Experiment 1. Given a number ‘n’, output its factorial using reduce( ).

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Subject:	**ML Lab**	**Code:**	**CSD-386**

1. **Aim/Overview of the practical:**

   Given a number ‘n’, output its factorial using reduce(), for loop and while loop.

2. **Task to be done:**

   Given a number ‘n’, output its factorial using
   reduce(),
   for loop
   while loop.

3. **Steps for experiment/practical:**
   a. **Take the input from the user.**
   b. **Create a list.**
   c. **Write a condition as :**

```
if n==0:
    fact=1
else:
    while n>=1:
        lst.append(n)
        fct=fct*n
        n=n-1
```

   d. **Print the factorial of the number.**

4. **Observations/Discussions (**For applied/experimental sciences/materials based labs**):**
   a. **Code for for loop:**

```
n= int(input('enter input value:'))

lst=[]
m=1

for i in range (n,0,-1):
    lst.append(i)
    m=m*i

print(lst)
print('factorial of',n,'is',m)
```

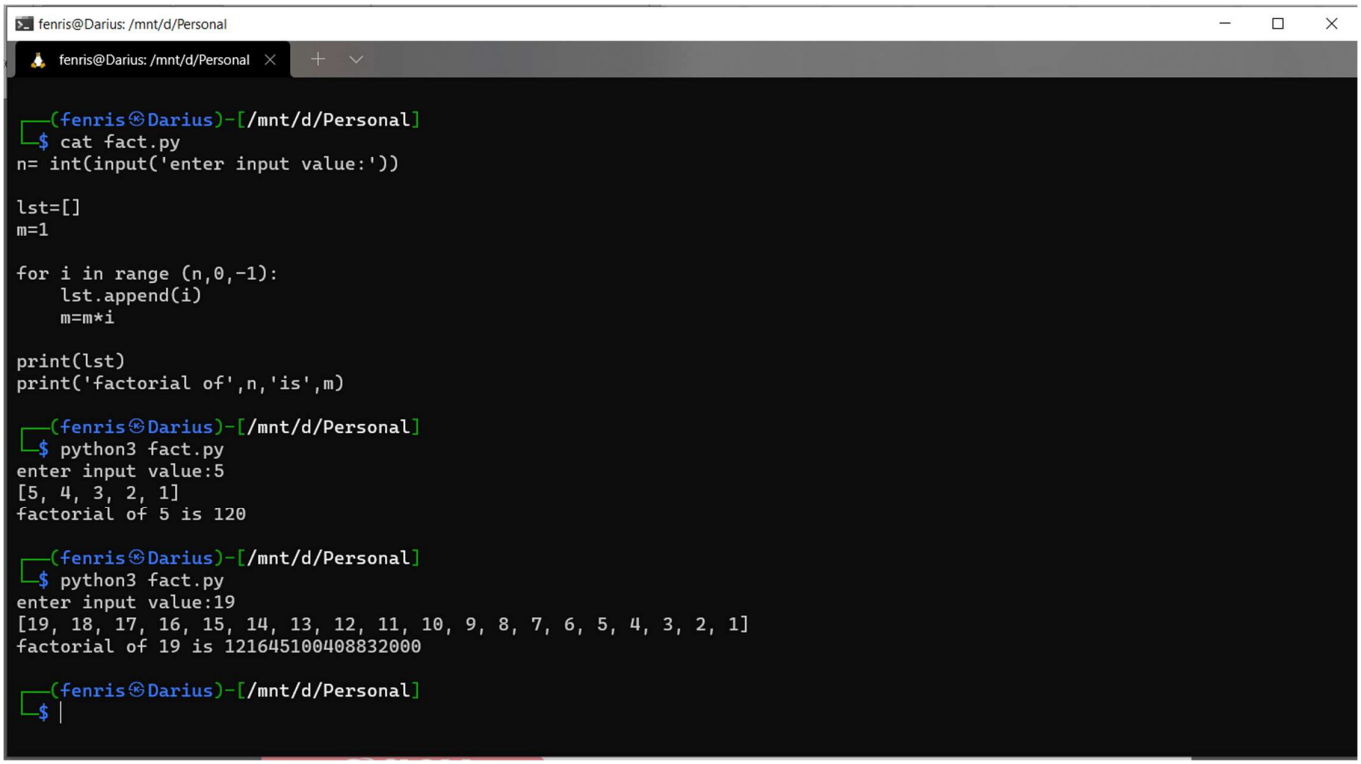
b. Code for while loop:

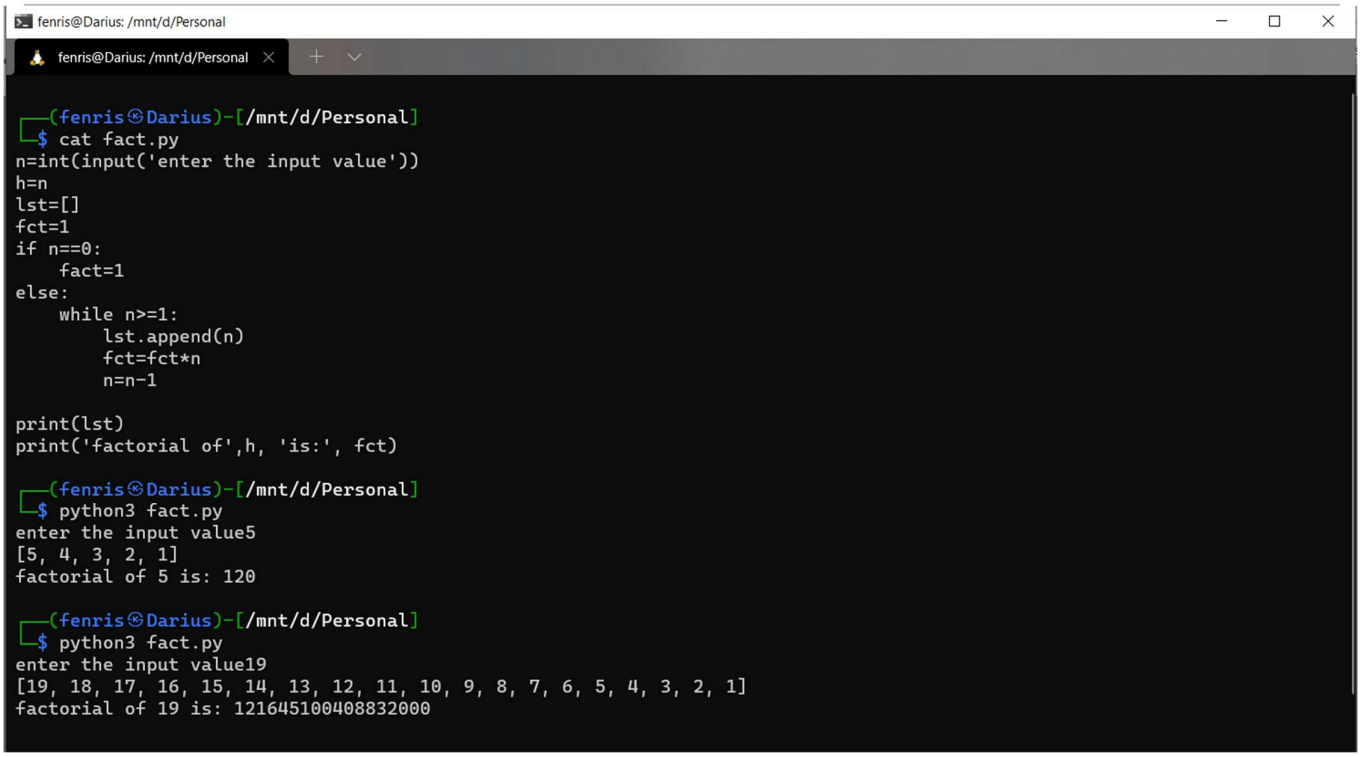
```
n=int(input('enter the input value'))
h=n
lst=[]
fct=1
if n==0:
   fact=1
else:
   while n>=1:
      lst.append(n)
      fct=fct*n
      n=n-1

print(lst)
print('factorial of',h, 'is:', fct)
```

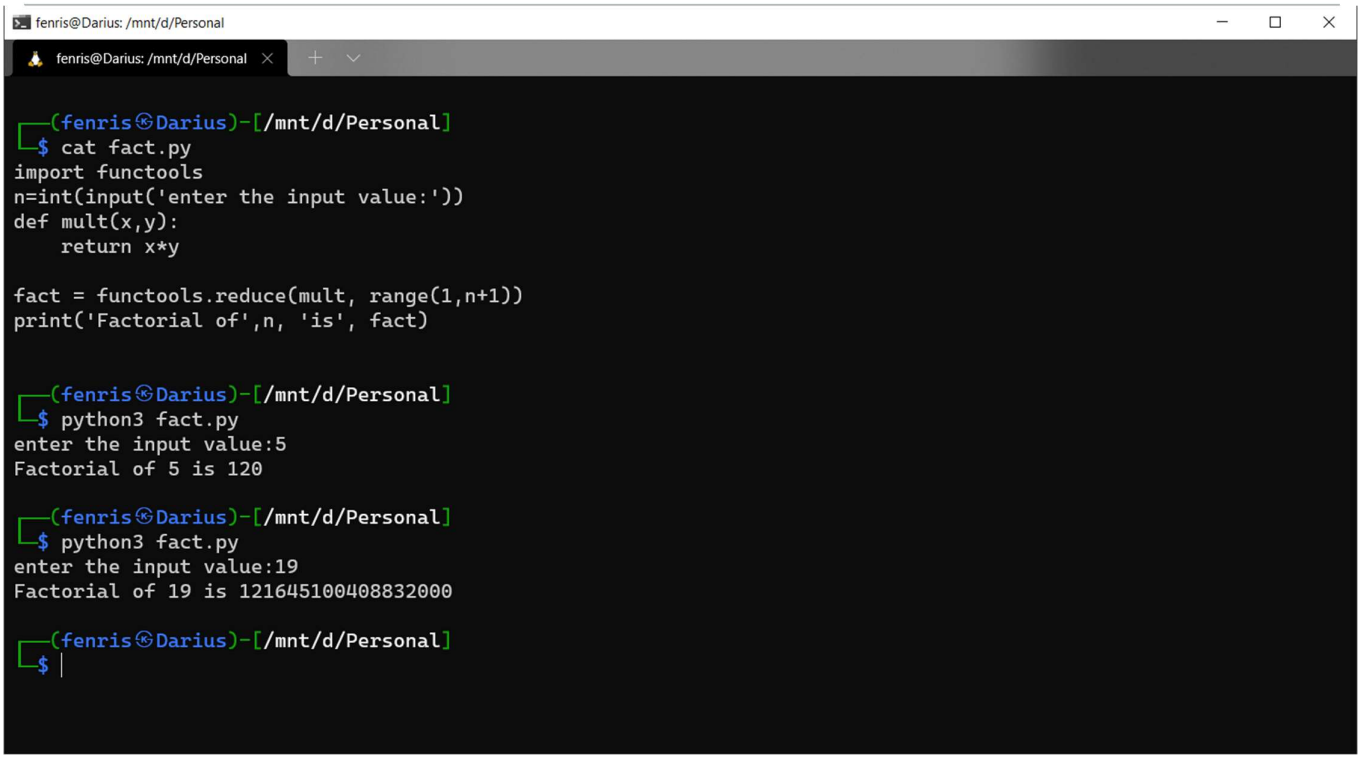
c. Code for reduce( ):

```
import functools
n=int(input('enter the input value:'))
def mult(x,y):
   return x*y

fact = functools.reduce(mult, range(1,n+1))
print('Factorial of',n, 'is', fact)
```

5. Result/Output/Writing Summary:




fenris@Darius: /mnt/d/Personal
fenris@Darius: /mnt/d/Personal
┌──(fenris㉿Darius)-[/mnt/d/Personal]
└─$ cat fact.py
n=int(input('enter the input value'))
h=n
lst=[]
fct=1
if n==0:
fact=1
else:
while n>=1:
lst.append(n)
fct=fct*n
n=n-1
print(lst)
print('factorial of',h, 'is:', fct)
┌──(fenris㉿Darius)-[/mnt/d/Personal]
└─$ python3 fact.py
enter the input value5
[5, 4, 3, 2, 1]
factorial of 5 is: 120
┌──(fenris㉿Darius)-[/mnt/d/Personal]
└─$ python3 fact.py
enter the input value19
[19, 18, 17, 16, 15, 14, 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1]
factorial of 19 is: 121645100408832000



Learning outcomes (What I have learnt):

1. **To print the factorial of any number using different methods.**
2. **Basics of python for Machine Learning.**
3. **Use of Reduce.**