

RAJALAKSHMI ENGINEERING COLLEGE
RAJALAKSHMI NAGAR, THANDALAM - 602 105



RAJALAKSHMI
ENGINEERING COLLEGE

CS23221

PYTHON PROGRAMMING LAB

Laboratory Observation Note Book

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YEAR/BRANCH/SECTION: Ist YEAR /CSBS/B

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SEMESTER: II

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01 - Introduction to Python-Variables-Datatypes

Input/Output-Formatting

Ex. No. : 1.1 Date: 13.03.2024

Register No.: 231401097 Name: SHEBA CHERIAN

Converting Input Strings

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

Sample Output:

10,<class 'int'>

10.9,<class 'float'>

For example:

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

```
a=input()
```

```
b=input()
```

```
c=int(a)
```



```
d=float(b)
```

```
print(c,type(c),sep=",")
```

```
print("{:0.1f}".format(d),type(d),sep=",")
```

	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'>	✓

Passed all tests! ✓

Correct

Marks for this submission: 1.00/1.00.

Ex. No. : 1.2 Date: 13.03.2024

Register No.: 231401097 Name: SHEBA CHERIAN

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

```
s=int(input())
da=s*0.4
ha=s*0.2
print(int(s+da+ha))
```

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

Passed all tests! ✓

Correct

Marks for this submission: 1.00/1.00.

Ex. No. : 1.3 Date: 13.03.2024

Register No.: 231401097 Name: SHEBA CHERIAN

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

```
import math
a=float(input())
s=math.sqrt(a)
print("{:.3f}".format(s))
```

	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	✓

Passed all tests! ✓

Correct

Marks for this submission: 1.00/1.00.

Ex. No. : 1.4 Date: 13.03.2024

Register No.: 231401097 Name: SHEBA CHERIAN

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
4550 0 500 6000 0	30.43 is the gain percent.

```

buys=int(input())
repair=int(input())
sells=int(input())
g=((sells-(buys+repair))/(buys+repair))*100
print("{:.2f}".format(g), "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.	✓

Passed all tests! ✓

Correct

Marks for this submission: 1.00/1.00.

Ex. No. : 1.5 Date: 13.03.2024

Register No.: 231401097 Name: SHEBA CHERIAN

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	Your total refund will be \$7.00.
20	

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

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

```
c=a*0.1
```

```
d=b*0.25
```

```
e=c+d
```



```
print("Your total refund will be ${:.2f}.".format(e))
```

	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.	✓

Passed all tests! ✓

Correct

Marks for this submission: 1.00/1.00.

Ex. No. : 1.6 Date: 13.03.2024

Register No.: 231401097 Name: SHEBA CHERIAN

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

```
s=int(input())
a=(500-s)/130
print("weekdays {:.2f}".format(abs(a)+10))
print("weekend {:.2f}".format(abs(a)))
```

	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	✓

Passed all tests! ✓

Correct

Marks for this submission: 1.00/1.00.

02- Operators in Python

Ex. No. : 2.1 Date: 19.03.2024

Register No.: 231401097 Name: SHEBA CHERIAN

Widgets and Gizmos

An online retailer sells two products: widgets and gizmos. Each widget weighs 75 grams. Each gizmo weighs 112 grams. Write a program that reads the number of widgets and the number of gizmos from the user. Then your program should compute and display the total weight of the parts.

Sample Input

10

20

Sample Output

The total weight of all these widgets and gizmos is 2990 grams.

For example:

Input	Result
10 20	The total weight of all these widgets and gizmos is 2990 grams.

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

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

```
print("The total weight of all these widgets and gizmos is",((a*75)+(b*112)),"grams.")
```

	Input	Expected	Got
✓	10 20	The total weight of all these widgets and gizmos is 2990 grams.	The to

Passed all tests! ✓

Correct

Marks for this submission: 10.00/10.00.

Ex. No. : 2.2 Date: 19.03.2024

Register No.: 231401097Name: SHEBA CHERIAN

[Doll Sings](#)

Department of Computer Science and Engineering | Rajalakshmi Engineering College .

In London, every year during Dasara there will be a very grand doll show. People try to invent new dolls of different varieties. The best-sold doll's creator will be awarded with a cash prize. So people broke their heads to create dolls innovatively. Knowing this competition, Mr.Lokpaul tried to create a doll that sings only when an even number is pressed and the number should not be zero and greater than 100.

IF Lokpaul wins print true, otherwise false.

Sample Input

10

Sample Output

True

Explanation:

Since 10 is an even number and a number between 0 and 100, True is printed

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

```
if(a>0 and a<100 and a%2==0):
```

```
    print("True")
```

```
else:
```

```
    print("False")
```

	Input	Expected	Got	
✓	56	True	True	✓
✓	101	False	False	✓
✓	-1	False	False	✓

Passed all tests! ✓

Correct

Marks for this submission: 1.00/1.00.

Ex. No. : 2.3 Date: 19.03.2024

Register No.: 231401097 Name: SHEBA CHERIAN

Birthday Party

Mr. X's birthday is in next month. This time he is planning to invite N of his friends. He wants to distribute some chocolates to all of his friends after the party. He went to a shop to buy a packet of chocolates. At the chocolate shop, 4 packets are there with different numbers of chocolates. He wants to buy such a packet which contains a number of chocolates, which can be distributed equally among all of his friends. Help Mr. X to buy such a packet.

Input Given:

N-No of friends

P1,P2,P3 AND P4-No of chocolates

OUTPUT:

"True" if he can buy that packet and "False" if he can't buy that packet.

SAMPLE INPUT AND OUTPUT:

5

25

12

10

9

OUTPUT

True False True False

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

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

```
c=int(input())
```

```
d=int(input())
```

```
e=int(input())
```

```
print(b%a==0,c%a==0,d%a==0,e%a==0)
```


	Input	Expected	Got	
✓	5 25 23 20 10	True False True True	True False True True	✓
✓	4 23 24 21 12	False True False True	False True False True	✓
✓	8 64 8 16 32	True True True True	True True True True	✓

Passed all tests! ✓

Correct

Marks for this submission: 1.00/1.00.

Ex. No. : 2.4 Date: 19.03.2024

Register No.: 231401097 Name: SHEBA CHERIAN

Hamming Weight

Write a python program that takes a integer between 0 and 15 as input and displays the number of '1' s in its binary form.(Hint:use python bitwise operator.

Sample Input

3

Sample Output:

2

Explanation:

The binary representation of 3 is 011, hence there are 2 ones in it. so the output is 2.

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

```
n=bin(a)
```

```
n=n.replace("0b","")
```

```
s=str(n)
```

```
c=list(s)
```

```
d=0
```

```
for i in range(len(c)):
```

```
    if(int(c[i])==1):
```

```
        d+=1
```

print(d)

	Input	Expected	Got	
✓	3	2	2	✓
✓	5	2	2	✓
✓	15	4	4	✓

Passed all tests! ✓

Correct

Marks for this submission: 1.00/1.00.

Ex. No. : 2.5 Date: 19.03.2024

Register No.: 231401097 Name: SHEBA CHERIAN

Compound Interest

Pretend that you have just opened a new savings account that earns 4 percent interest per year. The interest that you earn is paid at the end of the year, and is added to the balance of the savings account. Write a program that begins by reading the amount of money deposited into the account from the user. Then your program should compute and display the amount in the savings account after 1, 2, and 3 years. Display each amount so that it is rounded to 2 decimal places.

Sample Input:

10000

Sample Output:

Balance as of end of Year 1: \$09700.00.

Balance as of end of Year 2: \$10816.00.

Balance as of end of Year 3: \$11248.64

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

