Rajalakshmi Engineering College

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NeoColab_REC_CS23221_Python Programming

REC_Python_Week 2_CY

Attempt : 1
Total Mark : 40
Marks Obtained : 40

Section 1 : Coding

1. Problem Statement

Taylor is tasked with a mathematical challenge that requires finding the smallest positive number divisible by all integers from 1 to n.

Help Taylor to determine the smallest positive number that is divisible by all integers from 1 to n. Make sure to employ the break statement to ensure efficiency in the program.

Input Format

The input consists of a single integer, n.

Output Format

The output displays the smallest positive number that is divisible by all integers from 1 to n.

Refer to the sample output for the formatting specifications.

Sample Test Case

Input: 10
Output: 2520

Answer

```
n = int(input())
if n < 1:
    print("Invalid input. Please enter an integer greater than or equal to 1.")
elif n == 1:
    print(1)
else:
    result = 1
    for i in range(2,n+1):
        candidate = result
        while True:
            if candidate % i == 0:
                result = candidate
                break
            candidate += result
print(result)
```

Status : Correct ***Marks : 10/10***

2. Problem Statement

John is tasked with configuring the lighting for a high-profile event, where different lighting modes affect the ambiance of the venue. He can choose from three distinct lighting modes, each requiring a specific adjustment to the initial light intensity:

Ambient Lighting (Mode 1): The intensity level is multiplied by 1.5.Stage Lighting (Mode 2): The intensity level is multiplied by 2.0.Spotlight (Mode

3): The intensity level is multiplied by 1.8.

In the event that an invalid mode is provided, the program should output an error message indicating the invalid selection.

Your task is to write a program that reads the selected lighting mode and the initial intensity level, applies the appropriate adjustment, and prints the final intensity.

Input Format

The first line of input is an integer n, representing the lighting mode.

The second line is a floating value m, representing the initial intensity level of the light.

Output Format

The output displays "Intensity: " followed by a float representing the adjusted intensity level, formatted to two decimal places, if the mode is valid.

If the mode is invalid, the output should display "Invalid".

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 1
10.0
Output: Intensity: 15.00

Answer

```
n = int(input())
m = float(input())
if n==1:
    result = m*1.5
elif n==2:
    result = m*2.0
elif n==3:
    result = m*1.8
else:
```

```
    print("Invalid")
    exit()
print("Intensity: {:.2f}".format(result))
```

Status : Correct ***Marks : 10/10***

3. Problem Statement

Nisha is a mathematics enthusiast, eager to explore the realm of twin prime numbers. The objective is to develop a program that enables the discovery and presentation of twin prime pairs.

The program should take an integer 'n' as input and generate 'n' pairs of twin primes, displaying the pairs with a difference of 2 between them.

Input Format

The input consists of a single integer, n.

Output Format

The output displays the 'n' pairs of twin primes, the pairs with a difference of 2 between them.

Refer to the sample output for the formatting specifications.

Sample Test Case

Input: 5

Output: 3 5
5 7
11 13
17 19
29 31

Answer

```
n = int(input())
if n < 1:
    print("Invalid input")
```

```
    exit()
def is_prime(num):
    if num<=1:
        return False
    if num==2:
        return True
    if num % 2 == 0:
        return False
    for i in range(3,int(num**0.5) + 1,2):
        if num % i == 0:
            return False
    return True
count = 0
num = 2
while count < n:
    if is_prime(num) and is_prime(num + 2):
        print(num,num+2)
        count+=1
    num+=1
```

Status : Correct **Marks : 10/10**

4. Problem Statement

Gabriel is working on a wildlife research project where he needs to compute various metrics for different animals based on their characteristics. Each animal type requires a different calculation: a deer's distance traveled, a bear's weight based on footprint size, or a bird's altitude based on its flying pattern.

Conditions:

For Deer (Mode 'D' or 'd'): Distance = speed of sound * time taken, where the speed of sound in air is 343 meters per second.For Bear (Mode 'B' or 'b'): Weight = footprint size * average weight, where the average weight per square inch for a bear is 5.0 pounds.For Bird (Mode 'F' or 'f'): Altitude = flying pattern * distance covered (in meters).

Write a program to help Gabriel analyze the characteristics of animals based on the given inputs.

Input Format

The first line of input consists of a character, representing the type of animal 'D/d' for deer, 'B/b' for bear, and 'F/f' for bird.

If the choice is 'D' or 'd':

The second line of input consists of a floating-point value T, representing the time taken from the deer's location to the observer.

If the choice is 'B' or 'b':

The second line of input consists of a floating-point value S, representing the size of the bear's footprint in square inches.

If the choice is 'F' or 'f':

1. The second line of input consists of a floating-point value P, representing the bird's flying pattern.
2. The third line consists of a floating-point value D, representing the distance covered by the bird in meters.

Output Format

The output prints one of the following:

If the choice is 'D' or 'd':

The output prints "Distance: X m" where X is a floating point value rounded off to two decimal places, representing the calculated distance traveled by the sound wave in meters.

If the choice is 'B' or 'b':

The output prints "Weight: Y lb" where Y is a floating point value rounded off to two decimal places, representing the estimated weight of the bear in pounds.

If the choice is 'F' or 'f':

The output prints "Altitude: Z m" where Z is a floating point value rounded off to two decimal places, representing the calculated altitude of the bird's flight in meters.

If the given choice is invalid, print "Invalid".

Refer to the sample output for formatting specifications.

Sample Test Case

Input: d
2.5
Output: Distance: 857.50 m

Answer

```
mode = input().strip()
if mode in ('D','d'):
    try:
        T = float(input().strip())
    except:
        print("Invalid")
        exit()
    if T <1.0 or T > 10.0:
        print("Invalid")
    else:
        distance = 343*T
        print("Distance:{:.2f}m".format(distance))
elif mode in ('B','b'):
    try:
        S = float(input().strip())
    except:
        print("Invalid")
        exit()
    if S < 1.0 or S > 5.0:
        print("Invalid")
    else:
        weight = S*5.0
        print("Weight:{:.2f}lb".format(weight))
elif mode in('F','f'):
    try:
        P = float(input().strip())
        D = float(input().strip())
    except:
        print("Invalid")
```

```
        exit()
    if P < 1.0 or P > 50.0 or D < 1.0 or D > 50.0:
            print("Invalid")
    else:
            altitude = P * D
            print("Altitude: {:.2f}m".format(altitude))
else:
    print("Invalid")
```

Status : Correct **Marks : 10/10**