03-SelectionStructuresinPython

Ex. No. : 3.1 Date: 12.04.24

Register No.: 230701369 Name VALLURU

VARSHINI

ClassifyingTriangles

Atrianglecanbeclassifiedbasedonthelengthsofitssidesasequilateral,isosceles or scalene.Allthreesidesofanequilateraltrianglehavethesamelength.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 theuser. Then display a message that states the triangle's type.

SampleInput1

60

60

60

SampleOutput1

That'saequilateraltriangle

Sample Input 2

40

40

80

SampleOutput2

That's a isosceles triangle

Sample Input 3

50

60

70

SampleOutput3

That'sascalene triangle

Forexample:

Input	Result
60 60 60	That'saequilateraltriangle
40 40 80	That'saisoscelestriangle

Program:

```
a=int(input())

b=int(input())

c=int(input())

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

    print("That's","a","equilateral triangle")

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

    print("That's","a","scalene triangle")

else:

    print("That's","a","isoscelestriangle")
```

	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	✔

Ex.No. : 3.2 **Date:12.04.24**

RegisterNo.:230701369 **Name:VALLURU VARSHINI**

VowelorConsonant

Inthisexerciseyouwillcreateaprogramthatreadsaletterofthealphabetfrom the user.Iftheuserentersa,e,i,ooruthenyourprogramshoulddisplaya messageindicating that the entered letter is a vowel. If the user enters'y' then your programshoulddisplayamessageindicatingthatsometimesyisavowel,andsometimes yisa consonant.Otherwiseyourprogram shoulddisplaya messageindicatingthat the letter is a consonant.

SampleInput1 i

SampleOutput1 It's

a vowel.

SampleInput2

y

SampleOutput2

Sometimesit'savowel...Sometimesit'saconsonant.

SampleInput3

c

SampleOutput3 It's

a consonant.

Forexample:

Input	Result
y	Sometimesit'savowel...Sometimesit'saconsonant.
u	It'savowel.
p	It'saconsonant.

.

Program:

```
x=input()
if(x=='y'):
    print("Sometimesit'savowel...Sometimesit'saconsonant.") elif(x=='a'
or x=='e' or x=='i' or x=='o' or x=='u'):
    print("It'savowel.") else:
    print("It'saconsonant.")
```

	Input	Expected	Got
✔	i	It's a vowel.	It's a vowel.
✔	y	Sometimes it's a vowel... Sometimes it's a consonant.	Sometimes it's a vowel...
✔	c	It's a consonant.	It's a consonant.
✔	e	It's a vowel.	It's a vowel.
✔	r	It's a consonant.	It's a consonant.

Ex. No. : 3.3 Date: 12.04.24

Register No.: 230701369 Name: VALLURU

VARSHINI

ElectricityBill

Write a program to calculate and print the Electricity bill wheretheunit consumed by theuserisgivenfromtestcase.Itprintsthetotalamountthecustomerhastopay.The charge are as follows:

Unit	Charge/Unit
Upto199	@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 billshould be of Rs.100/-

SampleTestCases

Test Case 1

Input

50

Output

100.00

TestCase2

Input

300

Output

517.50

Forexample:

Input	Result
100.00	120.00

Program:

```
a=float(input())
if(a<200):
    b=a*1.20
    if(b<=100):
        b=100
        print(format(b,".2f"))
    else:
        print(format(b,".2f"))
elif(a>=200 and a<400):
    c=a*1.50
    if(c>=400):
       print(format(c*0.15+c,".2f"))
    else:
       print(format(c,".2f"))
elif(a>=400 and a<600):
    d=a*1.80
    print(format(d*0.15+d,".2f"))
elif(a>600):
```

e=a*2.00

print(format(e*0.15+e,".2f"))

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

Ex.No. : 3.4 **Date:12.04.24**

RegisterNo.:230701369 **Name:VALLURU VARSHINI**

IN/OUT

Ms. Sita, the faculty handling programming lab for you is very strict. Your seniors havetold 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 givenlastweekandthe numberofproblemssolvedbythestudentinthat week.

