

```
In [1]: class Programmer:

    def __init__(self,name,language,experience):
        self.name = name
        self.language = language
        self.experience = experience
        print("Hurray! A new programmer is born")

    def addExp(self,experience1):
        self.experience = self.experience+experience1
        print("Updating experience of",self.name)

    def printDetails(self):
        print("Name : ",self.name)
        print("Language : ",self.language)
        print("Experience : ",self.experience)

p1 = Programmer("Ethen Hunt", "Java", 10)
p1.printDetails()
print('-----')
p2 = Programmer("James Bond", "C++", 7)
p2.printDetails()
print('-----')
p3 = Programmer("Jon Snow", "Python", 4)
p3.printDetails()
p3.addExp(5)
p3.printDetails()
```

```
Hurray! A new programmer is born
Name : Ethen Hunt
Language : Java
Experience : 10
-----
```

```
Hurray! A new programmer is born
Name : James Bond
Language : C++
Experience : 7
-----
```

```
Hurray! A new programmer is born
Name : Jon Snow
Language : Python
```


Experience : 4
Updating experience of Jon Snow
Name : Jon Snow
Language : Python
Experience : 9

Question 7

```
In [2]: class Student:

    def __init__(self,name,id,department='CSE'):
        self.name = name
        self.id = id
        self.department = department

    def dailyEffort(self,hour):
        self.hour = hour
        print("Name :",self.name)
        print("ID :",self.id)
        print("Department :",self.department)
        print("Daily Effort :"+str(self.hour)+"hour(s)")

    def printDetails(self):
        if self.hour<=2:
            print("Suggestion: Should give more effort")

        elif self.hour<=4:
            print("Suggestion: Keep up the good work!")

        else:
            print("Suggestion: Excellent! Now motivate others.")

harry = Student('Harry Potter', 123)
harry.dailyEffort(3)
harry.printDetails()
print('=====')
john = Student("John Wick", 456, "BBA")
john.dailyEffort(2)
john.printDetails()
print('=====')
naruto = Student("Naruto Uzumaki", 777, "Ninja")
naruto.dailyEffort(6)
naruto.printDetails()
```

```
Name : Harry Potter
ID : 123
Department : CSE
Daily Effort :3hour(s)
Suggestion: Keep up the good work!
```

=====

Name : John Wick

ID : 456

Department : BBA

Daily Effort :2hour(s)

Suggestion: Should give more effort

=====

Name : Naruto Uzumaki

ID : 777

Department : Ninja

Daily Effort :6hour(s)

Suggestion: Excellent! Now motivate others.

Question 8

```
In [7]: class Patient:

    def __init__(self,name,age):
        self.name = name
        self.age = age

    def add_Symptom(self,*symptom):
        self.symptom = symptom

    def printPatientDetail(self):
        print('Name:',self.name)
        print('Age:',self.age)
        s = ''
        for i in self.symptom:
            s = s + i + ', '

        print('Symptoms:', s[:-2])

p1 = Patient('Thomas', 23)
p1.add_Symptom('Headache')
p2 = Patient('Carol', 20)
p2.add_Symptom('Vomiting', 'Coughing')
p3 = Patient('Mike', 25)
p3.add_Symptom('Fever', 'Headache', 'Coughing')
print("=====")
p1.printPatientDetail()
print("=====")
p2.printPatientDetail()
print("=====")
p3.printPatientDetail()
print("=====")
```

```
=====
Name: Thomas
Age: 23
Symptoms: Headache
=====
Name: Carol
Age: 20
Symptoms: Vomiting, Coughing
=====
```

Name: Mike

Age: 25

Symptoms: Fever, Headache, Coughing

=====

Question 9

```
In [9]: class Avengers:

    def __init__(self,name,partner):
        self.name = name
        self.partner = partner

    def super_powers(self,*powers):
        self.powers = powers

    def printAvengersDetail(self):
        print('Name:',self.name)
        print('Partner:',self.partner)
        p = ''
        for i in self.powers:
            p = p + i + ', '

        print('Super powers:', p[:-2])

a1 = Avengers('Captain America', 'Bucky Barnes')
a1.super_powers('Stamina', 'Slowed ageing')
a2 = Avengers('Doctor Strange', 'Ancient One')
a2.super_powers('Mastery of magic')
a3 = Avengers('Iron Man', 'War Machine')
a3.super_powers('Genius level intellect', 'Scientist ')
print("=====")
a1.printAvengersDetail()
print("=====")
a2.printAvengersDetail()
print("=====")
a3.printAvengersDetail()
print("=====")
```

```
=====
Name: Captain America
Partner: Bucky Barnes
Super powers: Stamina, Slowed ageing
=====
Name: Doctor Strange
Partner: Ancient One
Super powers: Mastery of magic
=====
Name: Iron Man
Partner: War Machine
```

Super powers: Genius level intellect, Scientist

=====

Question 10

```
In [10]: class Shinobi:

    def __init__(self,name,rank,mission = 0):
        self.name = name
        self.rank = rank
        self.mission = mission

    def changeRank(self,rank):
        self.rank = rank

    def calSalary(self,mission=0):
        self.mission = mission

    def printInfo(self):
        print('Name:',self.name)
        print('Rank:',self.rank)
        print('Number of mission:',self.mission)
        if self.rank=='Genin':
            salary = self.mission*50
            print("Salary:",salary)

        elif self.rank=='Chunin':
            salary = self.mission*100
            print("Salary:",salary)

        else:
            salary = self.mission*500
            print("Salary:",salary)

naruto = Shinobi("Naruto", "Genin")
naruto.calSalary(5)
naruto.printInfo()
print('=====')
shikamaru = Shinobi('Shikamaru', "Genin")
shikamaru.printInfo()
shikamaru.changeRank("Chunin")
shikamaru.calSalary(10)
shikamaru.printInfo()
print('=====')
```



```
neiji = Shinobi("Neiji", "Jonin")  
neiji.calSalary(5)  
neiji.printInfo()
```

Name: Naruto

Rank: Genin

Number of mission: 5

Salary: 250

=====

Name: Shikamaru

Rank: Genin

Number of mission: 0

Salary: 0

Name: Shikamaru

Rank: Chunin

Number of mission: 10

Salary: 1000

=====

Name: Neiji

Rank: Jonin

Number of mission: 5

Salary: 2500

In []: