

## Lab1

Create 8 different Python files(.py) to write following programs.

1. Write a Python program to compute the volume of a sphere whose base radius is read off from the keyboard.

$$\text{Volume} = (4/3) \pi r^3$$

**Test cases**

**Input :** r=2.5

**Output :** 65.45

**Input :** r=5.5

**Output :** 696.91

2. Write a Python program to input the number of days and print them in months, week, and day format. Assume that a month contains 4 weeks and 1 week contain 7 days. For eg: 129 days = 4 months, 1 Week, 2 days, and 25 days = 0 month, 3 weeks and 4 days

3. Write a Python program to input time in seconds and print it in the form HH:MM:SS, for eg:

Input: 7907

Output: 2:11:47

Input: 1432

Output: 00:23:52

4. Write a complete Python program that takes as input the coordinates of two points in the 3D plane and prints out the Euclidian distance between them.

If the points  $(x_1, y_1, z_1)$  and  $(x_2, y_2, z_2)$  are in 3-dimensional space, then the Euclidean distance between them is  $\sqrt{(x_2-x_1)^2+(y_2-y_1)^2+(z_2-z_1)^2}$

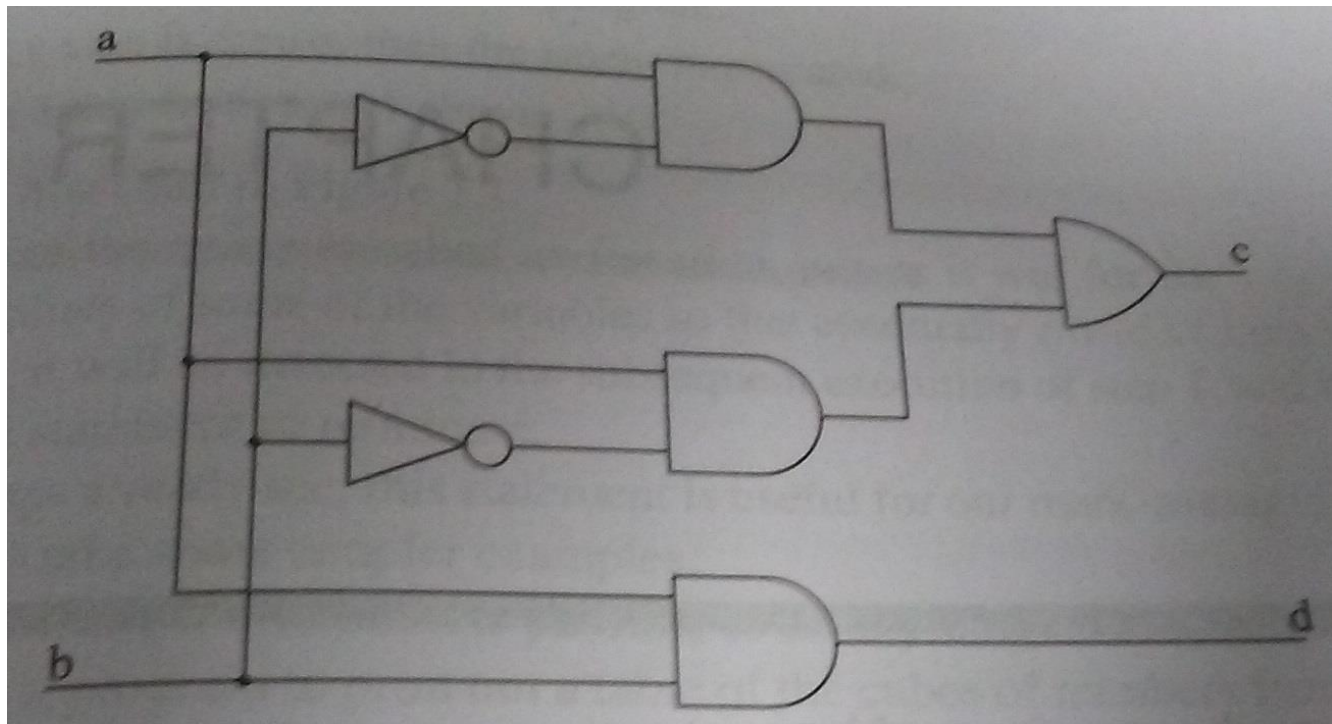
For example, the Euclidean distance between  $(-1, 2, 3)$  and  $(4, 0, -3)$  is 8.06225774829855

For example, the Euclidean distance between  $(3, 6, 5)$  and  $(7, -5, 1)$  is 12.36931687685298

5. Write a Python program that calculates and prints the number of seconds in a year(assume that a year has 365.25 days).

6. Light travels at  $3 \times 10^8$  meters per second. A light-year is the distance a light beam travels in one year. Write a Python program that calculates and displays the value of a light-year (assume that a year has 365.25 days).

7. Consider following digital circuit.



Write expressions of the outputs c and d. Write a Python program that reads combinations(0 and 1) of the inputs a and b and then accordingly compute the values of the outputs c and d. Test your program for all four combinations of 0 and 1.

8. Write a Python program that ask the restaurant cashier to enter in the price of an item and the program will compute CGST and SGST amount and display the total bill amount after adding CGST and SGST and finally rounding on customer's total bill amount. Assume that the CGST and SGST rates is equal to 2.5% each and the total amount owing is equal to the item price plus the amount of CGST and SGST. After this your program should prompt the cashier for the amount paid by the customer and display the amount of change that is owing. Your program must display the fractional rupees values to a maximum of two decimal places.

Note : Use round function for rounding total bill amount

```
>>> round(341.61)
```

```
342
```

```
>>> round(341.45)
```

```
341
```

```
>>> round(341.456789, 2)
```

```
341.46
```

```
>>> print("%.2f" % 5.98765)
```

```
5.99
```

**Input**

Net Total : 160.00

CGST : 4.00

SGST : 4.00

**Output**

Grand Total : 168.00

Rounded Total : 168.00

Cash : 200

Change : 32

**Input**

Net Total : 325.33

CGST : 8.13

SGST : 8.13

**Output**

Grand Total : 341.59

Rounded Total : 342

Cash : 500

Change : 158

**Input**

Net Total : 319.00

CGST : 7.97

SGST : 7.97

**Output**

Grand Total : 334.94

Rounded Total : 335

Cash : 500

Change : 165