

RAJALAKSHMI ENGINEERING COLLEGE

RAJALAKSHMI NAGAR, THANDALAM – 602 105



**RAJALAKSHMI
ENGINEERING COLLEGE**

**CS23221
PYTHON PROGRAMMING LAB**

Laboratory Observation Note Book

Name: VISHWA J

Year/Branch/Section: 1-year/CSE/F

Register No: 2116230701384

Semester: 2nd Semester

Academic Year: 2023 - 2024



INDEX

Reg. No:230701384

Name: Vishwa J

Year: 1 year

Branch: CSE

Sec: F

S. No.	Date	Title	Page No.	Teacher's Signature / Remarks
Introduction to python-Variables-Datatypes-Input/Output-Formatting				
1.1	12.03.24	Converting Input Strings	8	
1.2	12.03.24	Gross salary	10	
1.3	12.03.24	Square Root	11	
1.4	12.03.24	Gain percent	12	
1.5	12.03.24	Deposits	14	
1.6	12.03.24	Carpenter	16	
Operators in Python				
2.1	06.04.24	Widgets and Gizmos	19	
2.2	06.04.24	Doll Sings	20	
2.3	06.04.24	Birthday party	22	
2.4	06.04.24	Hamming Weight	24	
2.5	06.04.24	Compound Interest	25	
2.6	06.04.24	Eligible to donate blood	26	
2.7	06.04.24	C or D	28	
2.8	06.04.24	Troy Battle	30	
2.9	06.04.24	Tax and Tip	32	
2.10	06.04.24	Return last digit of the given number	34	



Selection Structures in Python				
3.1	12.04.24	Admission eligibility	37	
3.2	12.04.24	Classifying triangles	40	
3.3	12.04.24	Electricity Bill	42	
3.4	12.04.24	IN/OUT	45	
3.5	12.04.24	Vowel or Constant	47	
3.6	12.04.24	Leap Year	49	
3.7	12.04.24	Month name to Days	52	
3.8	12.04.24	Pythagorean triple	54	
3.9	12.04.24	Second Last Digit	56	
3.10	12.04.24	Chinese Zodiac	58	
Algorithmic Approach: Iteration Control Structures				
4.1	13.04.24	Factors of a Number	61	
4.2	13.04.24	Non-Repeated Digits Count	63	
4.3	13.04.24	Prime Checking	64	
4.4	13.04.24	Next Perfect Square	66	
4.5	13.04.24	Nth Fibonacci	67	
4.6	13.04.24	Disarium Number	69	
4.7	13.04.24	Sum of Series	70	
4.8	13.04.24	Unique Digits Count	72	
4.9	13.04.24	Product of single digits	73	
4.10	13.04.24	Perfect Square After adding One	75	
Strings in Python				
5.1	17.04.24	Count chars	78	
5.2	17.04.24	Decompress the String	79	
5.3	17.04.24	First N Common Characters	80	
5.4	17.04.24	Remove Characters	82	
5.5	17.04.24	Remove Palindrome Words	84	
5.6	17.04.24	Return Second Word in Uppercase	85	
5.7	17.04.24	Reverse String	87	
5.8	17.04.24	String characters balance Test	88	
5.9	17.04.24	Unique Names	89	
5.10	17.04.24	Username Domain Extension	90	
List in Python				



6.1	04.05.24	Monotonic array	93	
6.2	04.05.24	Check pair with difference k .	96	
6.3	04.05.24	Count Elements	98	
6.4	04.05.24	Distinct Elements in an Array	101	
6.5	04.05.24	Element Insertion	104	
6.6	04.05.24	Find the Factor	107	
6.7	04.05.24	Merge list	111	
6.8	04.05.24	Merge Two Sorted Arrays Without Duplication	114	
6.9	04.05.24	Print Element Location	117	
6.10	04.05.24	Strictly increasing	124	
Tuples & Set				
7.1	18.05.24	Binary String	126	
7.2	18.05.24	Check Pair	131	
7.3	18.05.24	DNA Sequence	133	
7.4	18.05.24	Print repeated no	136	
7.5	18.05.24	Remove repeated	138	
7.6	18.05.24	malfunctioning keyboard	141	
7.7	18.05.24	American keyboard	143	
Dictionary				
8.1	25.05.24	Uncommon Words	145	
8.2	25.05.24	Sort Dictionary By Values Summation	149	
8.3	25.05.24	Winner Of Election	151	
8.4	25.05.24	Student Record	154	
8.5	25.05.24	Scramble Score	156	
Functions				
9.1	01.06.24	Abundant Number	158	
9.2	01.06.24	Automorphic number or not	161	
9.3	01.06.24	Check Product of Digits	166	
9.4	01.06.24	Christmas Discount	169	



