

## ASSIGNMENT-7.4

NAME:-P LAHARI

BATCH-16


HTNO:-2303A51071

### Task 1 – Debugging Recursive Factorial Function

#### AI Prompt Used

Debug this recursive factorial Python function. It crashes and gives wrong output.

#### INCORRECT CODE:-



```
[1] 0s ▶ def factorial(n):  
    return n * factorial(n-1)  
  
    print(factorial(5))  
  
... -----  
RecursionError                                Traceback (most recent call last)  
/tmp/ipython-input-237490542.py in <cell line: 0>()  
      2     return n * factorial(n-1)  
      3  
----> 4 print(factorial(5))  
  
----- 1 frames -----  
... last 1 frames repeated, from the frame below ...  
  
/tmp/ipython-input-237490542.py in factorial(n)  
      1 def factorial(n):  
----> 2     return n * factorial(n-1)  
      3  
      4 print(factorial(5))  
  
RecursionError: maximum recursion depth exceeded
```

Next steps: [Explain error](#)

#### CORRECT CODE:-

```
def factorial(n):  
    if n == 0 or n == 1:  
        return 1  
    return n * factorial(n-1)  
  
print(factorial(5))  
... 120
```

## Task 2 – Fixing Data Type Errors in Sorting

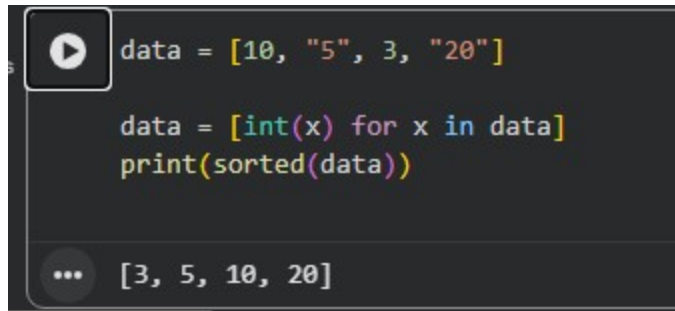
### AI Prompt Used

Why does this Python sorting code fail with mixed data types?

### INCORRECT CODE:-

```
data = [10, "5", 3, "20"]  
print(sorted(data))  
  
... -----  
TypeError                                Traceback (most recent call last)  
/tmp/ipython-input-3202248591.py in <cell line: 0>()  
      1 data = [10, "5", 3, "20"]  
----> 2 print(sorted(data))  
  
TypeError: '<' not supported between instances of 'str' and 'int'  
  
Next steps: Explain error
```

### CORRECTED CODE:-



```
data = [10, "5", 3, "20"]

data = [int(x) for x in data]
print(sorted(data))
```

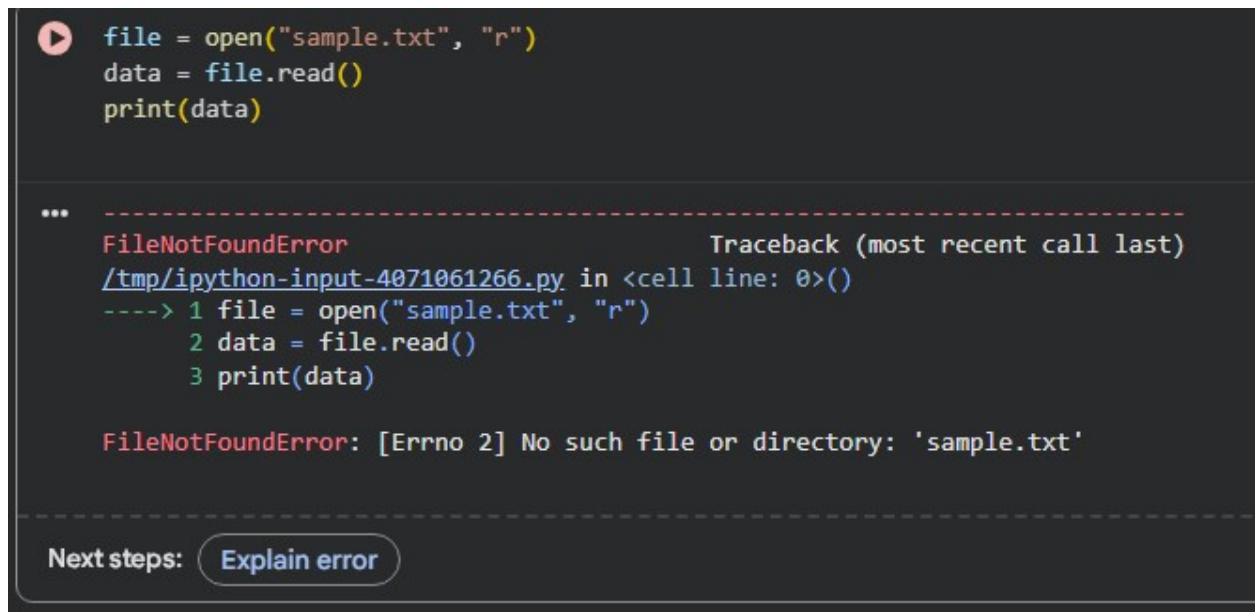
[3, 5, 10, 20]

### Task 3 – Improving File Handling Reliability

#### AI Prompt Used

Identify issue in Python file handling code that doesn't close files.

#### INCORRECT CODE:-



```
file = open("sample.txt", "r")
data = file.read()
print(data)
```

... **FileNotFoundError** Traceback (most recent call last)  
/tmp/ipython-input-4071061266.py in <cell line: 0>()  
----> 1 file = open("sample.txt", "r")  
 2 data = file.read()  
 3 print(data)  
  
**FileNotFoundError: [Errno 2] No such file or directory: 'sample.txt'**

Next steps: [Explain error](#)

#### CORRECT CODE:-

```
try:
    with open("sample.txt", "r") as file:
        data = file.read()
        print(data)
except FileNotFoundError:
    print("File not found.")

... File not found.
```

## Task 4 – Handling Runtime Errors in Loop

### AI Prompt Used

Fix ZeroDivisionError in loop so program continues running.

### INCORRECT CODE:-

```
for n in nums:
    print(10/n)
```

... 2.0

```
-----
ZeroDivisionError                                Traceback (most recent call last)
/tmp/ipython-input-2622015173.py in <cell line: 0>()
      2
      3 for n in nums:
----> 4     print(10/n)

ZeroDivisionError: division by zero
```

Next steps: [Explain error](#)

### CORRECT CODE:-

```
▶ nums = [5, 0, 2]

for n in nums:
    try:
        print(10/n)
    except ZeroDivisionError:
        print("Cannot divide by zero")

... 2.0
    Cannot divide by zero
    5.0
```

## Task 5 – Debugging Class Initialization Errors

### AI Prompt Used

Debug this Python class constructor error.

### INCORRECT CODE:-

```
▶ class Student:
    def __init__(name, age):
        name = name
        age = age


s = Student("Rahul", 20)
print(s.name)

... -----
TypeError                                 Traceback (most recent call last)
/tmp/ipython-input-3406629822.py in <cell line: 0>()
      4         age = age
      5
----> 6 s = Student("Rahul", 20)
      7 print(s.name)

TypeError: Student.__init__() takes 2 positional arguments but 3 were given

Next steps: Explain error
```

### CORRECT CODE:-



```
class Student:
    def __init__(self, name, age):
        self.name = name
        self.age = age

s = Student("ROHAN", 20)
print(s.name, s.age)
```

... ROHAN 20