RAJALAKSHMI ENGINEERING COLLEGE
An AUTONOMOUS Institution
Affiliated to ANNA UNIVERSITY, Chennai

REC-OCATS-1

CS23336-Introduction to Python Programming

Started on	Friday, 23 August 2024, 12:00 PM
State	Finished
Completed on	Sunday, 25 August 2024, 5:20 PM
Time taken	2 days 5 hours
Marks	10.00/10.00
Grade	**100.00** out of 100.00

Question 1

Correct
Mark 1.00 out of 1.00
Flag question

Question text

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

Answer:(penalty regime: 0 %)

```
p=int(input())
s=int(input())
if ((p/2)<=s):
    print("IN")
else:
    print("OUT")
```

Feedback

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.

Question 2

Correct
Mark 1.00 out of 1.00
☐ Flag question

Question text

A certain type of steel is used to test and give grade according to the following conditions.

1. Hardness of the steel must be greater than 50

2. Carbon content of the steel must be less than 0.7
3. Tensile strength must be greater than 5600

The grades awarded are as follows:

- Grade is 10 if all three conditions are met
- Grade is 9 if conditions (1) and (2) are met
- Grade is 8 if conditions (2) and (3) are met
- Grade is 7 if conditions (1) and (3) are met
- Grade is 6 if only one condition is met
- Grade is 5 if none of the three conditions are met

Write a program to display the grade of the steel, based on the values of hardness, carbon content and tensile strength of the steel, given by the user.

Input

53

0.6

5602

Output:

10

Answer:(penalty regime: 0 %)

```
h=int(input())
c=float(input())
t=int(input())
if(h>50 and c<0.7
and t>5600):
    print("10")
elif(h>50 and
c<0.7):
    print("9")
elif(c<0.7 and
t>5600):
    print("8")
elif(h>50 and
t>5600):
    print("7")
elif(h>50 or c<0.7
or t>5600):
    print("6")
```

Feedback

Input	Expected	Got
53 0.6 5602	10	10
45 0 4500	6	6

Passed all tests!

Correct

Marks for this submission: 1.00/1.00.

Question 3

Correct
Mark 1.00 out of 1.00
☐ Flag question

Question text

Given an integer N, check whether N the given number can be made a perfect square after adding 1 to it.

Input Format:

Single integer input.

Output Format:

Yes or No.

Example Input:

24

Output:

Yes

Example Input:

26

Output:

No

For example:

Input	Result
24	Yes

Answer:(penalty regime: 0 %)

```
a=int(input())
b=a+1
s=int(b**0.5)
if ((s*s)==b):
    print("Yes")
else:
    print("No")
```

Feedback

Input	Expected	Got
24	Yes	Yes
26	No	No

Passed all tests!

Correct

Marks for this submission: 1.00/1.00.

Question 4

Correct
Mark 1.00 out of 1.00
☐ Flag question

Question text

Most years have 365 days. However, the time required for the Earth to orbit the Sun is 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:

• Any year that is divisible by 400 is a leap year.

• Of the remaining years, any year that is divisible by 100 is not a leap year.

• Of the remaining years, any year that is divisible by 4 is a leap year.

• All other years are not leap years.

Write a program that reads a year from the user and displays a message indicating whether or not it is a leap year.

Sample Input 1

1900

Sample Output 1

1900 is not a leap year.

Sample Input 2

2000

Sample Output 2

2000 is a leap year.

Answer:(penalty regime: 0 %)

```
y=int(input())
if(y%400==0):
    print(f"{y} is a leap year.")
elif(y%100==0):
    print(f"{y} is not a leap year.")
elif(y%4==0):
    print(f"{y} is a leap year.")
else:
    print(f"{y} is not a leap year.")
```

Feedback

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.
2020	2020 is a leap year.	2020 is a leap year.

Passed all tests!

Correct
Marks for this submission: 1.00/1.00.

Question 5

Correct
Mark 1.00 out of 1.00
☐ Flag question

Question text

The Chinese zodiac assigns animals to years in a 12 year cycle. One 12 year cycle is shown 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

2000 Dragon

2001 Snake

2002 Horse

2003 Sheep

2004 Monkey

2005 Rooster

2006 Dog

2007 Pig

2008 Rat

2009 Ox

2010 Tiger

2011 Hare

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.

Sample Input 1

2010

Sample Output 1

2010 is the year of the Tiger.

Sample Input 2

2020

Sample Output 2

2020 is the year of the Rat.