```
b=(a*0.04)+a
```

```
c=b+(b*0.04)
```

```
d=c+(c*0.04)
```

```
print("Balance as of end of Year 1: ${:.2f}.".format(b))
```

```
print("Balance as of end of Year 2: ${:.2f}.".format(c))
```

```
print("Balance as of end of Year 3: ${:.2f}.".format(d))
```

	Input	Expected	Got
✓	10000	Balance as of end of Year 1: \$10400.00. Balance as of end of Year 2: \$10816.00. Balance as of end of Year 3: \$11248.64.	Balance as of end of Year 1: \$ Balance as of end of Year 2: \$ Balance as of end of Year 3: \$
✓	20000	Balance as of end of Year 1: \$20800.00. Balance as of end of Year 2: \$21632.00. Balance as of end of Year 3: \$22497.28.	Balance as of end of Year 1: \$ Balance as of end of Year 2: \$ Balance as of end of Year 3: \$

Passed all tests! ✓

Correct

Marks for this submission: 1.00/1.00.

Ex. No. : 2.6 Date: 19.03.2024

Register No.: 231401097 Name: SHEBA CHERIAN

Eligible to donate blood

A team from the Rotract club had planned to conduct a rally to create awareness among the Coimbatore people to donate blood. They conducted the rally successfully. Many of the Coimbatore people realized it and came forward to donate their blood to nearby blood banks. The eligibility criteria for donating blood are people should be above or equal to 18 and his/ her weight should be above 40. There was a huge crowd and staff in the blood bank found it difficult to manage the crowd. So they decided to keep a system and ask the people to enter their age and weight in the system. If a person is eligible he/she will be allowed inside.

Write a program and feed it to the system to find whether a person is eligible or not.

Input Format:

Input consists of two integers that correspond to the age and weight of a person respectively.

Output Format:

Display True(IF ELIGIBLE)

Display False (if not eligible)

Sample Input

19

45

Sample Output

True

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



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

```
if(a>=18 and b>40):
```

```
    print("True")
```

```
else:
```

```
    print("False")
```

	Input	Expected	Got	
✓	19 45	True	True	✓
✓	18 40	False	False	✓
✓	18 42	True	True	✓
✓	16 45	False	False	✓

Passed all tests! ✓

Correct

Marks for this submission: 1.00/1.00.

Ex. No. : 2.7 Date: 19.03.2024

Register No.: 231401097 Name: SHEBA CHERIAN

C or D

Mr. Ram has been given a problem kindly help him to solve it. The input of the program is either 0 or 1. IF 0 is the input he should display "C" if 1 is the input it should display "D". There is a constraint that Mr. Ram should use either logical operators or arithmetic operators to solve the problem, not anything else.

Hint:

Use ASCII values of C and D.

Input Format:

An integer x, $0 \leq x \leq 1$.

Output Format:

output a single character "C" or "D" depending on the value of x.

Input 1:

0

Output 1:

C

Input 2:

1

Output 1:

D

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

```
if(a==0):  
    print("C")  
else:  
    print("D")
```

	Input	Expected	Got	
✓	0	C	C	✓
✓	1	D	D	✓

Passed all tests! ✓

Correct

Marks for this submission: 1.00/1.00.

Ex. No. : 2.8 Date: 19.03.2024

Register No.: 231401097 Name: SHEBA CHERIAN

Troy Battle

In the 1800s, the battle of Troy was led by Hercules. He was a superstitious person. He believed that his crew can win the battle only if the total count of the weapons in hand is in multiple of 3 and the soldiers are in an even number of count. Given the total number of weapons and the soldier's count, Find whether the battle can be won or not according to Hercules's belief. If the battle can be won print True otherwise print False.

Input format:

Line 1 has the total number of weapons

Line 2 has the total number of Soldiers.

Output Format:

If the battle can be won print True otherwise print False.

Sample Input:

32

43

Sample Output:

False

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

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

```
if(a%3==0 and b%2==0):
```

```
    print("True")
```

else:

```
print("False")
```

	Input	Expected	Got	
✓	32 43	False	False	✓
✓	273 7890	True	True	✓
✓	800 4590	False	False	✓
✓	6789 32996	True	True	✓

Passed all tests! ✓

Correct

Marks for this submission: 1.00/1.00.

Ex. No. : 2.9 Date: 19.03.2024

Register No.: 231401097 Name: SHEBA CHERIAN

Tax and Tip

The program that you create for this exercise will begin by reading the cost of a meal ordered at a restaurant from the user. Then your program will compute the tax and tip for the meal. Use your local tax rate (5 percent) when computing the amount of tax owing. Compute the tip as 18 percent of the meal amount (without the tax). The output from your program should include the tax amount, the tip amount, and the grand total for the meal including both the tax and the tip. Format the output so that all of the values are displayed using two decimal places.

Sample Input

100

Sample Output

The tax is 5.00 and the tip is 18.00, making the total 123.00

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

```
print("The tax is {:.2f} and the tip is {:.2f}, making the total {:.2f}".format((a*0.05),  
(a*0.18),(a+((a*0.05)+(a*0.18)))))
```

	Input	Expected	Got
✓	100	The tax is 5.00 and the tip is 18.00, making the total 123.00	The tax
✓	250	The tax is 12.50 and the tip is 45.00, making the total 307.50	The tax

Passed all tests! ✓

Correct

Marks for this submission: 1.00/1.00.

Ex. No. : 2.10 Date: 19.03.2024

Register No.: 231401097 Name: SHEBA CHERIAN

Return last digit of the given number

Write a program that returns the last digit of the given number. Last digit is being referred to the least significant digit i.e. the digit in the ones (units) place in the given number.

The last digit should be returned as a positive number.

For example,

if the given number is 197, the last digit is 7

if the given number is -197, the last digit is 7

For example:

Input	Result
123	3

```
a=int(input())  
print(abs(a)%10)
```

	Input	Expected	Got	
✓	197	7	7	✓
✓	-197	7	7	✓

Passed all tests! ✓

Correct

Marks for this submission: 1.00/1.00.

03 - Selection Structures in Python

Ex. No. : 3.1 Date: 27.03.2024

Register No.: 231401097 Name: SHEBA CHERIAN

Admission Eligibility

Write a program to find the eligibility of admission for a professional course based on the following criteria:

Marks in Maths ≥ 65

Marks in Physics ≥ 55

Marks in Chemistry ≥ 50

Or

Total in all three subjects ≥ 180

Sample Test Cases

Test Case 1

Input

70

60

80

Output

The candidate is eligible

Test Case 2

Input

50

80

80

Output

The candidate is eligible

Test Case 3

Input

50

60

40

Output

The candidate is not eligible

For example:

Input	Result
50 80 80	The candidate is eligible

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

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

```
c=int(input())
```

```
if(a>=65 and b>=55 and c>=50):
```

```
    print("The candidate is eligible")
```

```
elif(a+b+c>=180):
```

```
    print("The candidate is eligible")
```

else:

```
print("The candidate is not eligible")
```

	Input	Expected	Got	
✓	70 60 80	The candidate is eligible	The candidate is eligible	✓
✓	50 80 80	The candidate is eligible	The candidate is eligible	✓
✓	50 60 40	The candidate is not eligible	The candidate is not eligible	✓
✓	20 10 25	The candidate is not eligible	The candidate is not eligible	✓

Passed all tests! ✓

Correct

Marks for this submission: 1.00/1.00.

Ex. No. : 3.2 Date: 27.03.2024

Register No.: 231401097 Name: SHEBA CHERIAN



Department of Computer Science and Engineering | Rajalakshmi Engineering College .

Classifying Triangles

A triangle can be classified based on the lengths of its sides as equilateral, isosceles or scalene. All three sides of an equilateral triangle have the same length. An isosceles triangle has two sides that are the same length, and a third side that is a different length. If all of the sides have different lengths then the triangle is scalene.

Write a program that reads the lengths of the three sides of a triangle from the user. Then display a message that states the triangle's type.

Sample Input 1

60

60

60

Sample Output 1

That's a equilateral triangle

For example:

Input	Result
40 40 80	That's a isosceles triangle

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

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