9.5	01.06.24	Coin Change	170	
9.6	01.06.24	Difference Sum	171	
9.7	01.06.24	Ugly number	172	
Searching & Sorting				
10.1	01.06.24	Merge Sort	173	
10.2	01.06.24	Bubble Sort	174	
10.3	01.06.24	Peak Element	175	
10.4	01.06.24	Binary Search	176	
10.5	01.06.24	Frequency of Numbers	177	
Exception Handling				
11.1	02.06.24	Exception Handling-1	178	
11.2	02.06.24	Exception Handling-2	180	
11.3	02.06.24	Exception Handling-3	181	
11.4	02.06.24	Exception Handling-4	183	
11.5	02.06.24	Exception Handling-5	185	
Modules				
12.1	07.06.24	Representing unique pairs	187	
12.2	07.06.24	Calculating average	190	
12.3	07.06.24	Using dictionary	191	
12.4	07.06.24	Power of four	193	
12.5	07.06.24	Determining the total revenue	195	



01 - Introduction to Python-Variables-Datatypes

Input/Output-Formatting



Ex. No: 1.1

Date: 12.03.24

Register No.: 230701384

Name: Vishwa J

Converting Input Strings

Write a program to convert strings to an integer and float and display its type.

Sample Input:

10

10.9

Sample Output:

10,<class 'int'>

10.9,<class 'float'>

For example:

Input	Result
10	10,<class 'int'>
10.9	10.9,<class 'float'>

Program:

```
a=int(input())
```

```
print(a,end=",")
```

```
print(type(a))
```

```
b=float(input())
```



```
print(round(b,1),end=",")
```

```
print(type(b))
```

	Input	Expected	Got	
✓	10 10.9	10,<class 'int'> 10.9,<class 'float'>	10,<class 'int'> 10.9,<class 'float'>	✓
✓	12 12.5	12,<class 'int'> 12.5,<class 'float'>	12,<class 'int'> 12.5,<class 'float'>	✓
✓	89 7.56	89,<class 'int'> 7.6,<class 'float'>	89,<class 'int'> 7.6,<class 'float'>	✓
✓	55000 56.2	55000,<class 'int'> 56.2,<class 'float'>	55000,<class 'int'> 56.2,<class 'float'>	✓
✓	2541 2541.679	2541,<class 'int'> 2541.7,<class 'float'>	2541,<class 'int'> 2541.7,<class 'float'>	✓



Ex. No: 1.2

Date: 12.03.24

Register No.: 230701384

Name: Vishwa J

Gross Salary

Ramesh's basic salary is input through the keyboard. His dearness allowance is 40% of his basic salary, and his house rent allowance is 20% of his basic salary. Write a program to calculate his gross salary.

Sample Input:

10000

Sample Output:

16000

For example:

Input	Result
10000	16000

Program:

```
a=int(input())
```

```
b=a*0.6
```

```
print(round(a+b))
```



	Input	Expected	Got	
✓	10000	16000	16000	✓
✓	20000	32000	32000	✓
✓	28000	44800	44800	✓
✓	5000	8000	8000	✓

Ex. No. :1.3

Date: 12.03.24

Register No.: 230701384

Name: Vishwa J

Square Root

Write a simple python program to find the square root of a given floating point number. The output should be displayed with 3 decimal places.

