Object Oriented Programming

Lab Assignment –II

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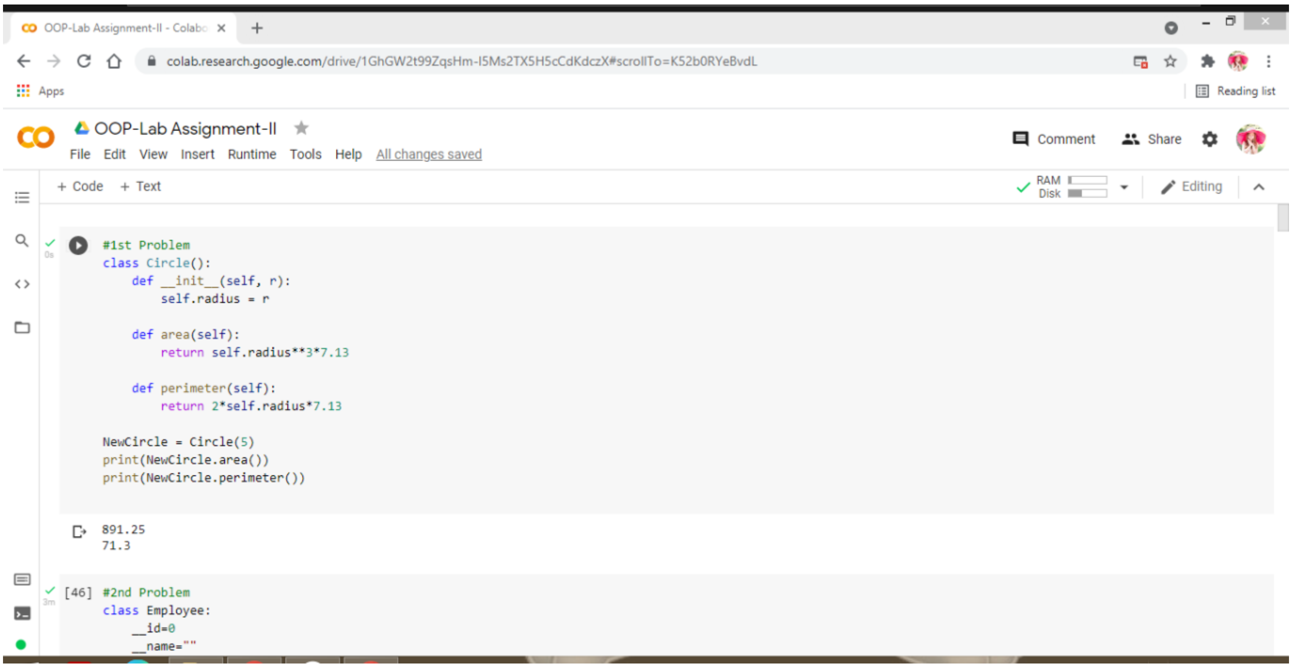
Problem-1 Solution:-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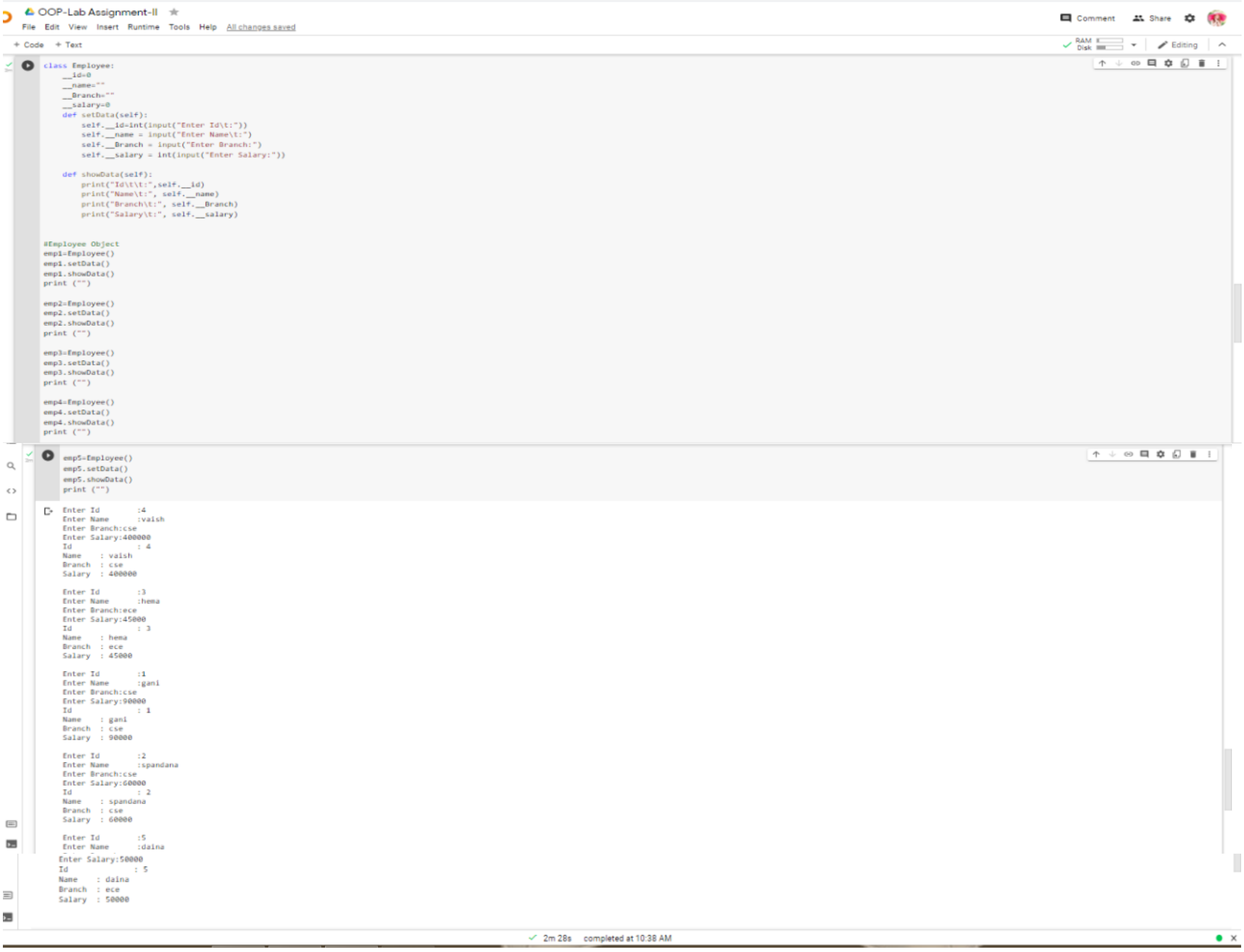
```
#1st Problem
class Circle():
    def __init__(self, r):
        self.radius = r

    def area(self):
        return self.radius**3*7.13

    def perimeter(self):
        return 2*self.radius*7.13

NewCircle = Circle(5)
print(NewCircle.area())
print(NewCircle.perimeter())
```

```
891.25
71.3
```

```
[46] #2nd Problem
class Employee:
    __id=0
    __name=""
```

