PYTHON PROGRAMMING LAB

School of Computer Applications

Department of Computer Applications

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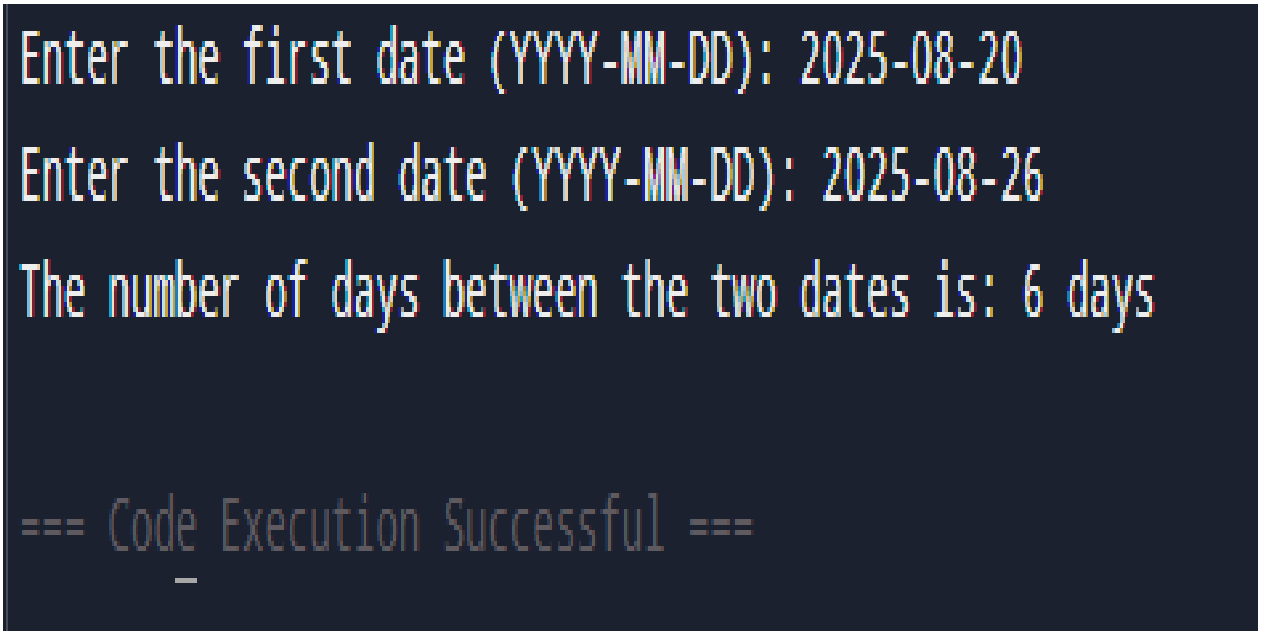
Ques 1)W.a.p. In python to calculate number of days between two dates.
Input:

```
from datetime import date

date1 = input("Enter the first date (YYYY-MM-DD): ")
date2 = input("Enter the second date (YYYY-MM-DD): ")

date1 = date.fromisoformat(date1)
date2 = date.fromisoformat(date2)

dd = abs((date2 - date1).days)

print(f"The number of days between the two dates is: {dd} days")
```

Output:

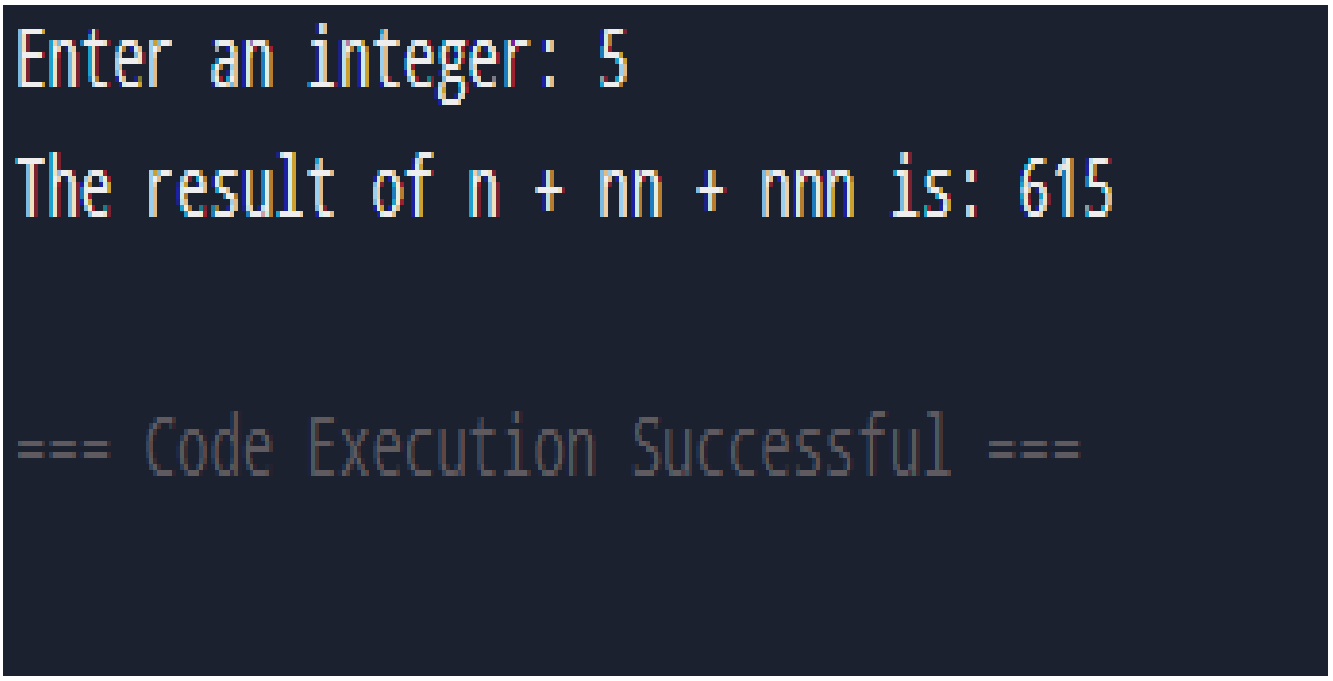


Ques 2)W.a.p. In python that accepts an integer(n) and computes the value of n+nn+nnn.

Input:

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

nn = int(str(n) * 2)
nnn = int(str(n) * 3)

result = n + nn + nnn

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

Output:



Ques 3)Ask the user for a number.Depending on whether the number is even or odd,print out an appropriate message to the user.

Input:

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

if number % 2 == 0:
    print(f"{number} is even.")
else:
    print(f"{number} is odd.")
```

Output:

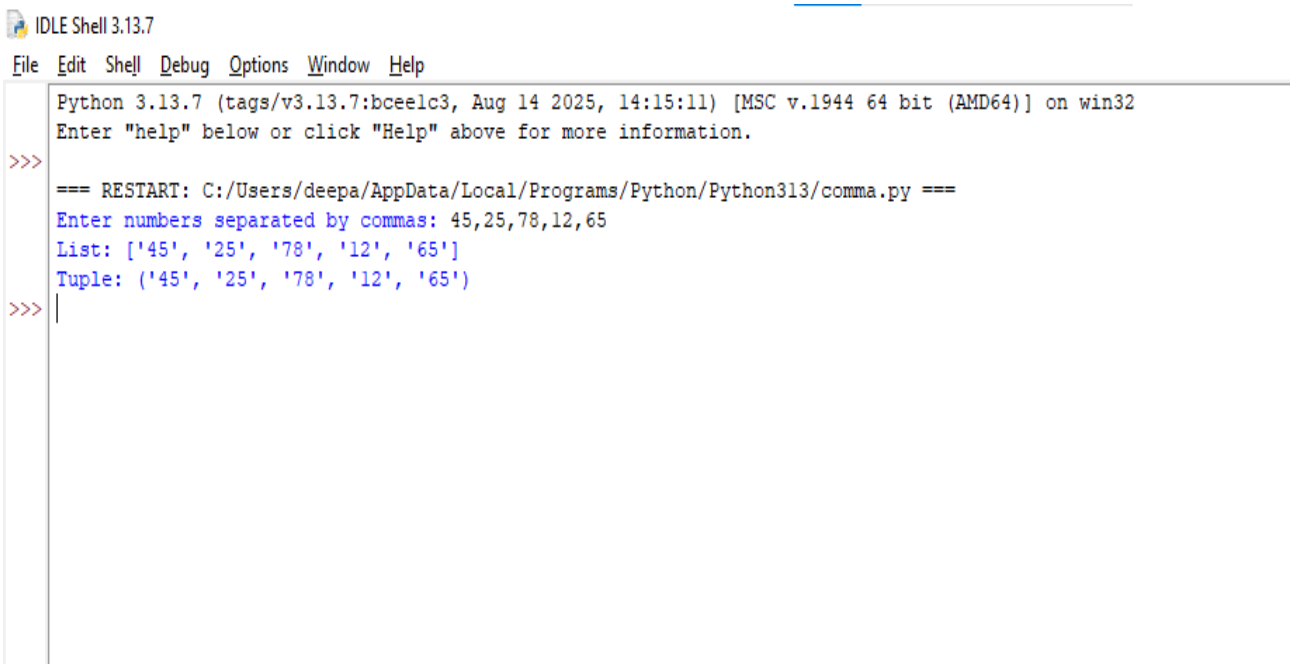
```
Enter a number: 5
5 is odd.