Sample Input:

8.00

Sample Output:

2.828

For example:

Input	Result
14.00	3.742

Program:

```
import math
```

```
a=float(input())
```

```
b=math.sqrt(a)
```



```
print(format(b, ".3f"))
```

	Input	Expected	Got	
✓	8.00	2.828	2.828	✓
✓	14.00	3.742	3.742	✓
✓	4.00	2.000	2.000	✓
✓	487	22.068	22.068	✓



Ex. No. : 1.4

Date: 12.03.24

Register No.: 230701384

Name: Vishwa J

Gain percent

Alfred buys an old scooter for Rs. X and spends Rs. Y on its repairs. If he sells the scooter for Rs. Z ($Z > X + Y$). Write a program to help Alfred to find his gain percent. Get all the above-mentioned values through the keyboard and find the gain percent.

Input Format:

The first line contains the Rs X

The second line contains Rs Y

The third line contains Rs Z

Sample Input:

10000

250

15000

Sample Output:

46.34 is the gain percent.

For example:

Input	Result
45500 500 60000	30.43 is the gain percent.



Program:

```
a=int(input())
b=int(input())
c=int(input())
d=a+b
e=c-d
f=(e/d)*100
print(format(f,".2f"),"is the gain percent.")
```

	Input	Expected	Got	
✓	10000 250 15000	46.34 is the gain percent.	46.34 is the gain percent.	✓
✓	45500 500 60000	30.43 is the gain percent.	30.43 is the gain percent.	✓
✓	5000 0 7000	40.00 is the gain percent.	40.00 is the gain percent.	✓
✓	12500 5000 18000	2.86 is the gain percent.	2.86 is the gain percent.	✓



Ex. No.: 1.5

Date: 12.03.24

Register No.: 230701384

Name: Vishwa J

Deposits

In many jurisdictions, a small deposit is added to drink containers to encourage people to recycle them. In one particular jurisdiction, drink containers holding one liter or less have a \$0.10 deposit and drink containers holding more than one liter have a \$0.25 deposit. Write a program that reads the number of containers of each size (less and more) from the user. Your program should continue by computing and displaying the refund that will be received for returning those containers. Format the output so that it includes a dollar sign and always displays exactly two decimal places.

Sample Input

10

20

Sample Output

Your total refund will be \$6.00.

For example:

Input	Result
20 20	Your total refund will be \$7.00.

Program:

```
a=int(input())
```

```
b=int(input())
```

```
c=a*0.1+b*0.25
```



```
print("Your total refund will be $",format(c, ".2f"), ".",sep="")
```

	Input	Expected	Got	
✓	20 20	Your total refund will be \$7.00.	Your total refund will be \$7.00.	✓
✓	11 22	Your total refund will be \$6.60.	Your total refund will be \$6.60.	✓
✓	123 200	Your total refund will be \$62.30.	Your total refund will be \$62.30.	✓
✓	76 38	Your total refund will be \$17.10.	Your total refund will be \$17.10.	✓



Ex. No.: 1.6

Date: 12.03.24

Register No.: 230701384

Name: Vishwa J

Carpenter

Justin is a carpenter who works on an hourly basis. He works in a company where he is paid Rs 50 for an hour on weekdays and Rs 80 for an hour on weekends. He works 10 hrs more on weekdays than weekends. If the salary paid for him is given, write a program to find the number of hours he has worked on weekdays and weekends.

Hint:

If the final result(hrs) are in -ve convert that to +ve using abs() function

The abs() function returns the absolute value of the given number.

```
number = -20
absolute_number = abs(number)
print(absolute_number)
# Output: 20
```

Sample Input:

450

Sample Output:

weekdays 10.38

weekend 0.38

For example:

Input	Result
450	weekdays 10.38 weekend 0.38



Program:

```
a=int(input())
b=((500-a)/130)
b=abs(b)
c=b+10
print("weekdays",format(c,".2f"))
print("weekend",format(b,".2f"))
```

	Input	Expected	Got	
✓	450	weekdays 10.38 weekend 0.38	weekdays 10.38 weekend 0.38	✓
✓	500	weekdays 10.00 weekend 0.00	weekdays 10.00 weekend 0.00	✓
✓	10000	weekdays 83.08 weekend 73.08	weekdays 83.08 weekend 73.08	✓
✓	6789	weekdays 58.38 weekend 48.38	weekdays 58.38 weekend 48.38	✓