Answer:(penalty regime: 0 %)

```
L=
['Dragon','Snake','Horse','Sheep','Monkey','Rooster','Dog','Pig','Rat','Ox','Tiger','Hare']
y=int(input())
x=((y-2000)%12)
print(f"{y} is the year of the {L[x]}.")
```

Feedback

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.

Passed all tests!

Correct
Marks for this submission: 1.00/1.00.

Question 6

Correct
Mark 1.00 out of 1.00
☐ Flag question

Question text

Write a program to determine the type of berth when the seat / berth number in the train is given.

RailwaySeat

Input Format:

Input consists of a single integer. Assume that the range of input is between 1 and 72.

Output Format:

Output consists of a single string. [Upper or Middle or Lower or Side Lower or Side Upper]

Sample Input 1:

9

Sample Output 1:

Lower Berth

Answer:(penalty regime: 0 %)

```
a=int(input())
if(a==72):
    print("Side Upper Berth")
elif(a== 1 or 4 or 9 or 12 or 17 or 20 or 25 or 28 or 33 or 36 or 41 or 44 or 49 or 52 or 57 or 60 or 65 or 68):
    print("Lower Berth")
elif(a== 2 or 5 or 10 or 13 or 18 or 21 or 26 or 29 or 34 or 37 or 45 or 50 or 53 or 58 or 61 or 66 or 69):
```

Feedback

Input	Expected	Got
9	Lower Berth	Lower Berth
72	Side Upper Berth	Side Upper Berth

Passed all tests!

Correct
Marks for this submission: 1.00/1.00.

Question 7

Correct
Mark 1.00 out of 1.00
☐ Flag question

Question text

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
100.00	120.00
500	1035.00

Answer:(penalty regime: 0 %)

```
a=float(input())
if a<200:
    charge=a*1.20
elif a<400:
    charge=a*1.50
elif a<600:
    charge=a*1.80
else:
    charge=a*2.00
if charge>400:
    charge*=1.15
if charge<100:
    charge=100
print("%.2f"%charge)
```

Feedback

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.

Question 8

Correct
Mark 1.00 out of 1.00
☐ Flag question

Question text

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

Sample Input 2

40

40

80

Sample Output 2

That's a isosceles triangle

Sample Input 3

50

60

70

Sample Output 3

That's a scalene triangle

For example:

Input	Result
60 60 60	That's a equilateral triangle
40 40 80	That's a isosceles triangle

Answer:(penalty regime: 0 %)

```
a=int(input())
b=int(input())
c=int(input())
if (a==b==c==a):
    print("That's a
equilateral triangle")
elif
(a!=b)and(b!=c)and(c
!=a):
    print("That's a
scalene triangle")
else:
    print("That's a
isosceles triangle")
```

Feedback

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.

Question 9

Correct
Mark 1.00 out of 1.00
☐ Flag question

Question text

Write a program that accepts 5 inputs and returns the count of how many of those 5 are odd.

For example,

If the five inputs are 12, 17, 19, 14, and 115, there are three odd numbers 17, 19 and 115. So, the program must return 3.

Similarly,

If the five inputs are 15, 0, -12, 19, and 28, there are two odd numbers 15 and 19. So, the program must return 2.

Observe that zero is considered an even number.

For example:

Input Result

```
12
17
19      3
14
115


15
0
-12     2
19
28
```

Answer:(penalty regime: 0 %)

```
count=0
for i in range(5):
    n=int(input())
    if n%2!=0:
        count+=1
print(count)
```

Feedback

Input	Expected	Got
12 17 19 3 14 115 15 0 -12 2 19 28	3 2	3 2

Passed all tests!

Correct
Marks for this submission: 1.00/1.00.

Question 10

Correct
Mark 1.00 out of 1.00
☐ Flag question

Question text

Write a Python program that accepts three parameters. The first parameter is an integer. The second is one of the following mathematical operators: +, -, /, or *. The third parameter will also be an integer.

The function should perform a calculation and return the results. For example, if the function is passed 6 and 4, it should return 24.

Sample Input Format:

11

+

14

Sample Output Format:

25

Answer:(penalty regime: 0 %)

```
a=int(input())
b=input()
c=int(input())
if(b=='+'):
    print(a+c)
elif(b=='-'):
    print(a-c)
elif(b=='/'):
    print(a/c)
elif(b=='|'):
    print(a or c)
elif(b=='*'):
    print(a*c)
```

Feedback

Input	Expected	Got
11 + 14	25	25
45 - 50	-5	-5
12 * 100	1200	1200
18 / 2	9.0	9.0

Passed all tests!

Correct
Marks for this submission: 1.00/1.00.

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