InputFormat:

Inputconsistsof2integers.

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

OutputFormat:

Output consists of the string “IN” or“OUT”.

Sample Input and Output:

Input

8

3

Output

OUT

Forexample:

Input	Result
8 3	OUT

Program:

```
a=int(input())
b=int(input())
c=a//2
if(b>=c):
    print("IN")
else:
    print("OUT")
```

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

Ex.No. : 3.5 **Date:12.04.24**

RegisterNo.:230701369 **Name:VALLURU VARSHINI**

Secondlastdigit

Writeaprogramthatreturnsthesecondlastdigitofthegivennumber.Secondlastdigit is being referred 10the digit in the tens place in the given number.

Forexample,ifthegivennumberis197,thesecondlastdigitis9.

Note1 - The second last digit should be returned as a positive number. i.e. if the given number is -197, the second last digit is 9.

Note2 - If the given number is a single digit number, then the second last digit does not exist. In such cases, the program should return -1. i.e. if the given number is 5, the second last digit should be returned as -1.

Forexample:

Input	Result
197	9

Program:

```
a=int(input())
b=abs(a)
```

```
if(b>=10):
c=b//10
d=c%10
print(d)
else:
    print(-1)
```

	Input	Expected	Got	
✔	197	9	9	✔
✔	-197	9	9	✔
✔	5	-1	-1	✔
✔	123456	5	5	✔
✔	8	-1	-1	✔

Ex.No. : 3.6 **Date:12.04.24**

RegisterNo.:230701369 **Name:VALLURU VARSHINI**

ChineseZodiac

The Chinese zodiac assigns animals to years in a 12 year cycle. One 12 year cycle isshown in the table below. The pattern repeats from there, with 2012 being another year of the dragon, and 1999 being another year of the hare.

Year Animal

2000Dragon

2001Snake

2002Horse

2003Sheep

2004Monkey

2005Rooster

2006Dog

2007Pig

2008Rat

2009Ox

2010Tiger

2011Hare

Write a program that reads a year from the user and displays the animal associated with that year. Your program should work correctly for any year greater than or equal to zero, not just the ones listed in the table.

SampleInput1

2010

SampleOutput1

2010istheyearoftheTiger.

Sample Input 2

2020

SampleOutput2

2020istheyearoftheRat.

Program:

```
a=int(input())
b=a%12
if(b==0):
    print(a,"istheyearoftheMonkey.")
elif(b==1):
    print(a,"istheyearoftheRooster.")
elif(b==2):
    print(a,"istheyearoftheDog.")
elif(b==3):
    print(a,"istheyearofthePig.")
elif(b==4):
    print(a,"istheyearoftheRat.")
elif(b==5):
    print(a,"istheyearoftheOx.")
elif(b==6):
    print(a,"istheyearoftheTiger.")
elif(b==7):
    print(a,"istheyearoftheHare.")
elif(b==8):
    print(a,"istheyearoftheDragon.")
elif(b==9):
```

```
    print(a,"istheyaeroftheSnake.")
elif(b==10):
    print(a,"istheyearoftheHorse.")
elif(b==11):
    print(a,"istheyearoftheSheep.")
```

	Input	Expected	Got	
✔	2010	2010 is the year of the Tiger.	2010 is the year of the Tiger.	✔
✔	2020	2020 is the year of the Rat.	2020 is the year of the Rat.	✔

Ex.No. : 3.7 **Date:12.04.24**

RegisterNo.:230701369 **Name:VALLURU VARSHINI**

Pythagoreantriple

ThreenumbersformaPythagoreantripleifthesumofsquaresoftwonumbersisequal to the square of the third.

Forexample,3,5and4formaPythagoreantriple,since3*3+4*4=25=5*5 You are given three integers, a, b, and c. They need not be given in increasing order. If they form a Pythagorean triple, then print "Yes", otherwise, print "No".