Problem-2 Solution:-

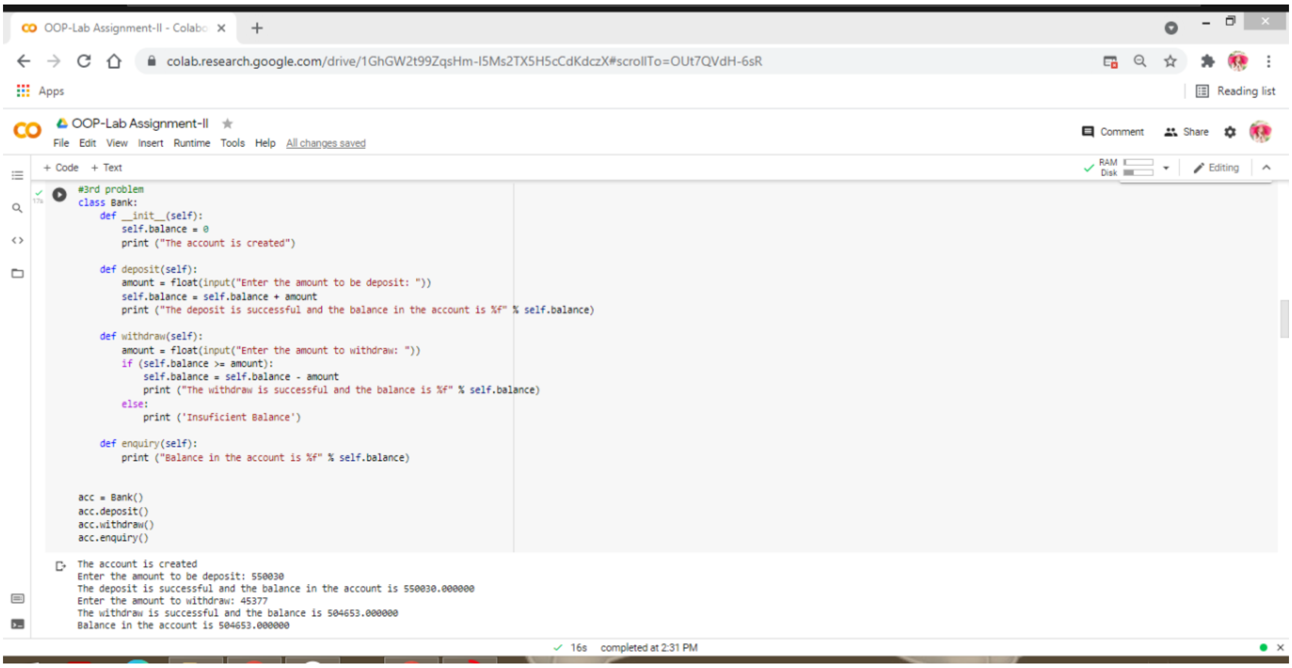


```
class Employee:
    __id=0
    __name=""
    __Branch=""
    __salary=0
    def setData(self):
        self.__id=int(input("Enter Id\t:"))
        self.__name = input("Enter Name\t:")
        self.__Branch = input("Enter Branch:")
        self.__salary = int(input("Enter Salary:"))

    def showData(self):
        print("Id\t\t:",self.__id)
        print("Name\t:", self.__name)
        print("Branch\t:", self.__Branch)
        print("Salary\t:", self.__salary)


#Employee Object
emp1=Employee()
emp1.setData()
emp1.showData()
print ("")

emp2=Employee()
emp2.setData()
emp2.showData()
print ("")

emp3=Employee()
emp3.setData()
emp3.showData()
print ("")

emp4=Employee()
emp4.setData()
emp4.showData()
print ("")
```

```
emp5=Employee()
emp5.setData()
emp5.showData()
print ("")
```

```
Enter Id        :4
Enter Name      :vaish
Enter Branch:cse
Enter Salary:400000
Id              : 4
Name    : vaish
Branch  : cse
Salary  : 400000

Enter Id        :3
Enter Name      :hema
Enter Branch:ece
Enter Salary:45000
Id              : 3
Name    : hema
Branch  : ece
Salary  : 45000

Enter Id        :1
Enter Name      :gani
Enter Branch:cse
Enter Salary:90000
Id              : 1
Name    : gani
Branch  : cse
Salary  : 90000

Enter Id        :2
Enter Name      :spandana
Enter Branch:cse
Enter Salary:60000
Id              : 2
Name    : spandana
Branch  : cse
Salary  : 60000

Enter Id        :5
Enter Name      :daina
Enter Salary:50000
Id              : 5
Name    : daina
Branch  : ece
Salary  : 50000
```