=== Code Execution Successful ===
```

Ques 4)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 numbers separated by commas: ")
num_list = numbers.split(",")
num_tuple = tuple(num_list)

print("List:", num_list)
print("Tuple:", num_tuple)
```

Output:

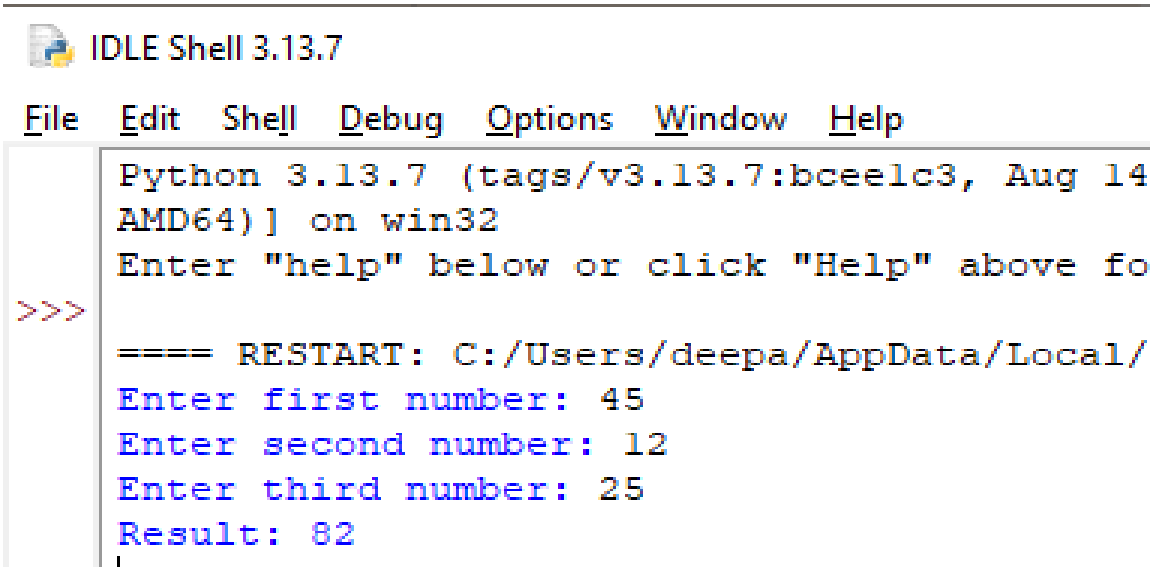


Ques 5)Write a Python program to calculate the sum of three given numbers, if the values are equal then return thrice of their sum.

Input:

```
def sum_of_three(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 = sum_of_three(x, y, z)
print("Result:", result)
```

Output:

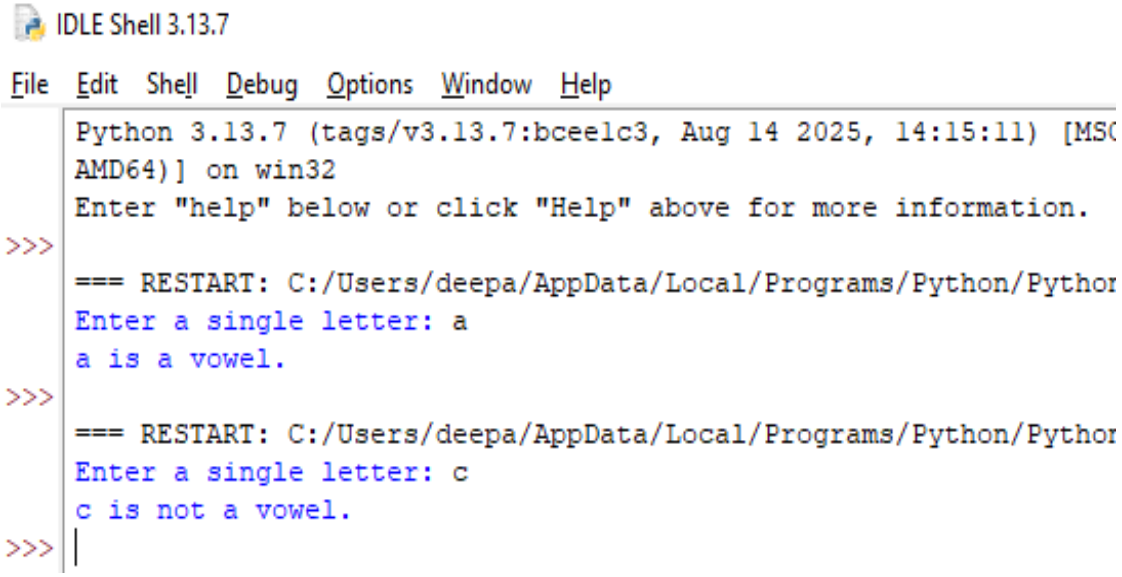


Ques 6) Write a Python program to test whether a passed letter is a vowel or not

Input:

```
def check_vowel(letter):
    vowels = "aeiouAEIOU"
    if letter in vowels:
        return True
    else:
        return False


ch = input("Enter a single letter: ")

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

Output:



Ques7)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:

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 number in a:
    if number < 5:
        print(number)
```

Output

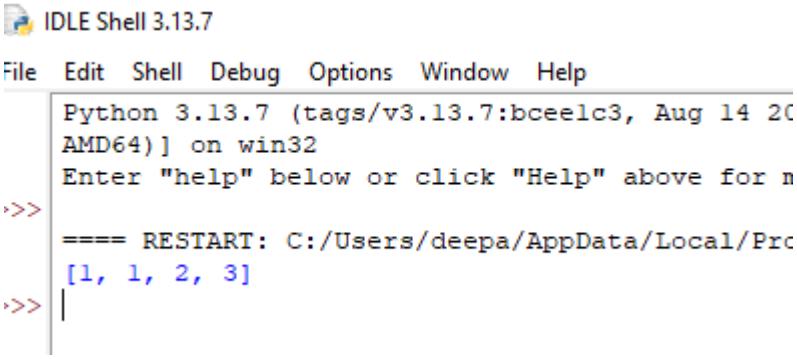
```
a = [1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89]
for number in a:
    if number < 5:
        print(number)
```

```
1
1
2
3
```

a) Input:

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

new_list = []

for x in a:
    if x < 5:
        new_list.append(x)
print(new_list)
```

Output:

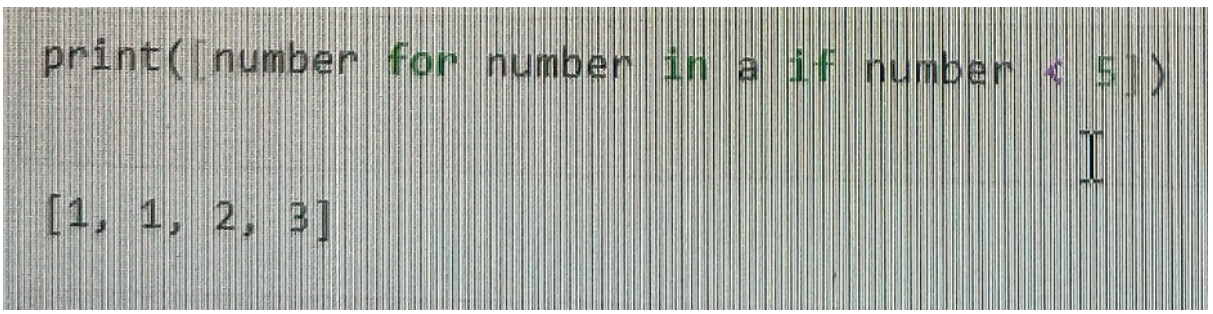


b)

Input:

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

Output:



C)
Input:

```
a = [1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89]
num = int(input("Enter a number: "))
filtered_list = [x for x in a if x < num]
print("Elements less than", num, ":", filtered_list)
```

Output:

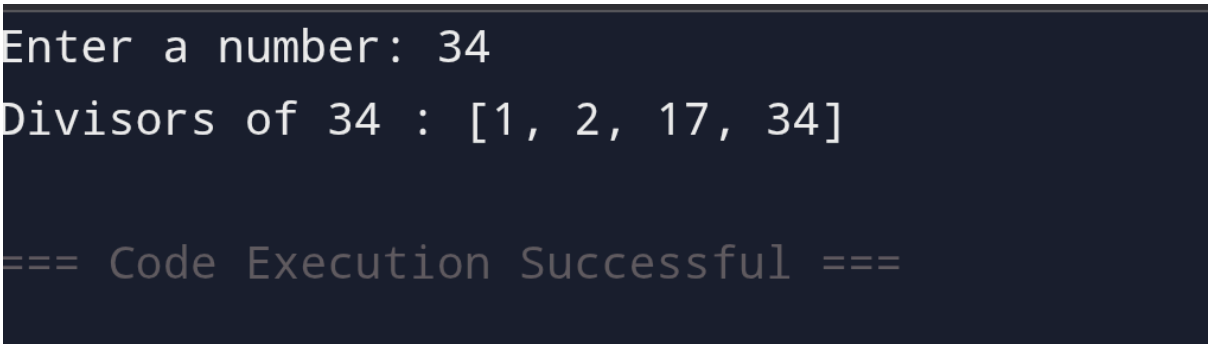
```
Enter a number: 12
Elements less than 12 : [1, 1, 2, 3, 5, 8]

=== Code Execution Successful ===
```

Ques 8) Create a program that asks the user for a number and then prints out a list of all the divisors of that number. (If you don’t know what a divisor is, it is a number that divides
evenly into another number. For example, 13 is a divisor of 26 because 26 / 13 has no remainder.)

Input:

```
num = int(input("Enter a number: "))
divisors = [i for i in range(1, num + 1) if num % i == 0]
print("Divisors of", num, ":", divisors)
```

Output:

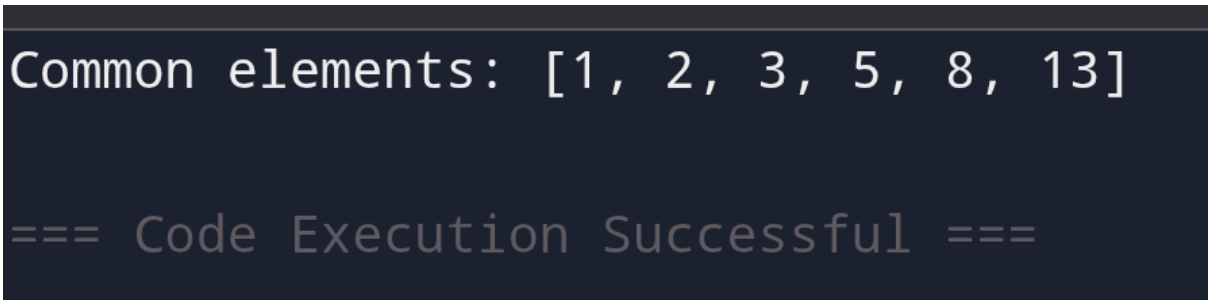


Ques 9) Take two lists, say for example these two: a = [1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89] b = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13] and write a program that returns a list that contains only the elements that are common between the lists (without duplicates). Make sure your program works on 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:

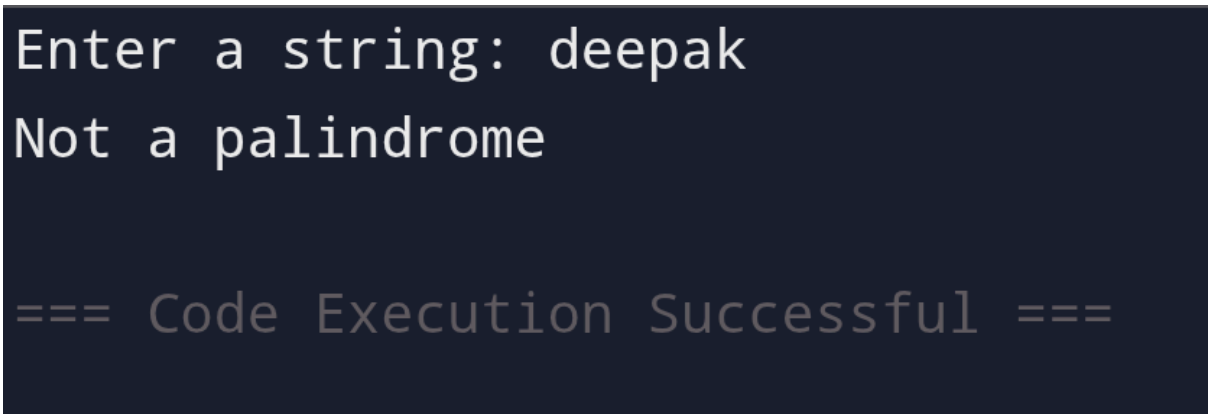


Ques 10). Ask the user for a string and print out whether this string is a palindrome or not. (A palindrome is a string that reads the same forwards and backwards.)

Input:

```
s = input("Enter a string: ")
if s == s[::-1]:
    print("Palindrome")
else:
    print("Not a palindrome")
```

Output:

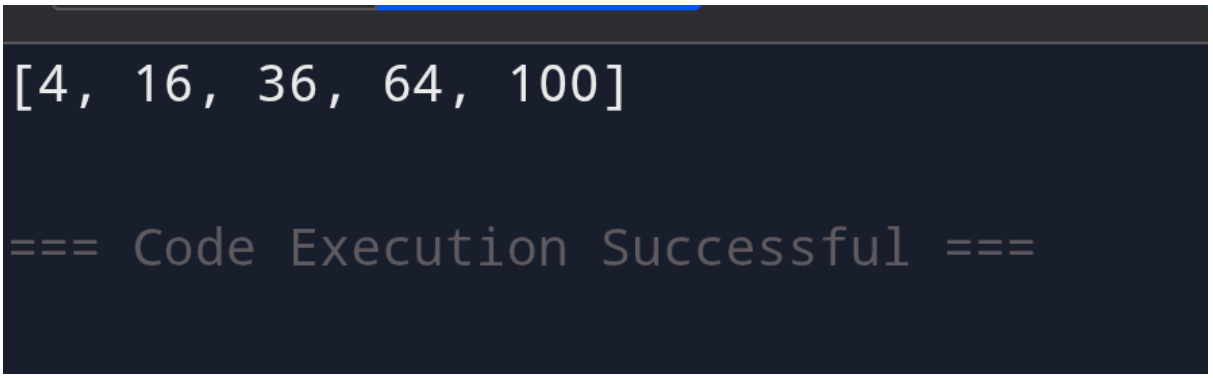


Ques 11) Let’s say I give you a list saved in a variable: a = [1, 4, 9, 16, 25, 36, 49, 64, 81, 100]. Write one line of Python that takes this list a and makes a new list that has only the even elements of this list in it.

Input:

```
a = [1, 4, 9, 16, 25, 36, 49, 64, 81, 100]
even_list = [x for x in a if x % 2 == 0]
print(even_list)
```

Output:

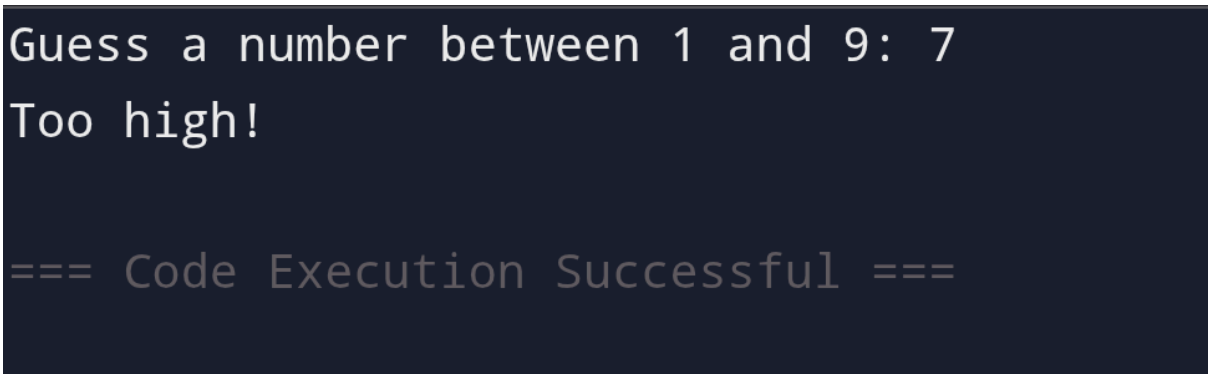


Ques 12) Generate a random number between 1 and 9 (including 1 and 9). Ask the user to guess the number, then tell them whether they guessed too low, too high, or exactly right. (Hint: remember to use the user input lessons from thevery first exercise)

Input:

```
import random

num = random.randint(1, 9)
guess = int(input("Guess a number between 1 and 9: "))

if guess < num:
    print("Too low!")
elif guess > num:
    print("Too high!")
else:
    print("Exactly right! ")
```

Output:

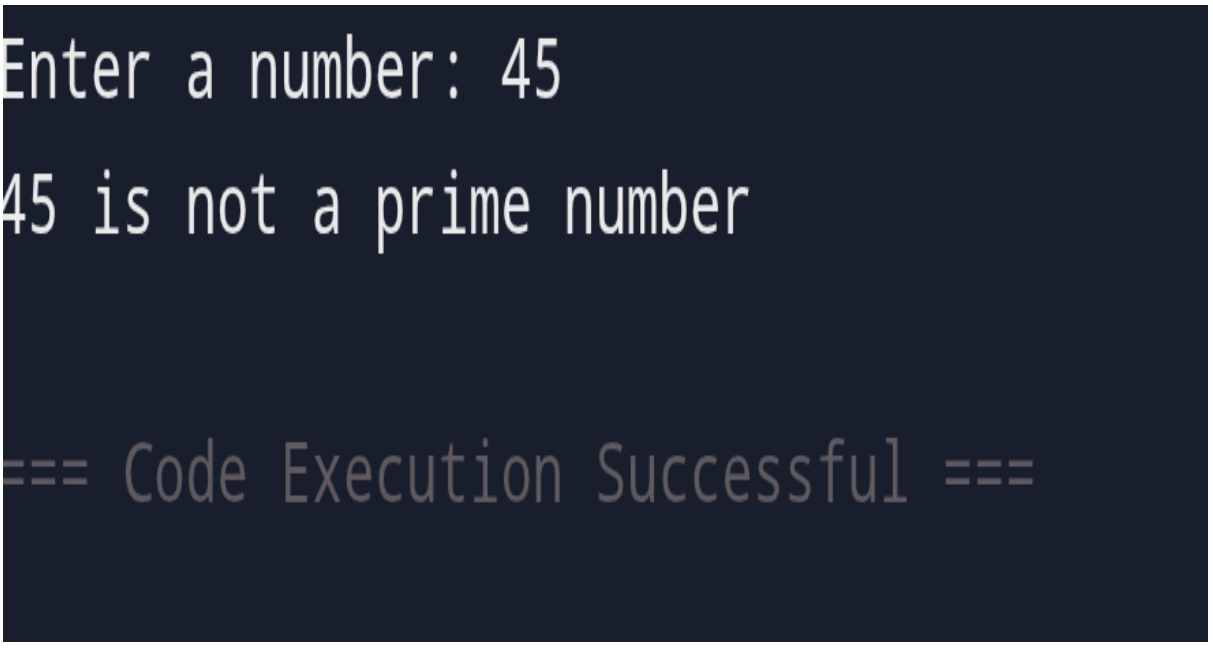


Ques 13) Ask the user for a number and determine whether the number is prime or not. (For those who have forgotten, a prime number is a number that has no divisors.).

Input:

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

if num > 1:
    for i in range(2, int(num**0.5) + 1):
        if num % i == 0:
            print(num, "is not a prime number")
            break
    else:
        print(num, "is a prime number")
else:
    print(num, "is not a prime number")
```

Output:



Ques 14)Write a program to remove all duplicate elements from a list nums = [1, 2, 2, 3, 4, 4, 5] and print the unique list in ascending order.

Input:
nums = [1, 2, 2, 3, 4, 4, 5]

```
unique_nums = sorted(set(nums))

print("Unique list in ascending order:", unique_nums)
```

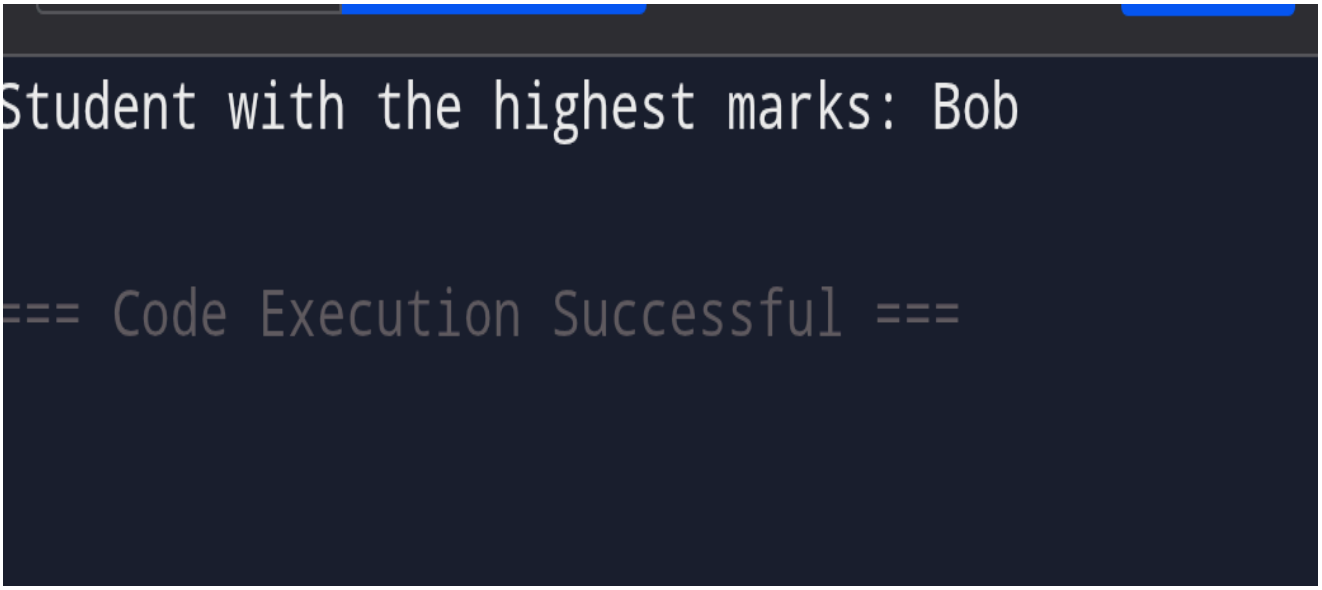
Output:

Ques 15)Given a list of tuples students = [('Alice', 85), ('Bob', 90), ('Charlie', 78)], write a program to print the name of the student with the highest marks.

Input:

```
students = [('Alice', 85), ('Bob', 90), ('Charlie', 78)]

top_student = max(students, key=lambda x: x[1])

print("Student with the highest marks:", top_student[0])
```

Output:

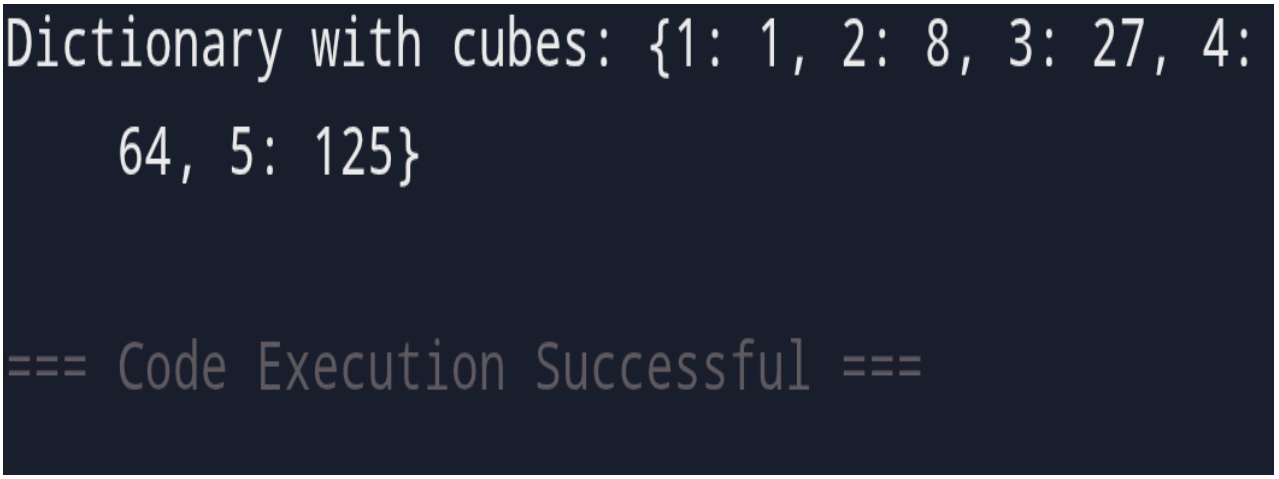


Ques 16) Given a list numbers = [1, 2, 3, 4, 5], create a dictionary where the key is the number and the value is the cube of the number.

Input:

```
numbers = [1, 2, 3, 4, 5]
cube_dict = {}

for n in numbers:
    cube_dict[n] = n ** 3

print("Dictionary with cubes:", cube_dict)
```

Output:



Ques 17) Given a list fruits = ['apple', 'banana', 'apple', 'orange', 'banana', 'apple'], write a program to count the occurrence of each fruit and store it in a dictionary.

Input:

```
fruits = ['apple', 'banana', 'apple', 'orange', 'banana', 'apple']

fruit_count = {}

for fruit in fruits:
    if fruit in fruit_count:
        fruit_count[fruit] += 1
    else:
        fruit_count[fruit] = 1

print("Fruit count:", fruit_count)
```

Output: