Python Programming

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Q1. Write a Python program to calculate number of days between two dates. Sample dates: (2014, 7, 2), (2014, 7,11)

INPUT-

```
from datetime import datetime

date1 = input("Enter first date (dd-mm-yyyy): ")

date2 = input("Enter second date (dd-mm-yyyy): ")

d1 = datetime.strptime(date1, "%d-%m-%Y")

d2 = datetime.strptime(date2, "%d-%m-%Y")

diff = abs((d2 - d1).days)

print(f"Difference between the two dates is {diff} days.")
```

Output-

```
Enter first date (dd-mm-yyyy): 2-7-2014
Enter second date (dd-mm-yyyy): 11-7-2014
Difference between the two dates is 9 days.
```

Q2. Write a Python program that accepts an integer (n) and computes the value of n+nn+nnn

INPUT-

```
n = input("Enter an integer: ")

result = int(n) + int(n*2) + int(n*3)

print(f"The value of n+nn+nnn for n={n} is {result}")
```

Output-

```
Enter an integer: 20
The value of n+nn+nnn for n=20 is 204060
```

Q3. Ask the user for a number. Depending on whether the number is even or odd, print out an appropriate message to the user.

INPUT-

```
a = int(input("Enter the Number: "))
if a % 2 == 0:
    print("This is an Even Number")
else:
    print("This is an Odd Number")
```

Output-

```
Enter the Number: 21
This is an Odd Number
```

Q4. Write a Python program which accepts a sequence of comma-separated numbers from user and generate a list and a tuple with those numbers.

INPUT-

```
numbers = input("Enter comma-separated numbers: ")
list_numbers = numbers.split(",")
tuple_numbers = tuple(list_numbers)
print("List :", list_numbers)
print("Tuple:", tuple_numbers)
```

Output-

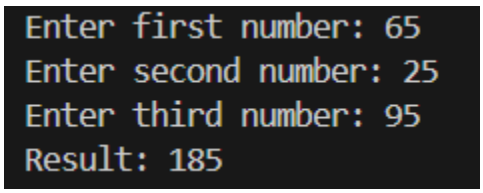
```
Enter comma-separated numbers: 15,25,35,45,55
List : ['15', '25', '35', '45', '55']
Tuple: ('15', '25', '35', '45', '55')
```

Q5. Write a Python program to calculate the sum of three given numbers, if the values are equal then return thrice of their sum.

INPUT-

```
def calculate_sum(a, b, c):
    total = a + b + c
    if a == b == c:
        return 3 * total
    else:
        return total
x = int(input("Enter first number: "))
y = int(input("Enter second number: "))
z = int(input("Enter third number: "))
result = calculate_sum(x, y, z)
print("Result:", result)
```

Output-

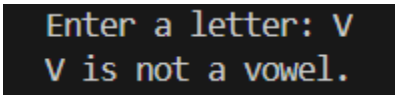


Q6. Write a Python program to test whether a passed letter is a vowel or not.

INPUT-

```
def is_vowel(letter):
    vowels = "aeiouAEIOU"
    if letter in vowels:
        return True
    else:
        return False
ch = input("Enter a letter: ")

if len(ch) == 1 and ch.isalpha():
    if is_vowel(ch):
        print(f"{ch} is a vowel.")
    else:
        print(f"{ch} is not a vowel.")
else:
    print("Please enter a single alphabet only.")
```

Output-



Q7. Take a list, say for example this one:

a = [1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89]

and write a program that prints out all the elements of the list that are less than 5.

Extras:Program-

a. Instead of printing the elements one by one, make a new list that has all the elements less than 5 from this list in it and print out this new list.

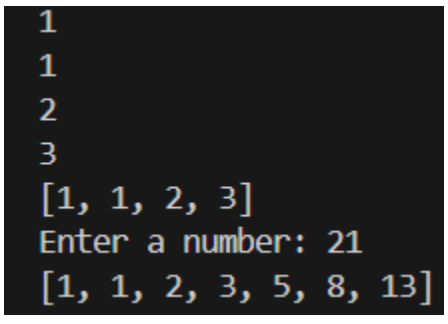
b.Write this in one line of Python.

c.Ask the user for a number and return a list that contains only elements from the original list a that are smaller than that number given by the user.

INPUT-

```
a = [1,1,2,3,5,8,13,21,34,55,89]

for i in a:

   if i < 5:

      print(i)


print([i for i in a if i<5])


num = int(input("Enter a number: "))

result = [x for x in a if x < num]

print(result)
```

OUTPUT-



Q8. Create a program that asks the user for a number and then prints out a list of all the divisors of that number.

INPUT-

```
num = int(input("Enter a number: "))

divisors = [i for i in range(1, num + 1) if num % i == 0]

print(f"Divisors of {num} are: {', '.join(map(str, divisors))}")
```

OUTPUT-

```
Enter a number: 25
Divisors of 25 are: 1, 5, 25
```

Q9. Take two lists, say for example these two:

a = [1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89]

b = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13]

and write a program that returns a list that contains only the elements that are common between the lists (without duplicates). Make sure your program works on two lists of different sizes.

INPUT-

```
a = [1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89]

b = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13]

common = list(set(a) & set(b))

print("Common elements:", common)
```

OUTPUT-

```
Common elements: [1, 2, 3, 5, 8, 13]
```

Q10. Ask the user for a string and print out whether this string is a palindrome or not. (A palindrome is a string that reads the same forwards and backwards.)

INPUT-

```
string = input("Enter a string: ")

string = string.lower()

string = string.replace(" ", "")

if string == string[::-1]:

    print("The string is a palindrome")

else:

    print("The string is not a palindrome")
```

Output-

```
Enter a string: 21
The string is not a palindrome
```

Q11. Let's say I give you a list saved in a variable: a = [1, 4, 9, 16, 25, 36, 49, 64, 81, 100]. Write one line of Python that takes this list a and makes a new list that has only the even elements of this list in it.

INPUT-

```
a = [1, 4, 9, 16, 25, 36, 49, 64, 81, 100]

even_elements = [element for element in a if element % 2 == 0]

print("Even Elements are:",even_elements)
```

Output-

```
Even Elements are: [4, 16, 36, 64, 100]
```

Q12. Generate a random number between 1 and 9 (including 1 and 9). Ask the user to guess the number, then tell them whether they guessed too low, too high, or exactly right. (Hint: remember to use the user input lessons from the very first exercise)

INPUT-

```
import random

number = random.randint(1, 9)
guess = 0
count = 0

while guess != number and guess != "exit":
    guess = input("Guess a number between 1 and 9 (or type exit): ")

    if guess == "exit":
        break

    guess = int(guess)
    count += 1

    if guess < number:
        print("Too low!")
    elif guess > number:
        print("Too high!")
```

```
    else:
        print("Exactly right!")
        print("You guessed it in", count, "tries")
```

Output-

```
Guess a number between 1 and 9 (or type exit): 2
Too low!
Guess a number between 1 and 9 (or type exit): 5
Too low!
Guess a number between 1 and 9 (or type exit): 7
Too low!
Guess a number between 1 and 9 (or type exit): 9
Too high!
Guess a number between 1 and 9 (or type exit): 8
Exactly right!
You guessed it in 5 tries
```