Task 8: Create a Python Program to Calculate Factorial

DESCRIPTION:

- This is the description of Task-8 of my python internship at Happieloop.
- Here, the task is to implement a function to print the **Factorial of a given Number**.
- This task is simple and can be developed using recursion.
- I have created a file named **task8.py** and developed the code according to the requirements of the task.
- I have developed the code using the **factorial()** function for the code.
- I have implemented this code in Visual Studio Code(Source code editor) and executed the code in the Terminal of the VS Code Editor.
- Now coming to the code I have written, firstly let me define what is **Recursion**.
- **Recursion** refers to the process in which a function calls itself as a subroutine.
- This allows the function to be repeated several times, each time using the result of the previous iteration as the input.
- It simplifies the implementation of complex problems by breaking them down into smaller, more manageable subproblems.
- The recursive function used in the code is:

return n*factorial(n)

- Factorial of a number is nothing but giving the product of a number till it reaches to 1 subtracting the number by 1 each time.
- Let me explain to you, the operation of **Factorial** with an example.
- Assume n=5,
  The factorial of 5 is 5*4*3*2*1 i.e., 120.

CODE:

```
def factorial(n):
    if n<=1:
        return 1
    else:
        return n*factorial(n-1)
n=int(input("Enter a number:"))
if n<0:
    print("The input should be positive integer")
else:
    print(f"The factorial of {n} is: ", factorial(n))
```

- Now let's see the implementation of the code by giving different sample inputs and obtaining corresponding outputs.
- We can see and determine the accuracy of the code by giving large inputs to the code.

OUTPUT:

Enter a number:10

The factorial of 10 is: 3628800

Enter a number:5

The factorial of 5 is: 120

Enter a number:4

The factorial of 4 is: 24

Enter a number:15

The factorial of 15 is: 1307674368000

Enter a number:35

The factorial of 35 is:
10333147966386144929666651337523200000000

Enter a number:41

The factorial of 41 is:
33452526613163807108170062053440751665152000000000

Enter a number:530

The factorial of 530 is:
282768894511806884040693317494735370870286197046
072864302028207741271113386117033852466222933472
122786772682350020152650999919970533061221386323
313882305934011462307855449050928566133687410293
036422487860399384068845790046863045540180941988
541957188254532687202791519082367309728191470169
980778292757553431674977335265243475713534382581
749321602682911447453290670973238139709551042971
492351749733968629134542927530351530221420809914
260044514670968078715911827086155447913046577969
655138455884483555451345444319574660430853057027
923759585503690978031665726788905516741791667846
792264313354848976875267653207821904313677295856
782885996737741116688967815517699034366346591629
436709793297124503266471303838021662061093985373
694716142826449392228193812963934435539158055815
890569433795049624000656583722673786751986848754
823629381782087544325280817639928189638620892885
273715838119765934710726750209229048051094966960
032087070016524059514707803973153805323170695038
503598172993829892791794751923820321139675566388
826511777529812786513242305956477638747236419518
416172799287014058118736773120000000000000000000
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