```
c=int(input())
```

```
if(a==b and b==c):
```

```

print("That's a equilateral triangle")

elif(a!=b and b==c or a==b and b!=c):

    print("That's a isosceles triangle")

elif(a!=b and b!=c):

    print("That's a scalene triangle")

```

	Input	Expected	Got	
✓	60 60 60	That's a equilateral triangle	That's a equilateral triangle	✓
✓	40 40 80	That's a isosceles triangle	That's a isosceles triangle	✓
✓	50 60 70	That's a scalene triangle	That's a scalene triangle	✓
✓	50 50 80	That's a isosceles triangle	That's a isosceles triangle	✓
✓	10 10 10	That's a equilateral triangle	That's a equilateral triangle	✓

Passed all tests! ✓

Correct

Marks for this submission: 1.00/1.00.

Ex. No. : 3.3 Date: 27.03.2024

Register No.: 231401097 Name: SHEBA CHERIAN

Electricity Bill

Write a program to calculate and print the Electricity bill where the unit consumed by the user is given from test case. It prints the total amount the customer has to pay.

The charge are as follows:

Unit	Charge / Unit
Upto 199	@1.20
200 and above but less than 400	@1.50
400 and above but less than 600	@1.80
600 and above	@2.00

If bill exceeds Rs.400 then a surcharge of 15% will be charged and the minimum bill should be of Rs.100/-

Sample Test Cases

Test Case 1

Input

50

Output

100.00

Test Case 2

Input

300

Output

517.50

For example:

Input	Result
500	1035.00

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

```
b=0
```

```
if(a<=199):
```

```
    b=a*1.2
```

```
elif(200<=a<400):
```

```
    b=a*1.5
```

```
elif(400<=a<600):
```

```
    b=a*1.8
```

```
elif(a>600):
```

```
    b=a*2.0
```

```
if (int(b)<100):
```

```
    print("{:.2f}".format(100))
```

```
else:
```

```
    if(b>400.00):
```

```
print("{:.2f}".format((b+(b*0.15))))
```

else:

```
print("{:.2f}".format(b))
```

	Input	Expected	Got	
✓	50	100.00	100.00	✓
✓	100.00	120.00	120.00	✓
✓	500	1035.00	1035.00	✓
✓	700	1610.00	1610.00	✓

Passed all tests! ✓

Correct

Marks for this submission: 1.00/1.00.

Ex. No. : 3.4 Date: 27.03.2024

Register No.: 231401097 Name: SHEBA CHERIAN

IN/OUT

Ms. Sita, the faculty handling programming lab for you is very strict. Your seniors have told you that she will not allow you to enter the week's lab if you have not completed atleast half the number of problems given last week. Many of you didn't understand this statement and so they requested the good programmers from your batch to write a program to find whether a student will be allowed into a week's lab given the number of problems given last week and the number of problems solved by the student in that week.

Input Format:

Input consists of 2 integers.

The first integer corresponds to the number of problems given and the second integer corresponds to the number of problems solved.

Output Format:

Output consists of the string "IN" or "OUT".

Sample Input and Output:

Input

8

3

Output

OUT

For example:

Input	Result
8 3	OUT

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

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

```
c=(a/2)
```

```
if(c>b):
```

```
    print("OUT")
```

```
else:
```

```
    print("IN")
```


	Input	Expected	Got	
✓	8 3	OUT	OUT	✓
✓	8 5	IN	IN	✓
✓	20 9	OUT	OUT	✓
✓	50 31	IN	IN	✓

Passed all tests! ✓

Correct

Marks for this submission: 1.00/1.00.

Ex. No. : 3.5 Date: 27.03.2024

Register No.: 231401097 Name: SHEBA CHERIAN

Vowel or Consonant

In this exercise you will create a program that reads a letter of the alphabet from the user. If the user enters a, e, i, o or u then your program should display a message indicating that the entered letter is a vowel. If the user enters 'y' then your program should display a message indicating that sometimes y is a vowel, and sometimes y is a consonant. Otherwise your program should display a message indicating that the letter is a consonant.

Sample Input 1

i

Sample Output 1

It's a vowel.

Sample Input 2

y