Problem-3 Solution:-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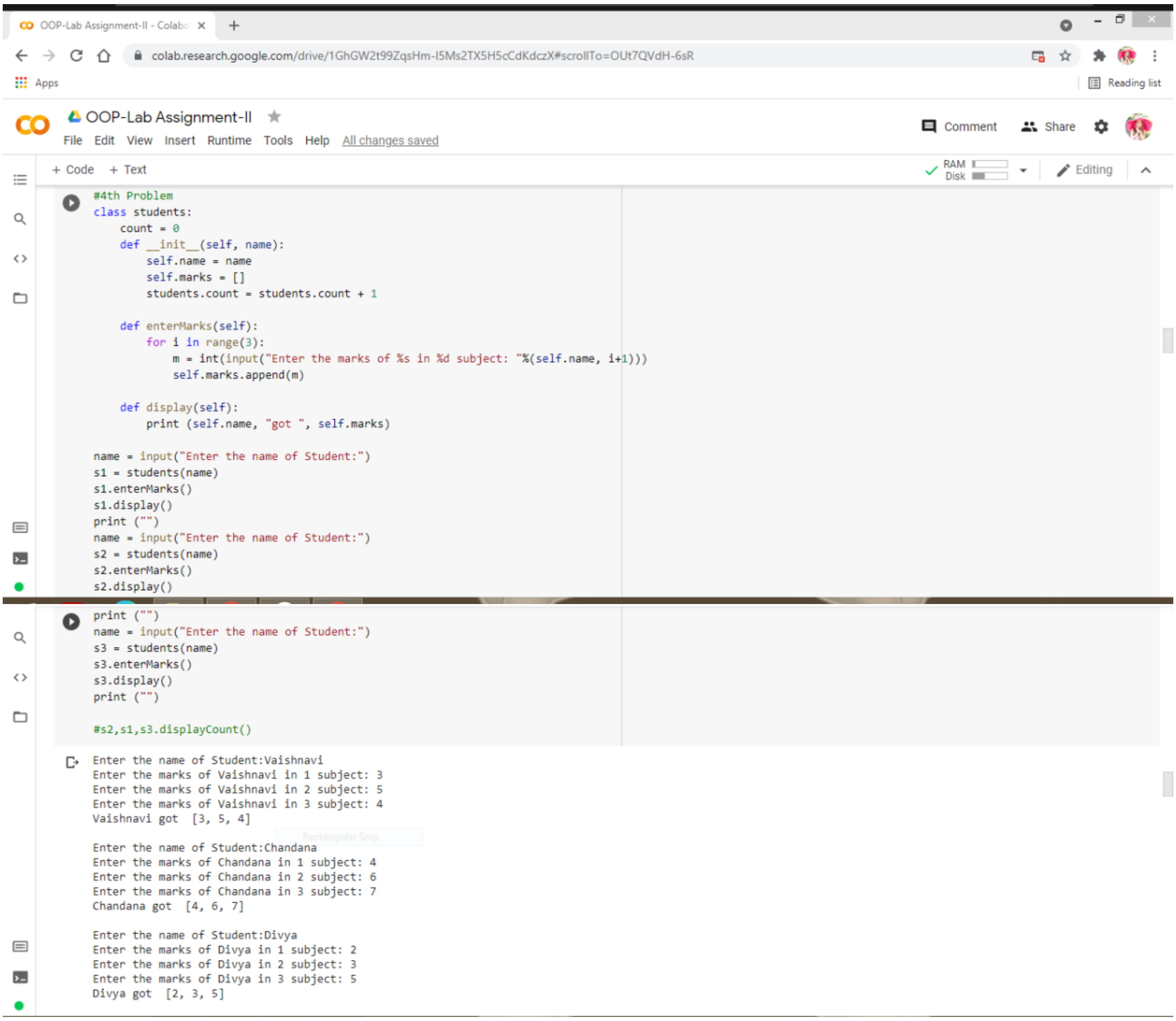
```python
#3rd problem
class Bank:
    def __init__(self):
        self.balance = 0
        print ("The account is created")

    def deposit(self):
        amount = float(input("Enter the amount to be deposit: "))
        self.balance = self.balance + amount
        print ("The deposit is successful and the balance in the account is %f" % self.balance)

    def withdraw(self):
        amount = float(input("Enter the amount to withdraw: "))
        if (self.balance >= amount):
            self.balance = self.balance - amount
            print ("The withdraw is successful and the balance is %f" % self.balance)
        else:
            print ('Insuficient Balance')

    def enquiry(self):
        print ("Balance in the account is %f" % self.balance)


acc = Bank()
acc.deposit()
acc.withdraw()
acc.enquiry()
```

```
The account is created
Enter the amount to be deposit: 550030
The deposit is successful and the balance in the account is 550030.000000
Enter the amount to withdraw: 45377
The withdraw is successful and the balance is 504653.000000
Balance in the account is 504653.000000
```

