LAB # 05

ITERATION WITH LOOPS

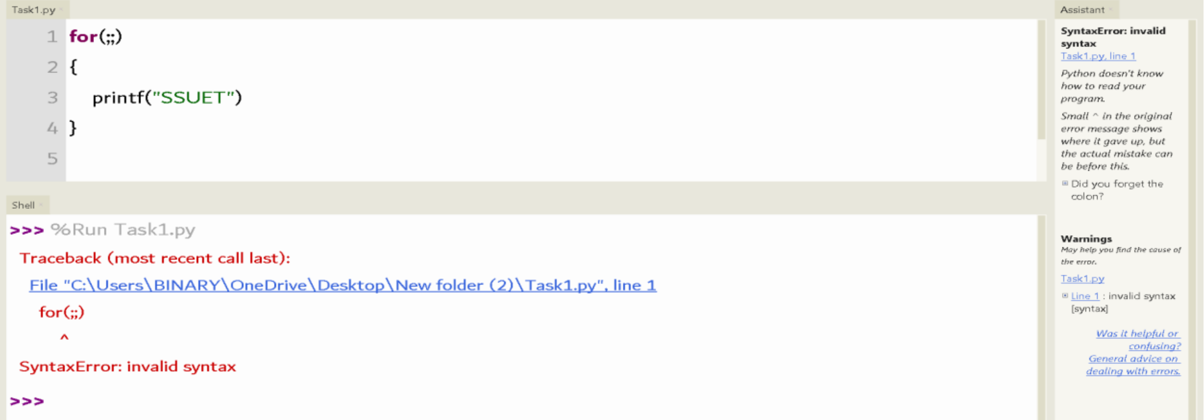
Objective

To get familiar with the different types of loops.

Exercise

A. Point out error, if any, and paste the output also in the following Python programs.

Code 01:



```
for(;;)
{
   printf("SSUET")
}
```

```
>>> %Run Task1.py
 Traceback (most recent call last):
   File "C:\Users\BINARY\OneDrive\Desktop\New folder (2)\Task1.py", line 1
     for(;;)
        ^
 SyntaxError: invalid syntax
>>>
```

SyntaxError: invalid syntax
Task1.py, line 1

Python doesn't know how to read your program.

Small ^ in the original error message shows where it gave up, but the actual mistake can be before this.

⊞ Did you forget the colon?

Warnings
May help you find the cause of the error.

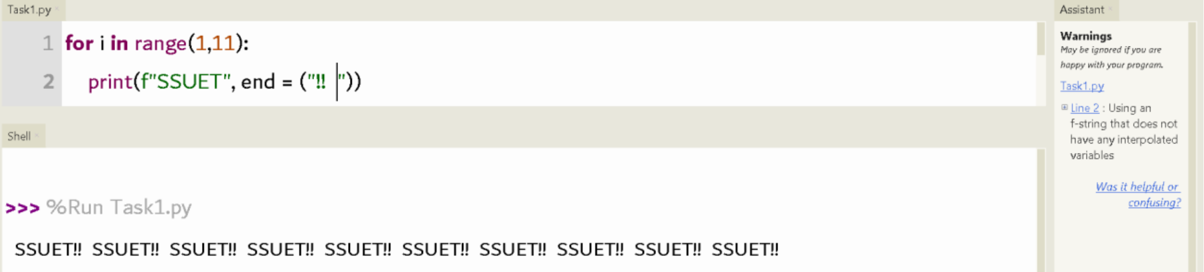
Task1.py

⊞ Line 1 : invalid syntax [syntax]

Was it helpful or confusing?
General advice on dealing with errors.

The error is we always give the range in for loop. We use indentation instead of curly braces after the condition end, we use colon too. Third we use f-string in the brackets not outside. After error solve ⬇.

Output:



```
for i in range(1,11):
   print(f"SSUET", end = ("!! "))
```

```
>>> %Run Task1.py

 SSUET!!  SSUET!!  SSUET!!  SSUET!!  SSUET!!  SSUET!!  SSUET!!  SSUET!!  SSUET!!  SSUET!!
```

