

MGM's
Jawaharlal Nehru Engineering College

Laboratory Manual

Python Programming

For

Third Year Students

Dept: Master of Computer Application

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FOREWORD

It is my great pleasure to present this laboratory manual for Third year students for the subject of Python Programming. As a student, many of you may be wondering with some of the questions in your mind regarding the subject and exactly what has been tried is to answer through this manual.

As you may be aware that MGM has already been awarded with ISO 9001-2015 certification and it is our endure to technically equip our students taking the advantage of the procedural aspects of ISO 9001-2015 Certification.

Faculty members are also advised that covering these aspects in initial stage itself, will greatly relived them in future as much of the load will be taken care by the enthusiasm energies of the students once they are conceptually clear.

Dr. H.H.Shinde

Principal

Institute Vision

To create self-reliant, continuous learner & competent technocrats imbued with human values.

Institute Mission

- Imparting quality technical education to the students through participative teaching – learning process.
 - Developing competence amongst the students through academic learning and practical experimentation.
 - Inculcating social mindset and human values amongst the students.
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Department Vision

Build a strong technical teaching and learning environment that responds swiftly to the challenges and needs of the current industry trends.

Department Mission

1. Provide excellent post graduate education in a state-of-the-art environment, preparing students for careers as computer technologist in self employment, industry, government and of IT enabled sectors.
2. Support society by participating in and encouraging technology transfer.

LABORATORY MANUAL CONTENTS

This manual is intended for the Third year students of MCA in the subject of Python Programming. This manual typically contains practical/Lab Sessions related Python Programming covering various aspects related the subject to enhanced understanding.

Students are advised to thoroughly go through this manual rather than only topics mentioned in the syllabus as practical aspects are the key to understanding and conceptual visualization of theoretical aspects covered in the books.

Good Luck for your Enjoyable Laboratory Sessions

Dr. S.S.Deshmukh

Head

Department of MCA

Ms. Sujata S.Magare

Assistant Professor

Department of MCA

DOs and DON'T DOs in Laboratory:

1. Do not handle any equipment before reading the instructions/Instruction manuals
2. Read carefully the power ratings of the equipment before it is switched on whether ratings 230 V/50 Hz or 115V/60 Hz. For Indian equipments, the power ratings are normally 230V/50Hz. If you have equipment with 115/60 Hz ratings, do not insert power plug, as our normal supply is 230V/50 Hz, which will damage the equipment.
3. Observe type of sockets of equipment power to avoid mechanical damage
4. Do not forcefully place connectors to avoid the damage
5. Strictly observe the instructions given by the teacher/Lab Instructor

Instruction for Laboratory Teachers:

1. Submission related to whatever lab work has been completed should be done during the next lab session. The immediate arrangements for printouts related to submission on the day of practical assignments.
2. Students should be taught for taking the printouts under the observation of lab teacher.
3. The promptness of submission should be encouraged by way of marking and evaluation patterns that will benefit the sincere students.

**Mahatma Gandhi Mission's
Jawaharlal Nehru Engineering College, Aurangabad.**

Subject: Python Programming

List of Experiments

Exp No.	Title
1	Program to demonstrate basic data type in python
2	Program to demonstrate operators in python
3	A cashier has currency notes of denominations 10, 50, and 100.If the amount to be withdrawn is input through the keyboard using input() function in hundreds, find the total number of currency notes of each denomination the cashier will have to give to the withdrawer
4	Program to demonstrate list and tuple in python
5	Write a program in Python, A library charges a fine for every book returned late. For first 5 days the fine is 50 paisa, for 6-10 days fine is one rupee and above 10 days fine is 5 rupees. If you return the book after 30 days your membership will be cancelled. Write a program to accept the number of days the member is late to return the book and display the fine or the appropriate message
6	Write a program to calculate overtime pay of 10 employees. Overtime is paid at the rate of Rs.12.00 per hour for every hour worked above 40 hours. Assume that employee do not work for fractional part of an hour.
7	Two numbers are entered through the keyboard; write a program to find the value of one number raised to the power of another.
8	Write a function that receives marks received by a student in 3 subjects and returns the average and percentage of these marks. Call this function from main() and print the result in main
9	Write a program to read a file and display its contents
10	Write a program to demonstrate database connectivity in python