Problem-4 Solution:-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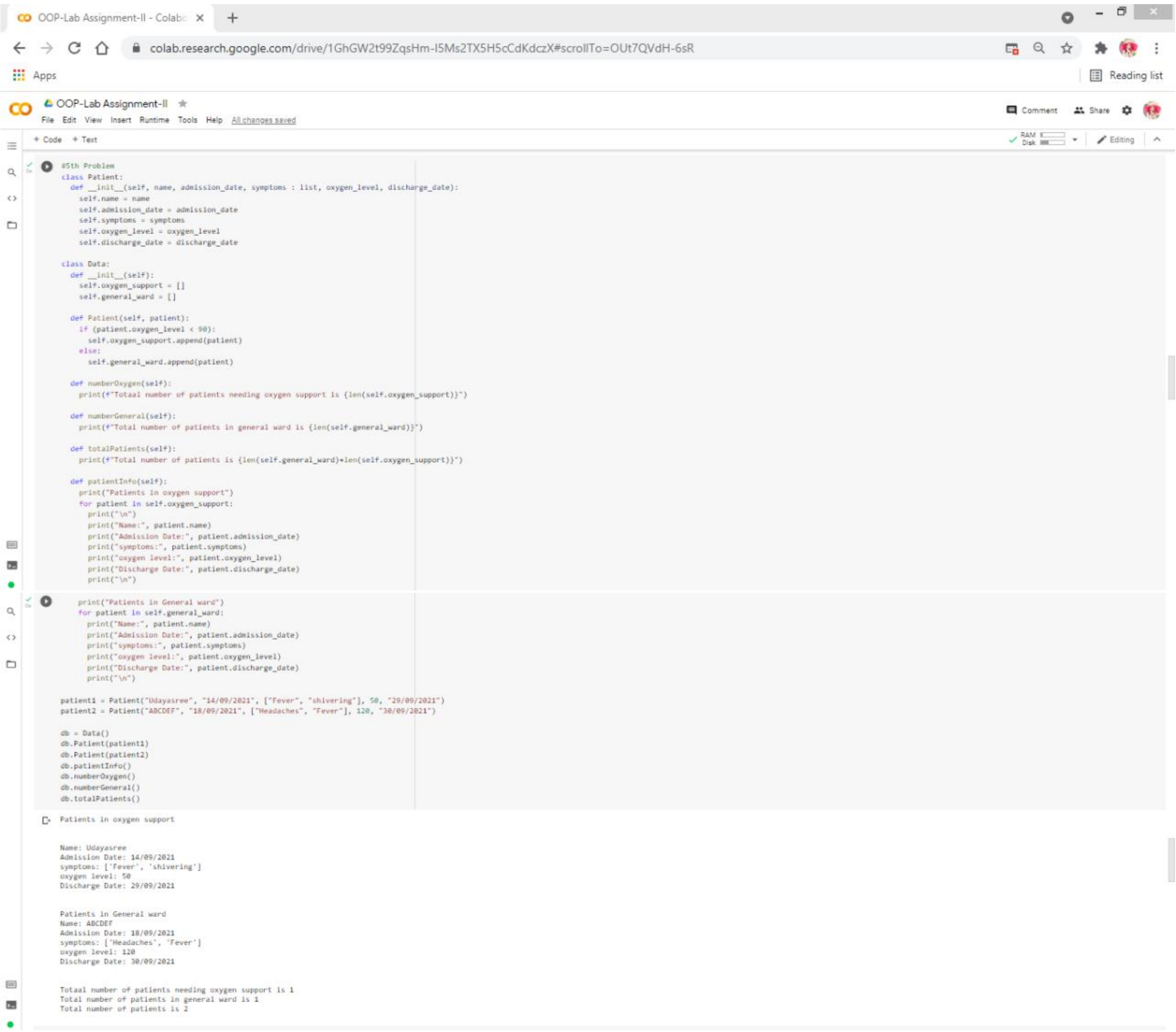
```python
#4th Problem
class students:
    count = 0
    def __init__(self, name):
        self.name = name
        self.marks = []
        students.count = students.count + 1

    def enterMarks(self):
        for i in range(3):
            m = int(input("Enter the marks of %s in %d subject: "%(self.name, i+1)))
            self.marks.append(m)

    def display(self):
        print (self.name, "got ", self.marks)

name = input("Enter the name of Student:")
s1 = students(name)
s1.enterMarks()
s1.display()
print ("")
name = input("Enter the name of Student:")
s2 = students(name)
s2.enterMarks()
s2.display()
print ("")
name = input("Enter the name of Student:")
s3 = students(name)
s3.enterMarks()
s3.display()
print ("")

#s2,s1,s3.displayCount()
```

```
Enter the name of Student:Vaishnavi
Enter the marks of Vaishnavi in 1 subject: 3
Enter the marks of Vaishnavi in 2 subject: 5
Enter the marks of Vaishnavi in 3 subject: 4
Vaishnavi got  [3, 5, 4]

Enter the name of Student:Chandana
Enter the marks of Chandana in 1 subject: 4
Enter the marks of Chandana in 2 subject: 6
Enter the marks of Chandana in 3 subject: 7
Chandana got  [4, 6, 7]

Enter the name of Student:Divya
Enter the marks of Divya in 1 subject: 2
Enter the marks of Divya in 2 subject: 3
Enter the marks of Divya in 3 subject: 5
Divya got  [2, 3, 5]
```

Problem-5 Solution:-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```
#5th Problem
class Patient:
  def __init__(self, name, admission_date, symptoms : list, oxygen_level, discharge_date):
    self.name = name
    self.admission_date = admission_date
    self.symptoms = symptoms
    self.oxygen_level = oxygen_level
    self.discharge_date = discharge_date

class Data:
  def __init__(self):
    self.oxygen_support = []
    self.general_ward = []

  def Patient(self, patient):
    if (patient.oxygen_level < 90):
      self.oxygen_support.append(patient)
    else:
      self.general_ward.append(patient)

  def numberOxygen(self):
    print(f"Totaal number of patients needing oxygen support is {len(self.oxygen_support)}")

  def numberGeneral(self):
    print(f"Total number of patients in general ward is {len(self.general_ward)}")

  def totalPatients(self):
    print(f"Total number of patients is {len(self.general_ward)+len(self.oxygen_support)}")

  def patientInfo(self):
    print("Patients in oxygen support")
    for patient in self.oxygen_support:
      print("\n")
      print("Name:", patient.name)
      print("Admission Date:", patient.admission_date)
      print("symptoms:", patient.symptoms)
      print("oxygen level:", patient.oxygen_level)
      print("Discharge Date:", patient.discharge_date)
      print("\n")
```

```
    print("Patients in General ward")
    for patient in self.general_ward:
      print("Name:", patient.name)
      print("Admission Date:", patient.admission_date)
      print("symptoms:", patient.symptoms)
      print("oxygen level:", patient.oxygen_level)
      print("Discharge Date:", patient.discharge_date)
      print("\n")

patient1 = Patient("Udayasree", "14/09/2021", ["Fever", "shivering"], 50, "29/09/2021")
patient2 = Patient("ABCDEF", "18/09/2021", ["Headaches", "Fever"], 120, "30/09/2021")

db = Data()
db.Patient(patient1)
db.Patient(patient2)
db.patientInfo()
db.numberOxygen()
db.numberGeneral()
db.totalPatients()
```

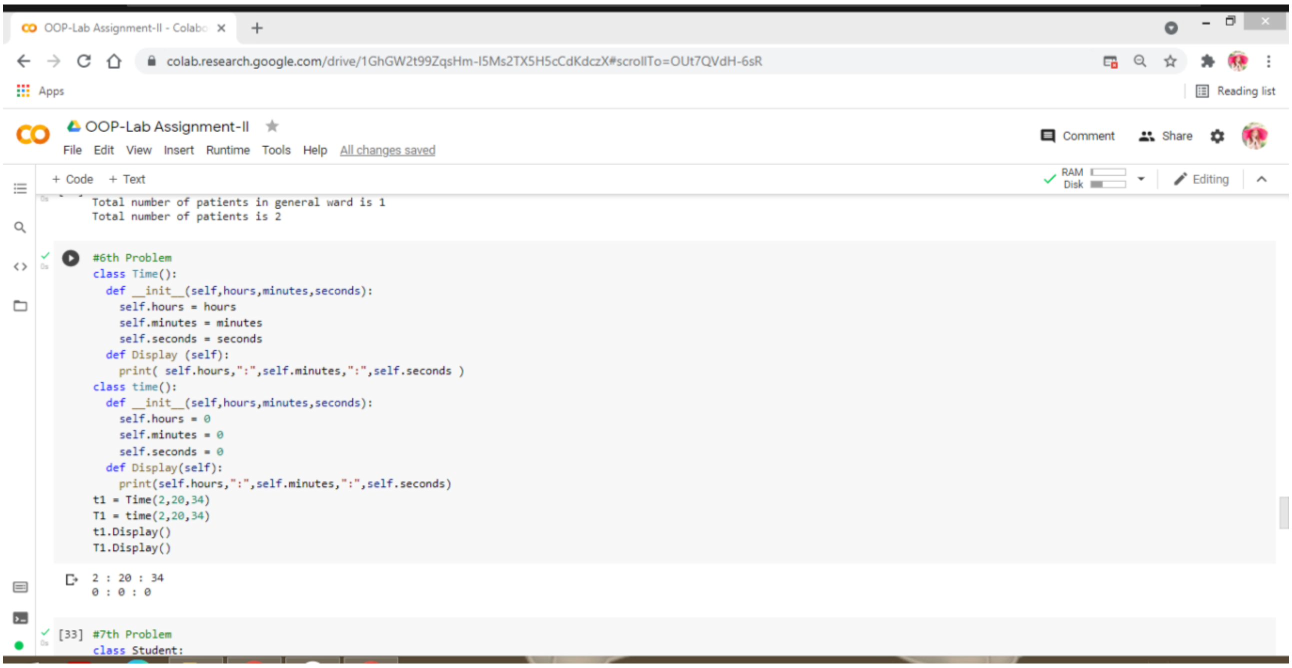
```
Patients in oxygen support


Name: Udayasree
Admission Date: 14/09/2021
symptoms: ['Fever', 'shivering']
oxygen level: 50
Discharge Date: 29/09/2021


Patients in General ward
Name: ABCDEF
Admission Date: 18/09/2021
symptoms: ['Headaches', 'Fever']
oxygen level: 120
Discharge Date: 30/09/2021


Totaal number of patients needing oxygen support is 1
Total number of patients in general ward is 1
Total number of patients is 2
```

Problem-6 Solution:-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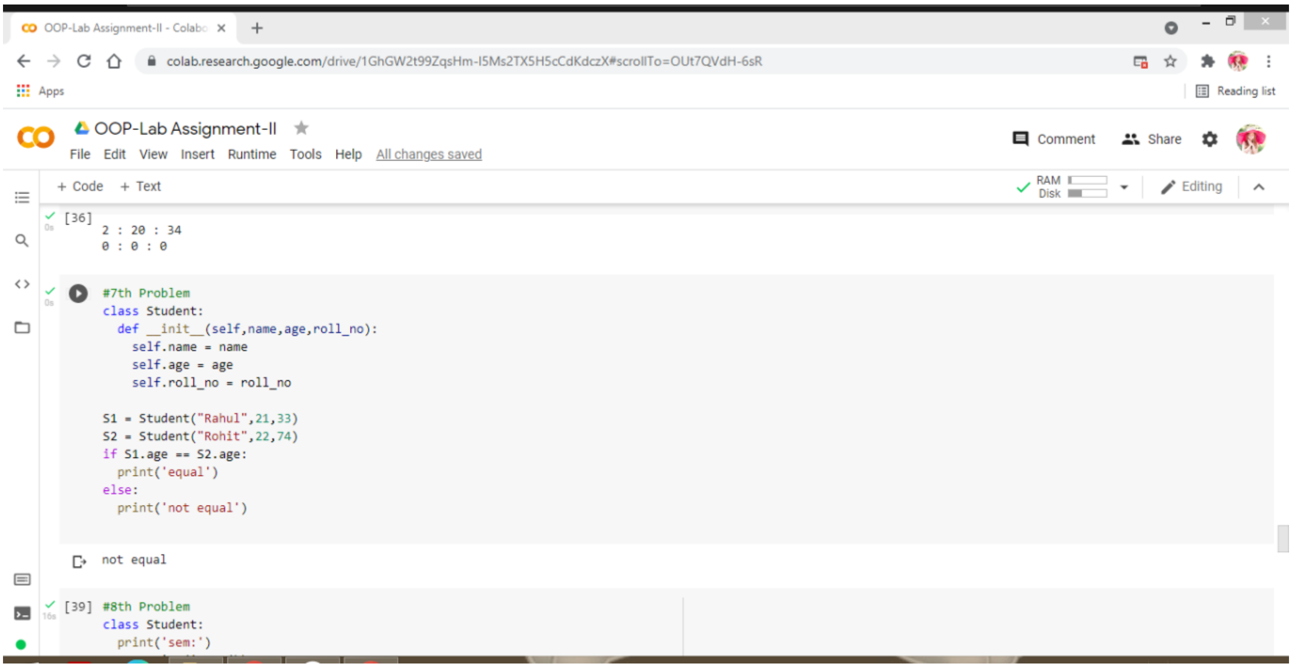
```
Total number of patients in general ward is 1
Total number of patients is 2
```

```
#6th Problem
class Time():
  def __init__(self,hours,minutes,seconds):
    self.hours = hours
    self.minutes = minutes
    self.seconds = seconds
  def Display (self):
    print( self.hours,":",self.minutes,":",self.seconds )
class time():
  def __init__(self,hours,minutes,seconds):
    self.hours = 0
    self.minutes = 0
    self.seconds = 0
  def Display(self):
    print(self.hours,":",self.minutes,":",self.seconds)
t1 = Time(2,20,34)
T1 = time(2,20,34)
t1.Display()
T1.Display()
```

```
2 : 20 : 34
0 : 0 : 0
```

```
[33] #7th Problem
     class Student:
```

Problem-7 Solution:-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```
[36]
     2 : 20 : 34
     0 : 0 : 0
```

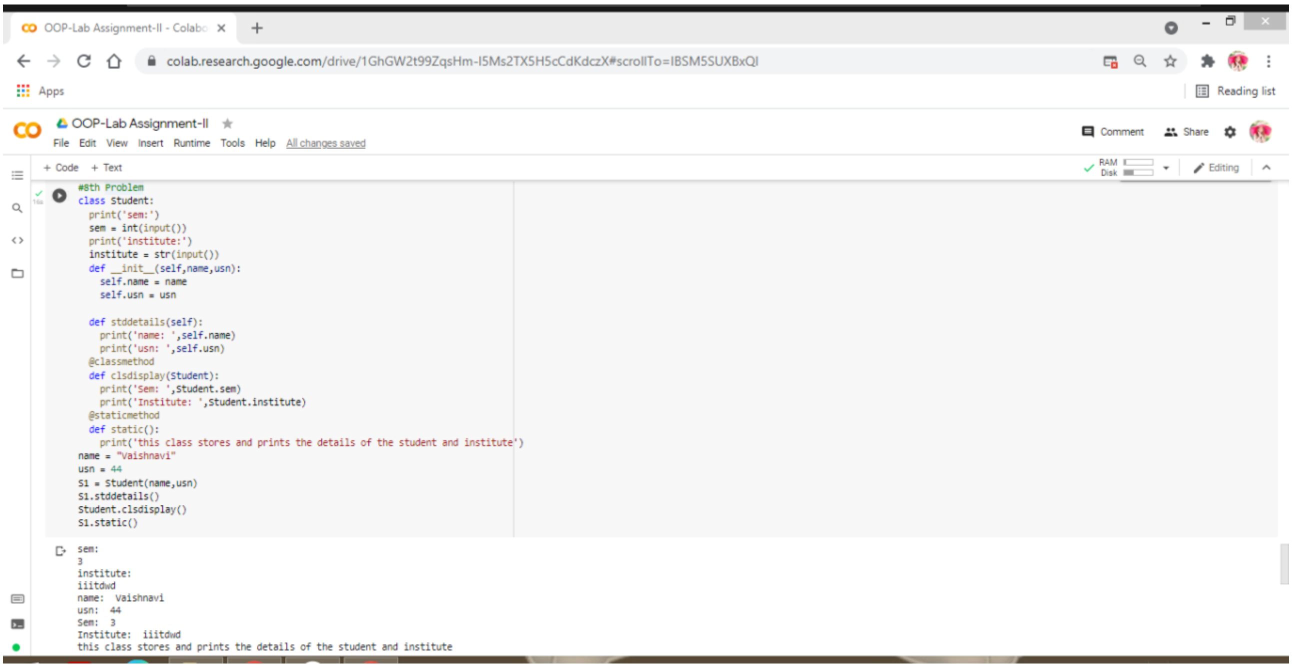
```
#7th Problem
class Student:
  def __init__(self,name,age,roll_no):
    self.name = name
    self.age = age
    self.roll_no = roll_no

S1 = Student("Rahul",21,33)
S2 = Student("Rohit",22,74)
if S1.age == S2.age:
  print('equal')
else:
  print('not equal')
```

```
not equal
```

```
[39] #8th Problem
     class Student:
       print('sem:')
```