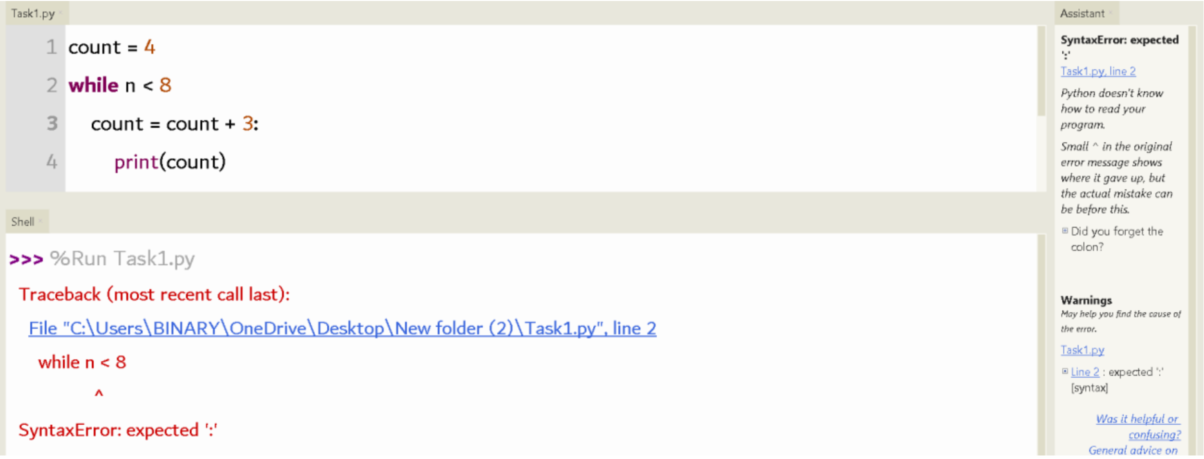
Warnings
May be ignored if you are happy with your program.

Task1.py

⊞ Line 2 : Using an f-string that does not have any interpolated variables

Was it helpful or confusing?

Code 02:



Task1.py

```
1  count = 4
2  while n < 8
3    count = count + 3:
4      print(count)
```

Shell

```
>>> %Run Task1.py
 Traceback (most recent call last):
  File "C:\Users\BINARY\OneDrive\Desktop\New folder (2)\Task1.py", line 2
    while n < 8
           ^
 SyntaxError: expected ':'
```

Assistant

SyntaxError: expected ':'

Task1.py, line 2

Python doesn't know how to read your program.

Small ^ in the original error message shows where it gave up, but the actual mistake can be before this.

⊞ Did you forget the colon?

Warnings
May help you find the cause of the error.

Task1.py

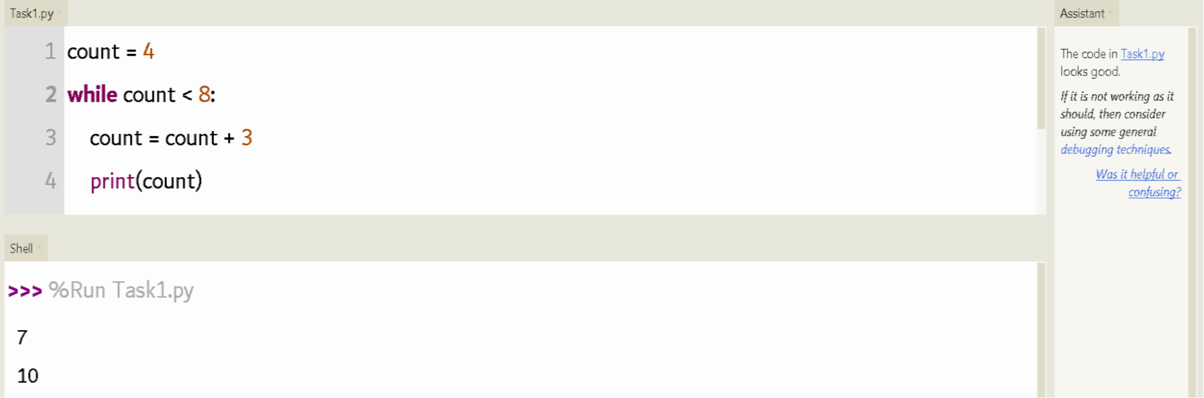
⊞ Line 2 : expected ':' [syntax]

Was it helpful or confusing?
General advice on

There is a Syntax Error because n variable is not defined. We use count instead of n

After the condition we use colon. We don’t use colon in increment condition. In print condition if we use extra indentation, it gives us the error. After error solve ⬇.