PRACTICAL: 1

Aim: Program to demonstrate basic data type in python

Program: Program to print type of given variable

```
a = 5

print(a, "is of type", type(a))

a = 2.0

print(a, "is of type", type(a))

a = 1+2j

print(a, "is complex number?", isinstance(1+2j,complex))
```

Output:

```
5 is of type <class 'int'>
2.0 is of type <class 'float'>
(1+2j) is complex number? True
```

Program: ii) Program to print Dictionary items

```
d = {'value':'key':2}

print(type(d))

print("d[1] = ", d[1]);

print("d['key'] = ", d['key']);
```

Output:

```
<class 'dict'>
d[1] = value
d['key'] = 2
```

PRACTICAL: 2

Aim: Program to demonstrate operators in python

Program:

- i) Program to perform addition of two numbers

```
num1 = 1.5
num2 = 6.3
# Add two numbers
sum = float(num1) + float(num2)
# Display the sum
print('The sum of {0} and {1} is {2}'.format(num1, num2, sum))
```

Output:

The sum of 1.5 and 6.3 is 7.8

- ii) Program to Solve Quadratic Equation

```
import math
a = float(input('Enter a: '))
b = float(input('Enter b: '))
c = float(input('Enter c: '))
# calculate the discriminant
d = (b**2) - (4*a*c)
# find two solutions
sol1 = (-b-math.sqrt(d))/(2*a)
sol2 = (-b+math.sqrt(d))/(2*a)
print('The solution are {0} and {1}'.format(sol1,sol2))
```

Output:

```
Enter a: 1
Enter b: 5
Enter c: 6
The solution are -3.0 and -2.0
```


PRACTICAL: 3

Aim: A cashier has currency notes of denominations 10, 50, and 100. If the amount to be withdrawn is input through the keyboard using input() function in hundreds, find the total number of currency notes of each denomination the cashier will have to give to the withdrawer

Program:

```
amt=int(input('Enter amount : '))
```

```
h=amt/100
```

```
f=(amt%100)/50
```

```
t=((amt%100)%50)/10
```

```
print('100 notes : ',int(h))
```

```
print('50 notes : ',int(f))
```

```
print('20 notes : ',int(t))
```

Output:

```
Enter amount : 480
```

```
100 notes : 4
```

```
50 notes : 1
```

```
20 notes : 3
```

PRACTICAL :4

Aim: Program to demonstrate list and tuple in python

Program:

i) Program for python list

```
my_list = ['p','r','o','b','e']  
print(my_list[0])  
print(my_list[2])  
print(my_list[4])  
n_list = ["Happy", [2,0,1,5]] # Nested List  
print(n_list[0][1]) # Nested indexing  
print(n_list[1][3])
```

Output:

```
p  
o  
e  
a  
5
```

ii) Program for python Tuple

```
my_tuple = ('a','p','p','l','e')  
print(my_tuple.count('p'))  
print(my_tuple.index('l'))  
#Membership Test  
print('a' in my_tuple)  
print('b' in my_tuple)  
print('g' not in my_tuple)
```

Output:

```
2  
3  
True  
False  
True
```

PRACTICAL: 5

Aim: Write a program in Python, A library charges a fine for every book returned late. For first 5 days the fine is 50 paisa, for 6-10 days fine is one rupee and above 10 days fine is 5 rupees. If you return the book after 30 days your membership will be cancelled. Write a program to accept the number of days the member is late to return the book and display the fine or the appropriate message