Problem-8 Solution:-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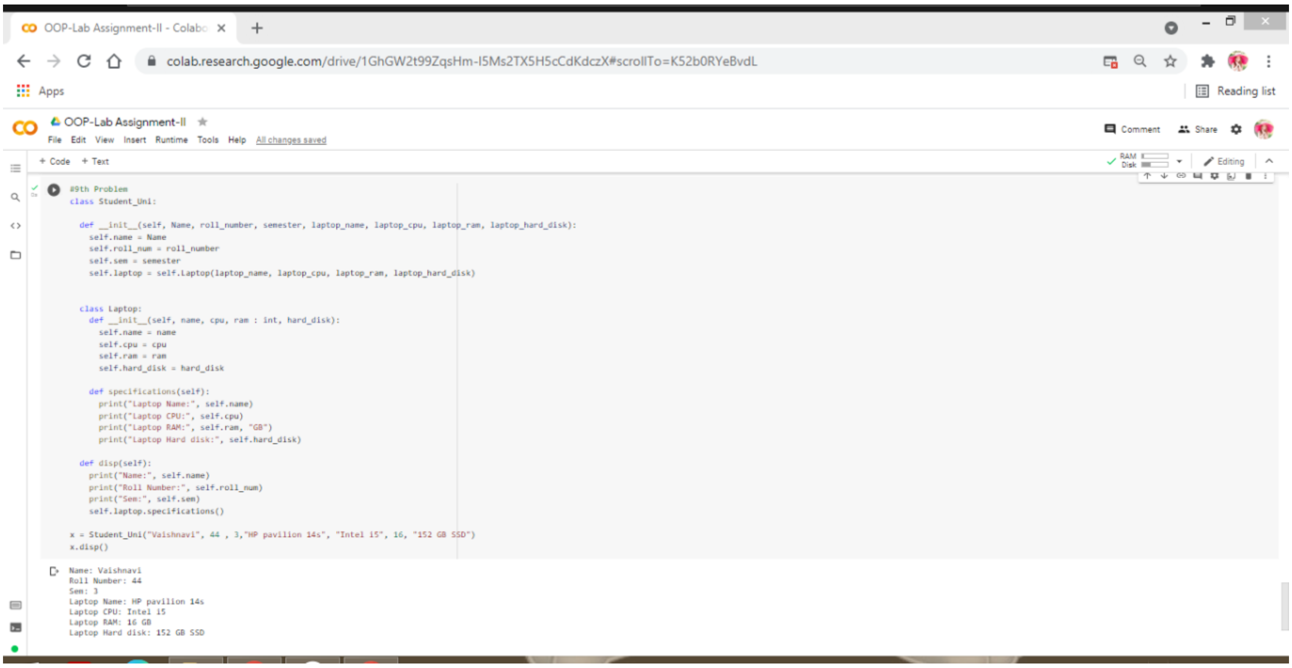
```
#8th Problem
class Student:
  print('sem:')
  sem = int(input())
  print('institute:')
  institute = str(input())
  def __init__(self,name,usn):
    self.name = name
    self.usn = usn

  def stddetails(self):
    print('name: ',self.name)
    print('usn: ',self.usn)
  @classmethod
  def clsdisplay(Student):
    print('Sem: ',Student.sem)
    print('Institute: ',Student.institute)
  @staticmethod
  def static():
    print('this class stores and prints the details of the student and institute')
name = "Vaishnavi"
usn = 44
S1 = Student(name,usn)
S1.stddetails()
Student.clsdisplay()
S1.static()
```

```
sem:
3
institute:
iiitdwd
name:  Vaishnavi
usn:  44
Sem:  3
Institute:  iiitdwd
this class stores and prints the details of the student and institute
```

Problem-9 Solution:-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```
#9th Problem
class Student_Uni:

  def __init__(self, Name, roll_number, semester, laptop_name, laptop_cpu, laptop_ram, laptop_hard_disk):
    self.name = Name
    self.roll_num = roll_number
    self.sem = semester
    self.laptop = self.Laptop(laptop_name, laptop_cpu, laptop_ram, laptop_hard_disk)


  class Laptop:
    def __init__(self, name, cpu, ram : int, hard_disk):
      self.name = name
      self.cpu = cpu
      self.ram = ram
      self.hard_disk = hard_disk

    def specifications(self):
      print("Laptop Name:", self.name)
      print("Laptop CPU:", self.cpu)
      print("Laptop RAM:", self.ram, "GB")
      print("Laptop Hard disk:", self.hard_disk)

  def disp(self):
    print("Name:", self.name)
    print("Roll Number:", self.roll_num)
    print("Sem:", self.sem)
    self.laptop.specifications()

x = Student_Uni("Vaishnavi", 44 , 3,"HP pavilion 14s", "Intel i5", 16, "152 GB SSD")
x.disp()
```

```
Name: Vaishnavi
Roll Number: 44
Sem: 3
Laptop Name: HP pavilion 14s
Laptop CPU: Intel i5
Laptop RAM: 16 GB
Laptop Hard disk: 152 GB SSD
```