SampleInput

3

5

4

SampleOutput

yes

SampleTestCases

Test Case 1

Input

3

5

4

Output

yes

TestCase2

Input

5

8

2

Output

no

Program:

```
a=int(input())
b=int(input())
c=int(input())
if(a*a+b*b==c*corb*b+c*c==a*aorc*c+a*a==b*b): print("yes")
else:
   print("no")
```

	Input	Expected	Got	
✔	3 5 4	yes	yes	✔
✔	5 8 2	no	no	✔

Ex.No. : 3.8 **Date:12.04.24**

RegisterNo.:230701369 **Name:VALLURU VARSHINI**

LeapYear

Most years have 365 days. However, the time required for the Earth to orbit the Sunis actually slightly more than that. As a result, an extra day, February 29, is included in some years to correct for this difference. Such years are referred to as leap years.The rules for determining whether or not a year is a leap year follow:

- Anyyearthatisdivisibleby 400isaleapyear.
- Oftheremainingyears,anyyearthatisdivisibleby100isnotaleapyear.
- Oftheremainingyears,any yearthatisdivisibleby4isa leapyear.
- Allotheryearsarenotleap years.

Writeaprogramthatreadsayearfromtheuseranddisplaysamessageindicating whether or not it is a leap year.

SampleInput1

1900

SampleOutput1

1900isnotaleapyear.

Sample Input 2

2000

Sample Output 2

2000isaleapyear.

Program:

```
a=int(input())
b=a%100
c=a%400
if(b==0):
    if(c==0):
        print(a,"isaleapyear.")
    else:
```

```
        print(a,"isnotaleapyear.")
elif(a%4==0):
    print(a,"isaleapyear.")
```

	Input	Expected	Got	
✔	1900	1900 is not a leap year.	1900 is not a leap year.	✔
✔	2000	2000 is a leap year.	2000 is a leap year.	✔
✔	2100	2100 is not a leap year.	2100 is not a leap year.	✔
✔	2400	2400 is a leap year.	2400 is a leap year.	✔

Ex. No. : 3.9 Date: 12.04.24

Register No.: 230701369 NameVALLURU

VARSHINI

Monthnametodays

The length of a month varies from 28 to 31 days. In this exercise you will createa programthat reads the name of a month from the user as a string. Then yourprogram should display the number of days in that month. Display “28 or 29 days”for February so that leap years are addressed.

Sample Input 1

FebruarySample

Output1

Februaryhas28or29daysinit. Sample

Input 2

March

Sample Output

2Marchhas31 days init.

Sample Input 3

April

SampleOutput3April

has 30 days in it. **For example:**

Input	Result
February	Februaryhas28or29daysinit.

Program:

```
odd=['January','March','May','July','August','October','December']
even=['April','June','September','November']
a=input()
if(a=='February'):
    print("Februaryhas28or29daysinit.") if a
in odd:
    print(a,"has31daysinit.") if
a in even:
    print(a,"has30daysinit.")
```

	Input	Expected	Got	
✔	February	February has 28 or 29 days in it.	February has 28 or 29 days in it.	✔
✔	March	March has 31 days in it.	March has 31 days in it.	✔
✔	April	April has 30 days in it.	April has 30 days in it.	✔
✔	May	May has 31 days in it.	May has 31 days in it.	✔

Ex. No. : 3.10 Date: 12.04.24

Register No.: 230701369 Name:VALLURU

VARSHINI

AdmissionEligibility

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

Marks in Maths >= 65

Marks in Physics >= 55

MarksinChemistry>=50 Or

Total in all three subjects >= 180

Sample Test Cases

TestCase1

Input

70

60

80

Output

Thecandidateiseligible

Test Case 2

Input

50

80

80

Output

Thecandidateiseligible

Test Case 3

Input

50

60

40

Output

Thecandidateisnoteligible

Forexample:

Input	Result
50 80 80	Thecandidateiseligible

Program:

```
a=int(input())
b=int(input())
c=int(input())
if(a>=65 and b>=55 and c>=50):
   print("Thecandidateiseligible")
elif(a+b+c>=180):
   print("Thecandidateiseligible")
else:
   print("Thecandidateisnoteligible")
```

	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	✔