Output:



Task1.py

```
1  count = 4
2  while count < 8:
3    count = count + 3
4    print(count)
```

Shell

```
>>> %Run Task1.py
 7
 10
```

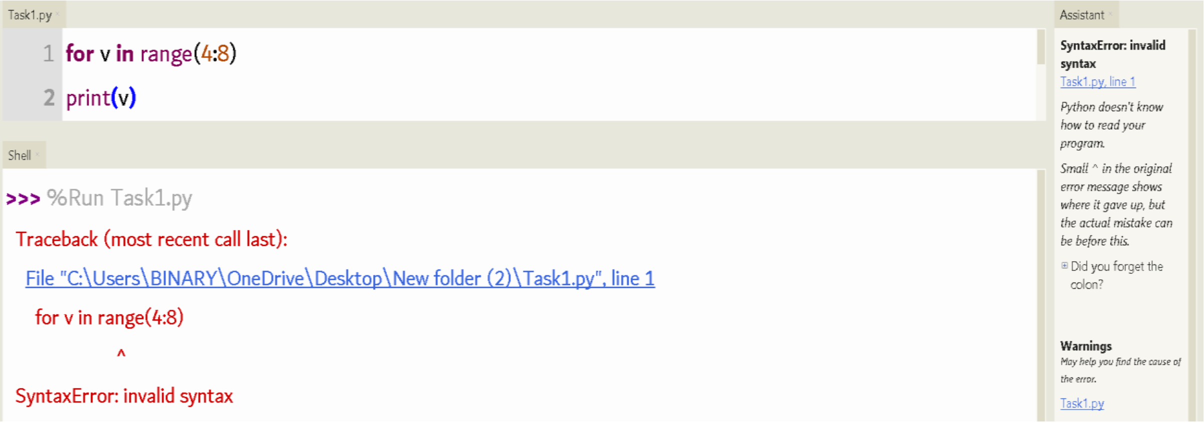
Assistant

The code in Task1.py looks good.

If it is not working as it should, then consider using some general debugging techniques.

Was it helpful or confusing?

Code 03:



Task1.py

```
1  for v in range(4:8)
2  print(v)
```

Shell

```
>>> %Run Task1.py
 Traceback (most recent call last):
  File "C:\Users\BINARY\OneDrive\Desktop\New folder (2)\Task1.py", line 1
    for v in range(4:8)
               ^
 SyntaxError: invalid syntax
```

Assistant

SyntaxError: invalid syntax

Task1.py, line 1

Python doesn't know how to read your program.

Small ^ in the original error message shows where it gave up, but the actual mistake can be before this.

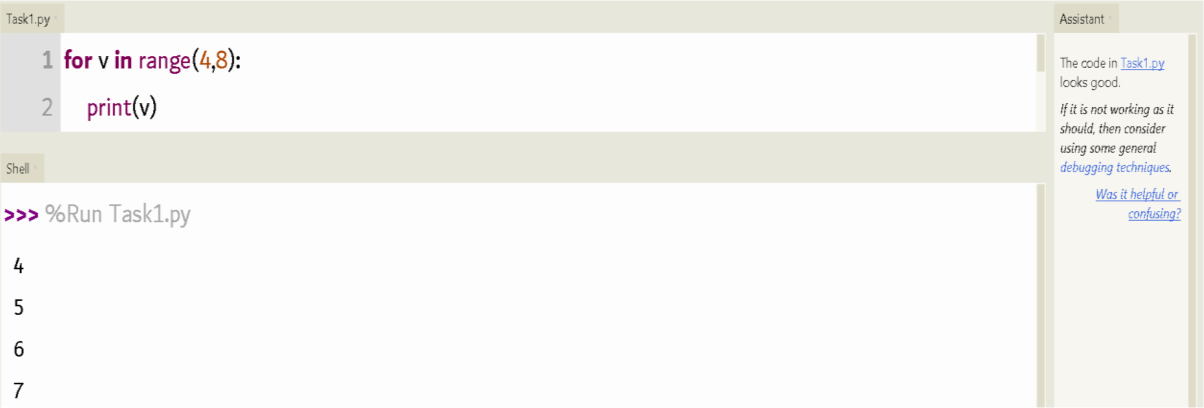
⊞ Did you forget the colon?

Warnings
May help you find the cause of the error.

Task1.py

There is a syntax error. While we give start & end range we use comma instead of colon. After the condition end we always use colon. Here is no indentation in print condition so this is error. After error solve ⬇.

Output:



```
for v in range(4,8):
    print(v)
```

```
>>> %Run Task1.py
 4
 5
 6
 7
```

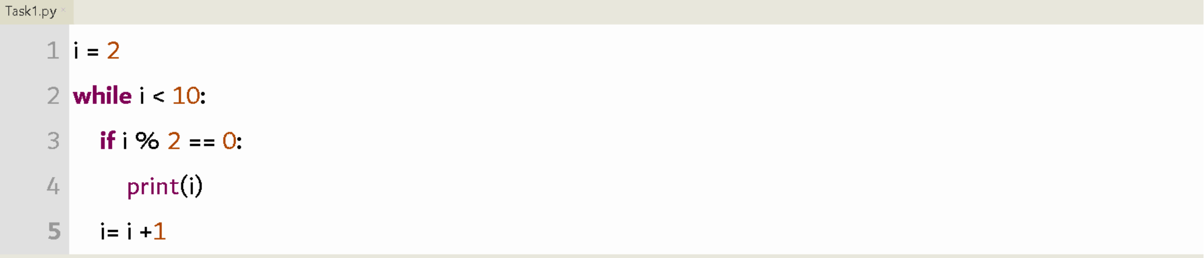
The code in Task1.py looks good.

If it is not working as it should, then consider using some general debugging techniques.

Was it helpful or confusing?

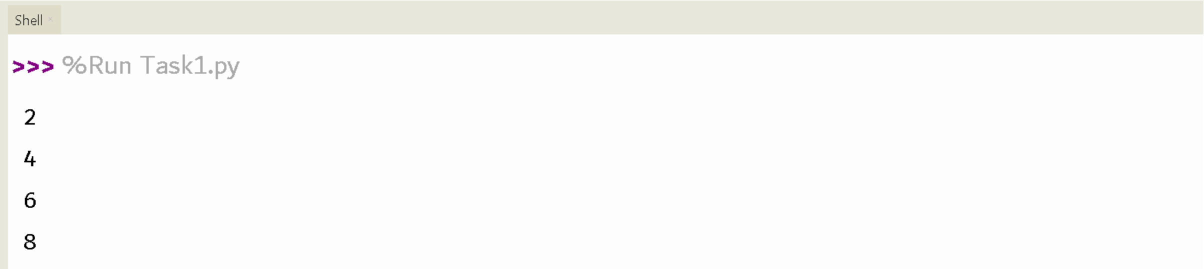
B. What will be the output of the following programs:

Code 04:



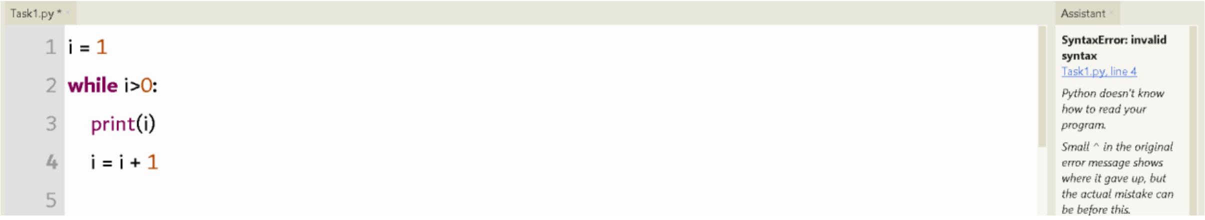
```
i = 2
while i < 10:
  if i % 2 == 0:
      print(i)
  i= i +1
```

Output:



```
>>> %Run Task1.py
 2
 4
 6
 8
```

Code 05:



```
i = 1
while i>0:
  print(i)
  i = i + 1
```

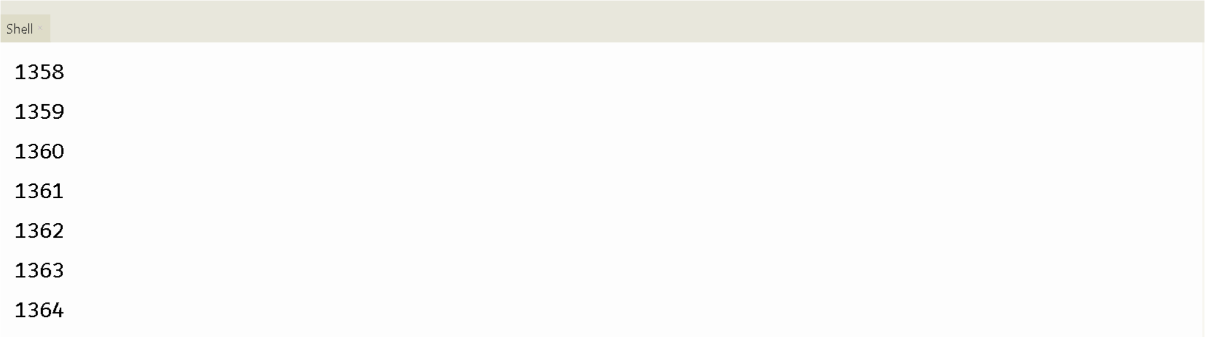
SyntaxError: invalid syntax
Task1.py, line 4

Python doesn't know how to read your program.

Small ^ in the original error message shows where it gave up, but the actual mistake can be before this.

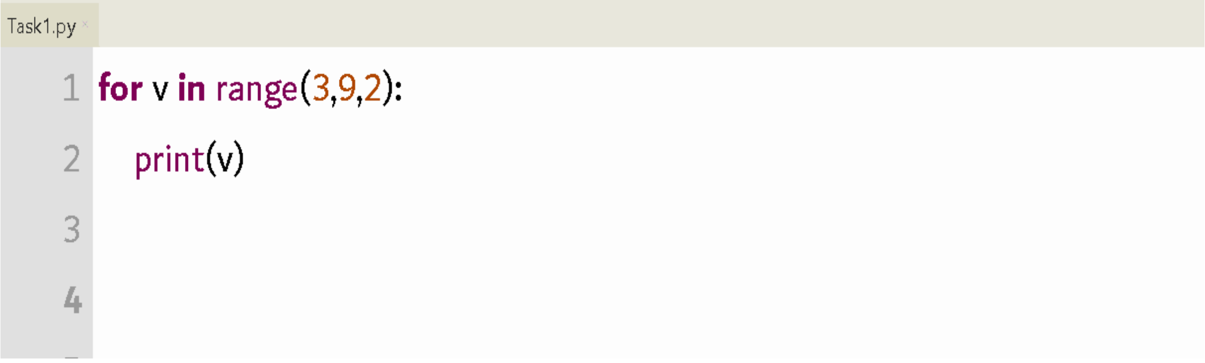
This is Infinite loop.

Output:



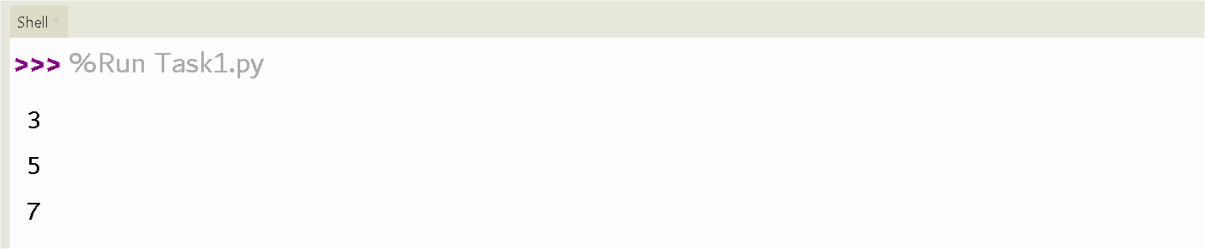
```
1358
1359
1360
1361
1362
1363
1364
```

Code 06:



```
for v in range(3,9,2):
   print(v)
```

Output:



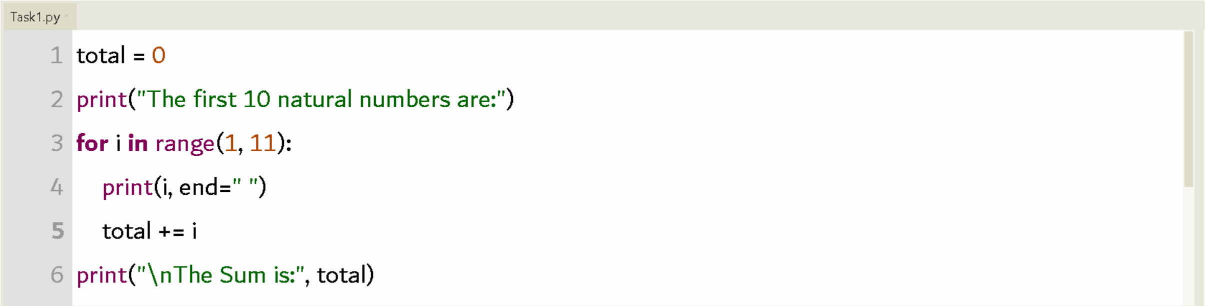
```
>>> %Run Task1.py

 3
 5
 7
```

C. Write Python programs for the following.

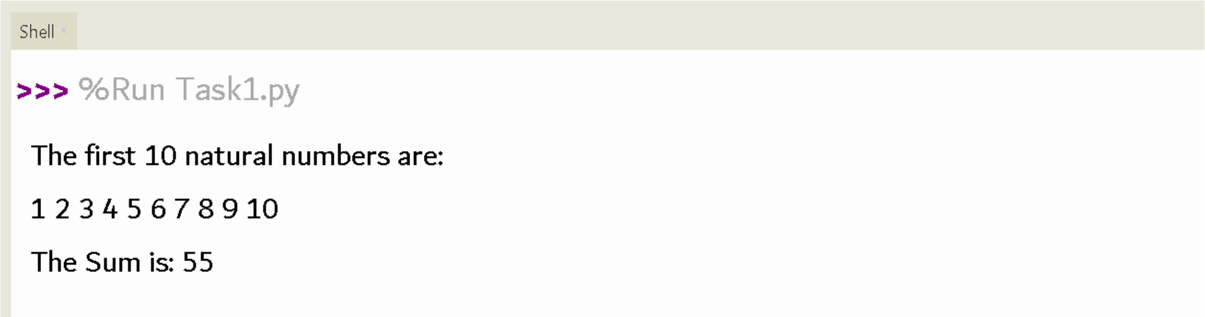
1. Write a program that prints the first 10 natural numbers and their sum using ‘for loop’.

Code 07:



```python
total = 0
print("The first 10 natural numbers are:")
for i in range(1, 11):
    print(i, end=" ")
    total += i
print("\nThe Sum is:", total)
```

Output:

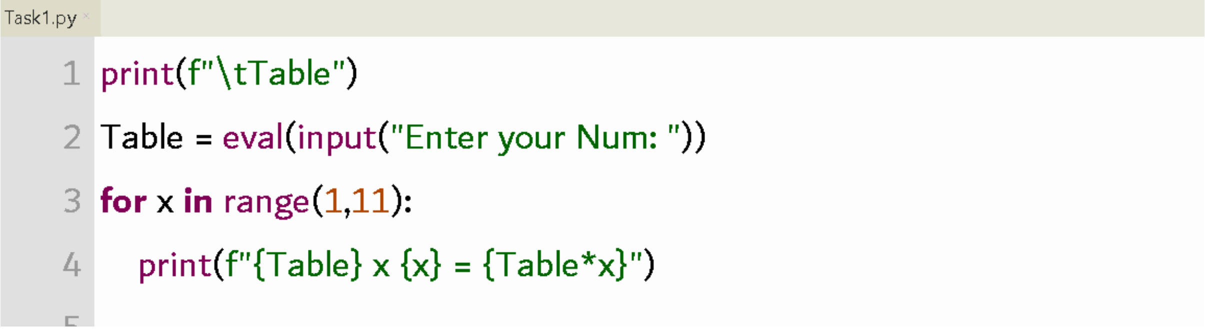


```
>>> %Run Task1.py

 The first 10 natural numbers are:
 1 2 3 4 5 6 7 8 9 10
 The Sum is: 55
```

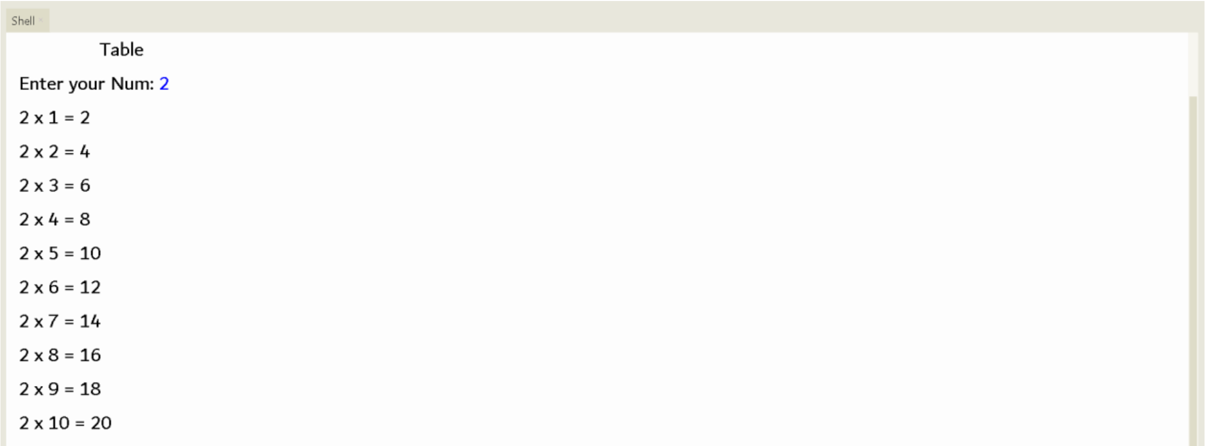
2. Write a program to print the multiplication table of the number entered by the user. The table should get displayed in the following form.

Code 08 “Using for loop”:



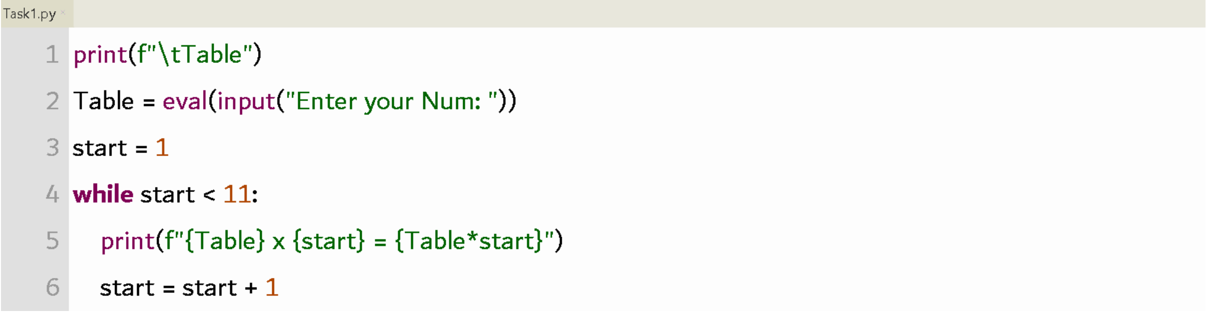
```python
print(f"\tTable")
Table = eval(input("Enter your Num: "))
for x in range(1,11):
    print(f"{Table} x {x} = {Table*x}")
```

Output:



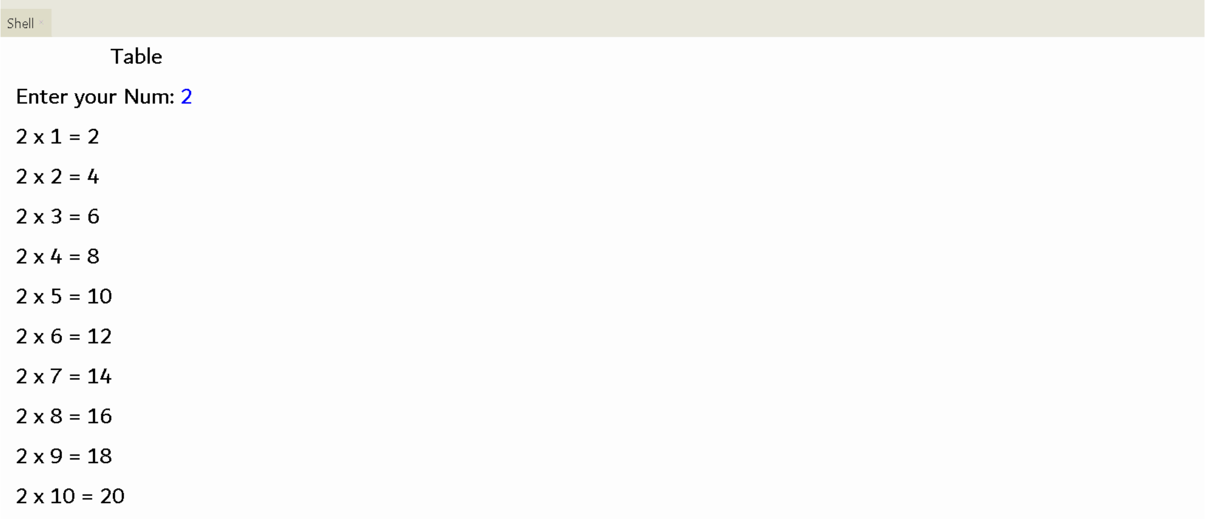
```
        Table
Enter your Num: 2
2 x 1 = 2
2 x 2 = 4
2 x 3 = 6
2 x 4 = 8
2 x 5 = 10
2 x 6 = 12
2 x 7 = 14
2 x 8 = 16
2 x 9 = 18
2 x 10 = 20
```