Program:

```
d=int(input("enter Number of days : "))

fine=0

if(d<=5):

    fine=d*0.50

    print("Fine : ",float(fine))

elif(d>5 and d<=10):

    i=d-5

    fine=(i*1)+(5*0.5)

    print("Fine : ",float(fine))

elif(d>10 and d<=30):

    i=d-10

    fine=(i*5)+(5*0.5)+(5*1)

    print("Fine : ",float(fine))

else:

    i=d-10

    fine=(i*5)+(5*0.5)+(5*1)

    print("Your Membership is calcelled")

    print("Fine : ",float(fine))
```

Output:

```
enter Number of days : 14

Fine : 27.5
```

Aim: Write a program to calculate overtime pay of 10 employees. Overtime is paid at the rate of Rs.12.00 per hour for every hour worked above 40 hours. Assume that employee do not work for fractional part of an hour

Program:

```
ovpay=0
sum=0
for i in range(1,11):
    print("Enter Working Hours of Emp ",i,":")
    h=int(input())
    if(h>40):
        extra=h-40
        ovpay=extra*12
        print("Over time pay of emp ",i," is ",ovpay)
        sum=sum+ovpay
    else:
        print("No Overtime Pay")
print("Total Overtime Pay of all employees : ", sum)
```

Output:

```
Enter Working Hours of Emp 1 : 43
Over time pay of emp 1 is 36
Enter Working Hours of Emp 2 : 44
Over time pay of emp 2 is 48
Enter Working Hours of Emp 3 : 41
Over time pay of emp 3 is 12
Enter Working Hours of Emp 4 : 40
No Overtime Pay
Enter Working Hours of Emp 5 : 42
```

Over time pay of emp 5 is 24

Enter Working Hours of Emp 6 :44

Over time pay of emp 6 is 48

Enter Working Hours of Emp 7 : 56

Over time pay of emp 7 is 192

Enter Working Hours of Emp 8 : 43

Over time pay of emp 8 is 36

Enter Working Hours of Emp 9 : 44

Over time pay of emp 9 is 48

Enter Working Hours of Emp 10 : 40

No Overtime Pay

Total Overtime Pay of all employees : 444

PRACTICAL: 7

Aim: Two numbers are entered through the keyboard; write a program to find the value of one number raised to the power of another.

Program:

```
m=int(input('Enter First value: '))
n =int(input('Enter Second value: '))
p=m**n
print('{0} Raise to {1} = {2}'.format(m,n,p))
```

Output:

```
Enter First value: 4
Enter Second value: 7
4 Raise to 7 = 16384
```

PRACTICAL: 8

Aim: Write a function that receives marks received by a student in 3 subjects and returns the average and percentage of these marks. Call this function from main() and print the result in main

Program:

```
def AP(m1,m2,m3):  
    tot=m1+m2+m3  
    avg=float(tot/3)  
    per=float((tot/150)*100)  
    print("Average=%0.2f Percentage=%0.2f"%(avg,per))  
  
def main():  
    i=int(input("Enter sub1 marks out of 50 : "))  
    j=int(input("Enter sub2 marks out of 50 : "))  
    k=int(input("Enter sub3 marks out of 50 : "))  
    AP(i,j,k)  
main()
```

Output:

```
Enter sub1 marks out of 50 : 45  
Enter sub2 marks out of 50 : 36  
Enter sub3 marks out of 50 : 47  
Average=42.66 Percentage=85.33
```

PRACTICAL: 9

Aim: Write a program to read a file and display its contents

Program:

```
f=open('myfile.txt','w')
f.write('My first file')
f.close()

f=open('myfile.txt','a')
f.write('\nWelcome Every one')
f.write('\nAppend Mode')
f.close()

f=open('myfile.txt','r')
print(f.read())
f.close()
```

Output:

My first file

Welcome Every one

Append Mode

PRACTICAL: 10

Aim: Write a program to demonstrate database connectivity in python

Program:

```
import mysql.connector

conn=
mysql.connector.connect(host='localhost',user='root',passwd="",database='db1')

cursor = conn.cursor()

cursor.execute("insert into books values (101,'Python')")

print("record inserted successfully")

cursor.execute("select * from books")

result=cursor.fetchall()

print(result)
```

Output:

```
record inserted successfully
(101,'python')
```