Week 2

1. **Write a function greet(name) that takes a name ehich is store in variable as input and prints "Hello, [name]!".**

```
def greet(name):
    print(f"Hello {name}")
greet("test")
```

 # Output:

```
======= RESTART: C:/New
Hello test
```

2. **Create a function square(num) that returns the square of a given number.**

```
def square(num):
    sq = num * num
    print(f"square of {num} is {sq}")
no = int(input("Enter Number : "))
square(no)
```

 # Output:

```
Enter Number : 5
square of 5 is 25
```

3. **Write a function is_even(n) that returns True if a number is even, otherwise False.**

def is_even(no):

  if (no % 2 == 0):

    print(f"{no} is even number.")

  else:

    print(f"{no} is odd number.")

no = int(input("Enter Number : "))

is_even(no)

 # Output:

```
Enter Number : 3
3 is odd number.

==========================
Enter Number : 4
4 is even number.
```

4. **Define a function sum_numbers(a, b=10) that takes two numbers and returns their sum. If the second number is not provided, it should default to 10.**

def sum_numbers(a, b):

  sum = a + b

  print(f"sum of {a} and {b} is {sum}")

a = int(input("Enter the first number: "))

b = input("Enter the second number (press Enter to set default value): ")

b = int(b) if b else 10

sum_numbers(a, b)

 # Output:

```
Enter the first number: 10
Enter the second number (press Enter to set default value(10)):
sum of 10 and 10 is 20

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Enter the first number: 10
Enter the second number (press Enter to set default value(10)): 5
sum of 10 and 5 is 15
```

5. Write a recursive function factorial(n) to calculate the factorial of a number.

```python
def factorial(n):
    if n == 0 or n == 1:
        return 1
    else:
        return n * factorial(n - 1)


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


if num < 0:
    print("Invalid Number.Please Enter Positive number.")
else:
    print(f"Factorial of {num} is {factorial(num)}")
```

 # Output:

```
Enter a number: 5
Factorial of 5 is 120

===================== RESTART: C:/New folder/E
Enter a number: 0
Factorial of 0 is 1

===================== RESTART: C:/New folder/E
Enter a number: 1
Factorial of 1 is 1

===================== RESTART: C:/New folder/E
Enter a number: -10
Invalid Number.Please Enter Positive number.
```

6. **Use a lambda function with filter( ) to get all even numbers from a list: [1, 2, 3, 4, 5, 6, 7, 8].**

numbers = [1, 2, 3, 4, 5, 6, 7, 8]

even_numbers = list(filter(lambda x: x % 2 == 0, numbers))

print(f"even numbers in the list are {even_numbers}")

 # Output:

```
even numbers in the list are [2, 4, 6, 8]
```

7. **Write a while loop to print the first 5 multiples of 3.**

n = 1

i = 1

while(i <= 5):

   print(3 * n)

   n += 1

   i += 1

 # Output:

```
3
6
9
12
15
```

8. **Create a loop that prints all numbers from 1 to 20 but skips multiples of 5.**

i = 1

while (i <= 20):

  if (i % 5 != 0):

    print (i, end = " ")

  i += 1

 # Output:

```
1  2  3  4  6  7  8  9  11  12  13  14  16  17  18  19
```

9. **Write a loop that stops when it encounters the number 7 in this list: [1, 2, 3, 4, 5, 6, 7, 8, 9].**

list1 = [1, 2, 3, 4, 5, 6, 7, 8, 9]

for i in list1:

  # print(i) (if we want to print 7, assuming not)

  if i == 7:
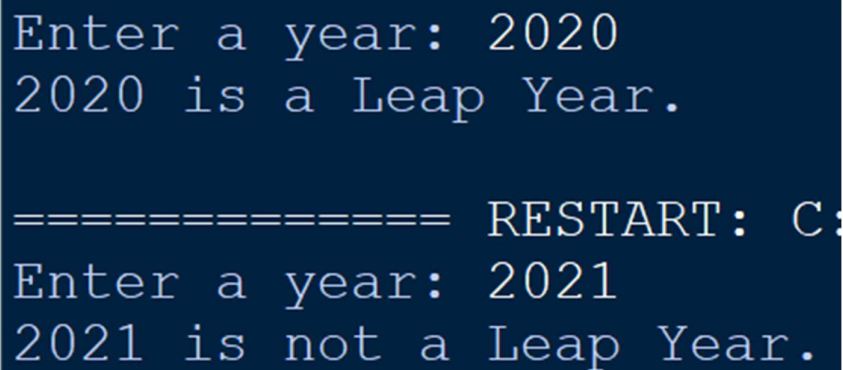
    break

  print(i)

 # Output:

```
1
2
3
4
5
6
```

10. Write a program that checks if a year is a leap year. (Hint: A year is a leap year if it is divisible by 4 but not by 100, except when it is also divisible by 400.)

```python
def leap_year(year):
    if (year % 4 == 0 and year % 100 != 0) or (year % 400 == 0):
        return True
    else:
        return False


year = int(input("Enter a year: "))


if leap_year(year):
    print(f"{year} is a Leap Year.")
else:
    print(f"{year} is not a Leap Year.")
```

 # Output:

```
Enter a year: 2020
2020 is a Leap Year.


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Enter a year: 2021
2021 is not a Leap Year.
```