Code 08 “Using while loop”:



```python
print(f"\tTable")
Table = eval(input("Enter your Num: "))
start = 1
while start < 11:
    print(f"{Table} x {start} = {Table*start}")
    start = start + 1
```

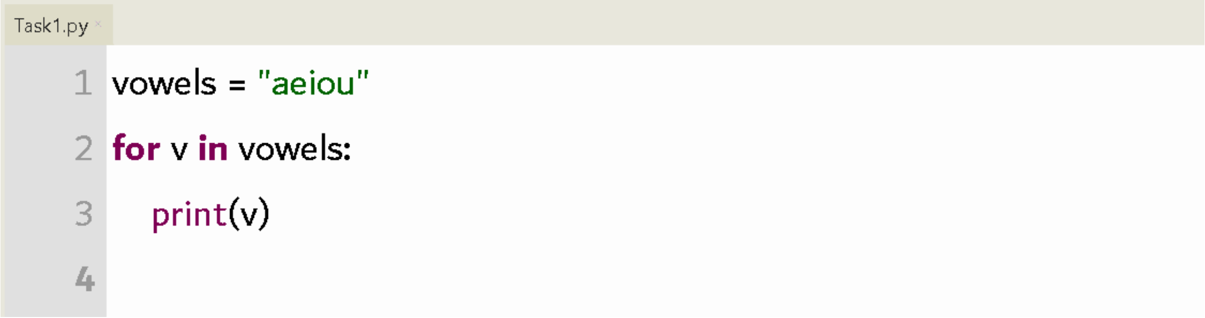
Output:



```
        Table
Enter your Num: 2
2 x 1 = 2
2 x 2 = 4
2 x 3 = 6
2 x 4 = 8
2 x 5 = 10
2 x 6 = 12
2 x 7 = 14
2 x 8 = 16
2 x 9 = 18
2 x 10 = 20
```

3. Write a program that take vowels character in a variable named “vowels” then print each vowels characters in newline using ‘for loop’.

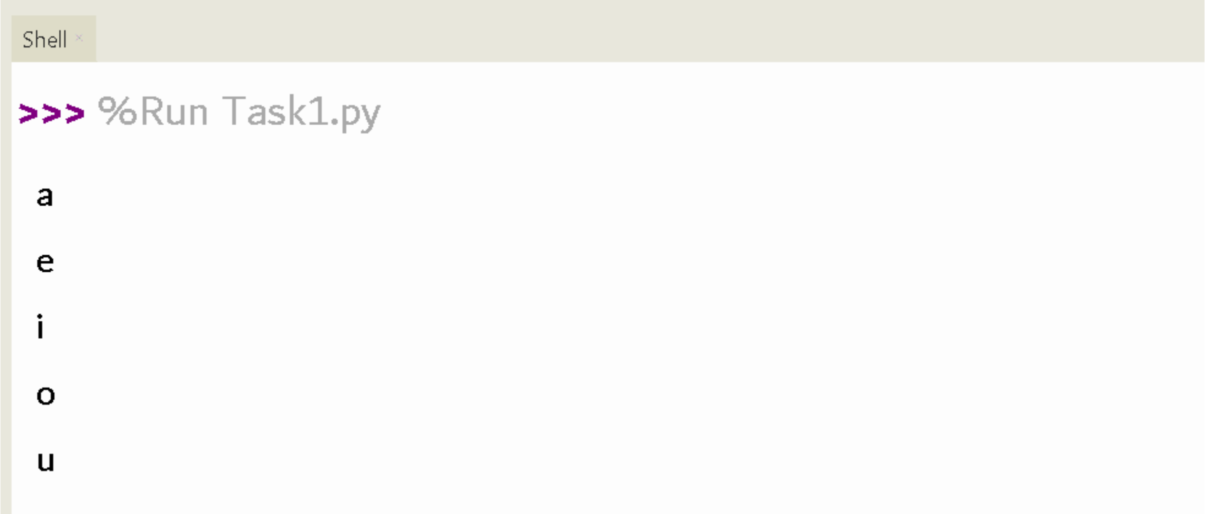
Code 09:



```python
vowels = "aeiou"
for v in vowels:
    print(v)

```

Output:



```
>>> %Run Task1.py
 a
 e
 i
 o
 u
```