SCHOOL OF COMPUTER SCIENCE AND ARTIFICIAL INTELLIGENCE	**DEPARTMENT OF COMPUTER SCIENCE ENGINEERING**

Program Name: M. Tech/MCA	**Assignment Type: Lab**	**AcademicYear:**2025-2026	
Course Coordinator Name	Venkataramana Veeramsetty		
Course Code		**Course Title**	AI Assisted Problem Solving Using Python
Year/Sem	I/I	**Regulation**	R24
Date and Day of Assignment	Week1 - Monday	**Time(s)**	
Duration	2 Hours	**Applicable to Batches**	M. Tech/MCA
AssignmentNumber:1.3(Present assignment number)/**24**(Total number of assignments)			

Q.No.	**Question**	***Expected Time to complete***
1	Lab 1: Environment Setup – GitHub Copilot and VS Code Integration **Lab Objectives:** • To install and configure GitHub Copilot in Visual Studio Code. • To explore AI-assisted code generation using GitHub Copilot. • To analyze the accuracy and effectiveness of Copilot's code suggestions. • To understand prompt-based programming using comments and code context **Lab Outcomes (LOs):** After completing this lab, students will be able to: • Set up GitHub Copilot in VS Code successfully. • Use inline comments and context to generate code with Copilot. • Evaluate AI-generated code for correctness and readability. • Compare code suggestions based on different prompts and programming styles. **Task Description#1** • Install and configure GitHub Copilot in VS Code. Take screenshots of each step. **Expected Output#1** • Install and configure GitHub Copilot in VS Code. Take screenshots of each step.	Week1 - Wednesday

Task Description#2

- Use Copilot to generate a is_prime() Python function**.**

Expected Output#2

- Function to check primality with correct logic.

Task Description#3

- Write a comment like # Function to reverse a string and use Copilot to generate the function.

Expected Output#3

- Auto-completed reverse function

Task Description#4

- Generate both recursive and iterative versions of a factorial function using comments.

Expected Output#4

- Two working factorial implementations

Task Description#5

- Use Copilot to find the largest number in a list. Assess code quality and efficiency.

Expected Output#5

- A valid function with your review

Note: Report should be submitted a word document for all tasks in a single document with prompts, comments & code explanation, and output and if required, screenshots.

Evaluation Criteria:

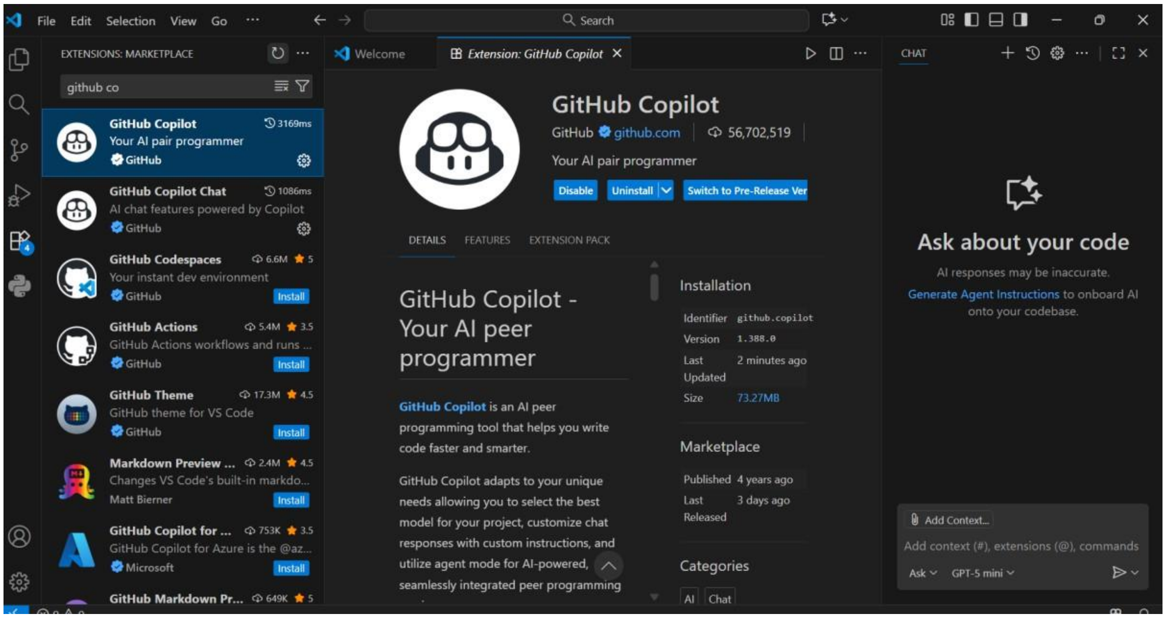
Criteria	Max Marks
Successful Setup of Copilot (Task #1)	2
is_prime() Python function (Task #2)	2
Reverse a string function (Task #3)	2
Factorial Function (Task #4)	2
Find the largest number (Task #5)	2
Total	**10 Marks**

Task Description#1

Install and configure GitHub Copilot in VS Code. Take screenshots of each step.

Steps:

- Open VS Code.
- To open Extensions, press “**Ctrl + Shift + X**”.
- In the search bar, type "**GitHub Copilot**".
- Click **Install** on the official extension by GitHub.
- When prompted, sign in with your GitHub account.



GitHub Copilot - Your AI peer programmer

GitHub Copilot is an AI peer programming tool that helps you write code faster and smarter.

GitHub Copilot adapts to your unique needs allowing you to select the best model for your project, customize chat responses with custom instructions, and utilize agent mode for AI-powered, seamlessly integrated peer programming

Installation

Identifier `github.copilot`
Version `1.388.0`
Last Updated 2 minutes ago
Size 73.27MB

Marketplace

Published 4 years ago
Last Released 3 days ago

Categories

AI Chat

AI responses may be inaccurate.

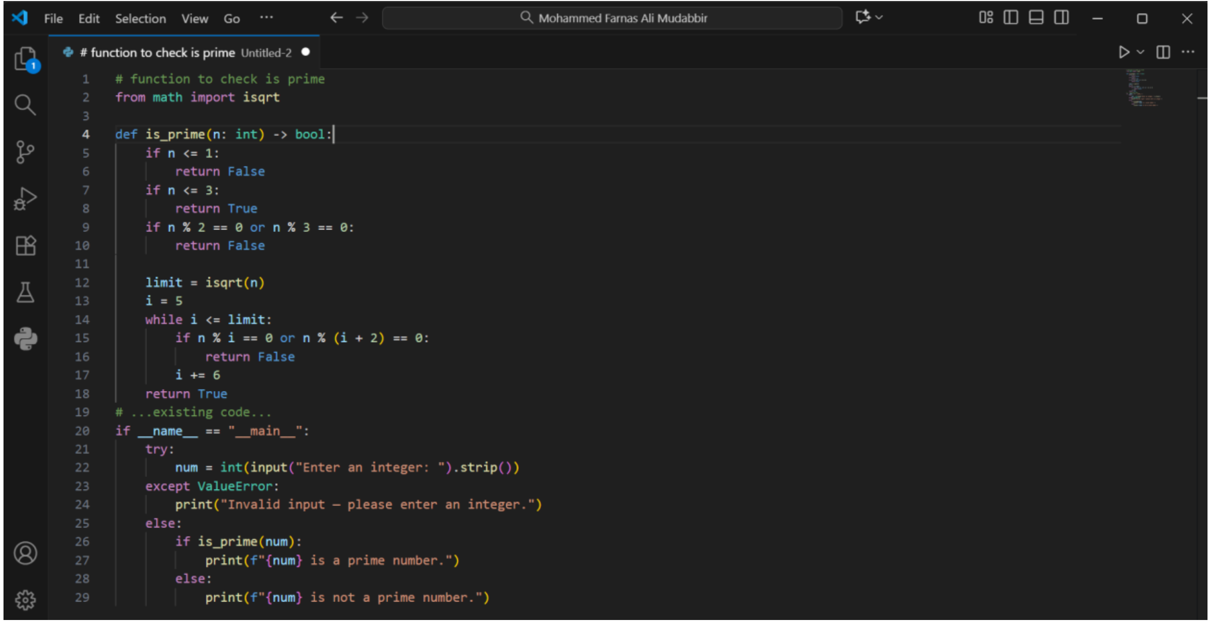
Generate Agent Instructions to onboard AI onto your codebase.

Add context (#), extensions (@), commands

Task Description#2

Use Copilot to generate a is prime() Python function**.**

Prompt: Provide me a Function to check if a number is prime

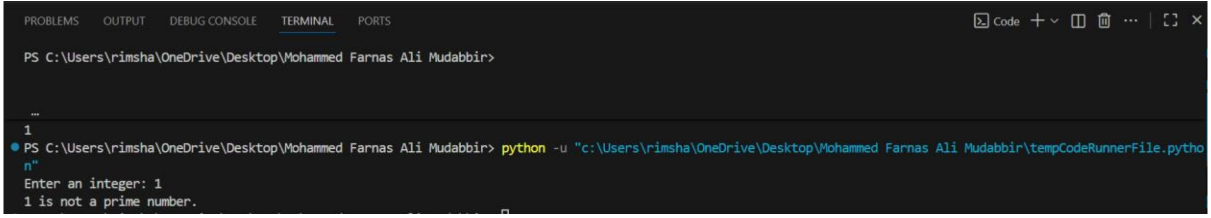

File Edit Selection View Go ···
Mohammed Farnas Ali Mudabbir
# function to check is prime Untitled-2

```python
# function to check is prime
from math import isqrt

def is_prime(n: int) -> bool:
    if n <= 1:
        return False
    if n <= 3:
        return True
    if n % 2 == 0 or n % 3 == 0:
        return False

    limit = isqrt(n)
    i = 5
    while i <= limit:
        if n % i == 0 or n % (i + 2) == 0:
            return False
        i += 6
    return True
# ...existing code...
if __name__ == "__main__":
    try:
        num = int(input("Enter an integer: ").strip())
    except ValueError:
        print("Invalid input — please enter an integer.")
    else:
        if is_prime(num):
            print(f"{num} is a prime number.")
        else:
            print(f"{num} is not a prime number.")
```

Expected Output#2

Function to check primality with correct logic.

Practical output:

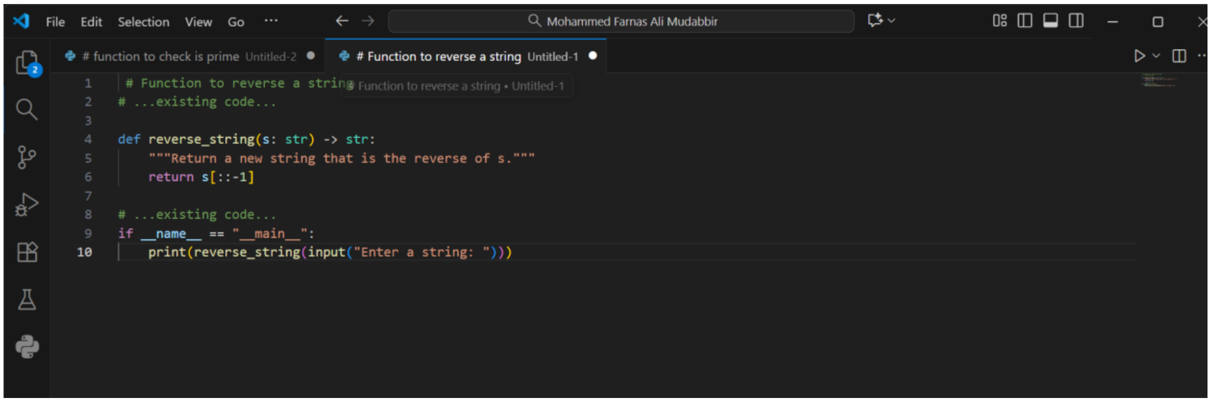


```
PS C:\Users\rimsha\OneDrive\Desktop\Mohammed Farnas Ali Mudabbir>


 …
1
PS C:\Users\rimsha\OneDrive\Desktop\Mohammed Farnas Ali Mudabbir> python -u "c:\Users\rimsha\OneDrive\Desktop\Mohammed Farnas Ali Mudabbir\tempCodeRunnerFile.pytho
n"
Enter an integer: 1
1 is not a prime number.
```

Task Description#3

Write a comment like # Function to reverse a string and use Copilot to generate the function.

Prompt: Give me a function to reverse a string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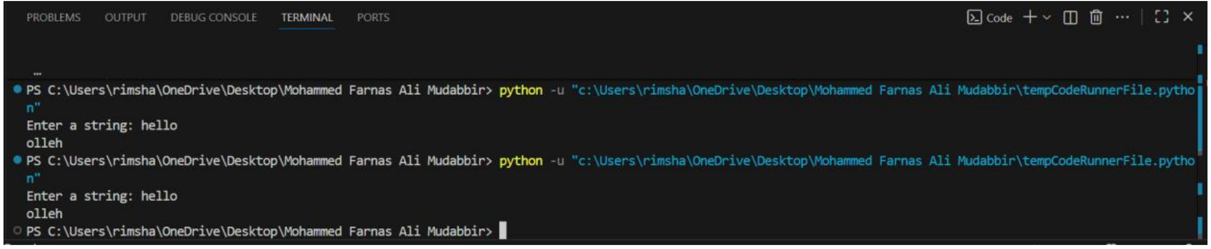
Mohammed Farnas Ali Mudabbir
# function to check is prime Untitled-2
# Function to reverse a string Untitled-1
# Function to reverse a string • Untitled-1

```
# Function to reverse a string
# ...existing code...

def reverse_string(s: str) -> str:
    """Return a new string that is the reverse of s."""
    return s[::-1]

# ...existing code...
if __name__ == "__main__":
    print(reverse_string(input("Enter a string: ")))
```

Expected Output#3

Auto-completed reverse function

Practical output:

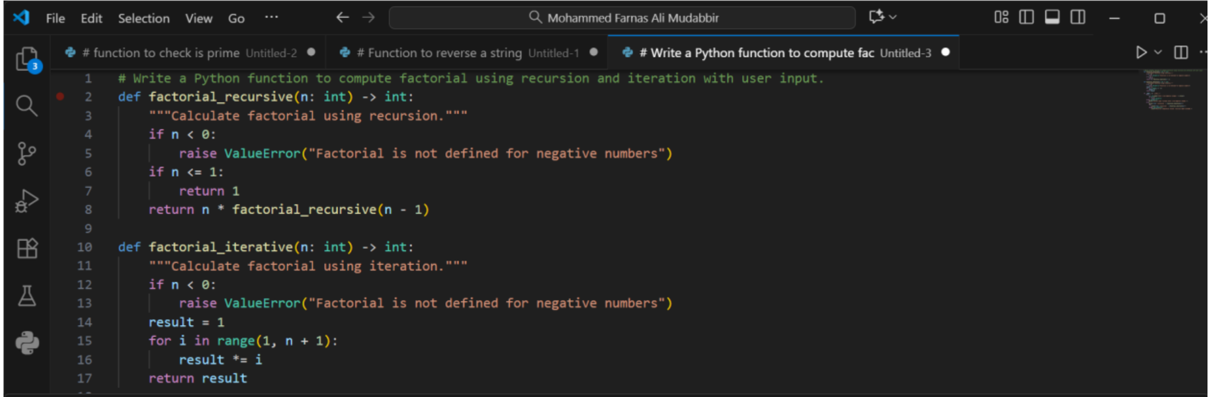


```
 …
● PS C:\Users\rimsha\OneDrive\Desktop\Mohammed Farnas Ali Mudabbir> python -u "c:\Users\rimsha\OneDrive\Desktop\Mohammed Farnas Ali Mudabbir\tempCodeRunnerFile.pytho
n"
Enter a string: hello
olleh
● PS C:\Users\rimsha\OneDrive\Desktop\Mohammed Farnas Ali Mudabbir> python -u "c:\Users\rimsha\OneDrive\Desktop\Mohammed Farnas Ali Mudabbir\tempCodeRunnerFile.pytho
n"
Enter a string: hello
olleh
○ PS C:\Users\rimsha\OneDrive\Desktop\Mohammed Farnas Ali Mudabbir> 
```

Task Description#4

Generate both recursive and iterative versions of a factorial function using comments.

Prompt: Write a Python function to compute factorial using recursion and iteration with user input.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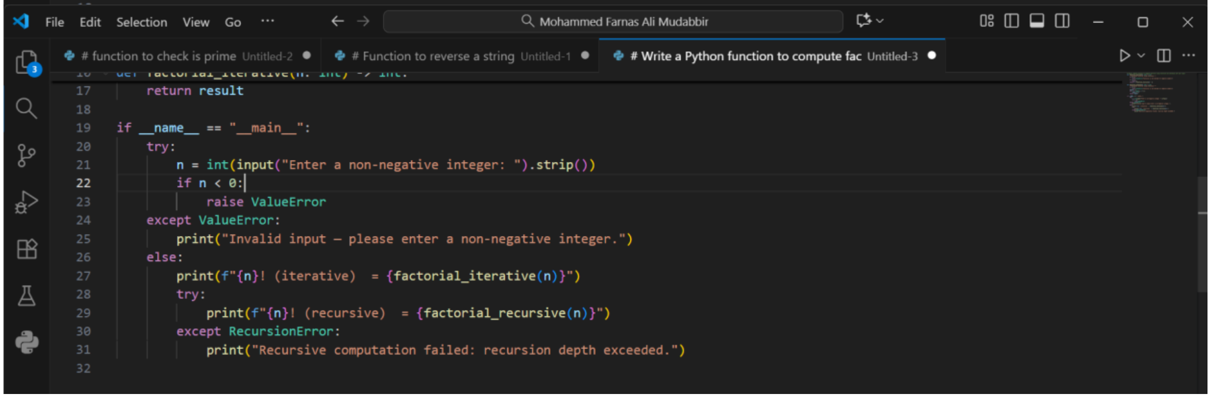
Mohammed Farnas Ali Mudabbir
# function to check is prime Untitled-2
# Function to reverse a string Untitled-1
# Write a Python function to compute fac Untitled-3

```python
# Write a Python function to compute factorial using recursion and iteration with user input.
def factorial_recursive(n: int) -> int:
    """Calculate factorial using recursion."""
    if n < 0:
        raise ValueError("Factorial is not defined for negative numbers")
    if n <= 1:
        return 1
    return n * factorial_recursive(n - 1)

def factorial_iterative(n: int) -> int:
    """Calculate factorial using iteration."""
    if n < 0:
        raise ValueError("Factorial is not defined for negative numbers")
    result = 1
    for i in range(1, n + 1):
        result *= i
    return result
```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Mohammed Farnas Ali Mudabbir
# function to check is prime Untitled-2
# Function to reverse a string Untitled-1
# Write a Python function to compute fac Untitled-3

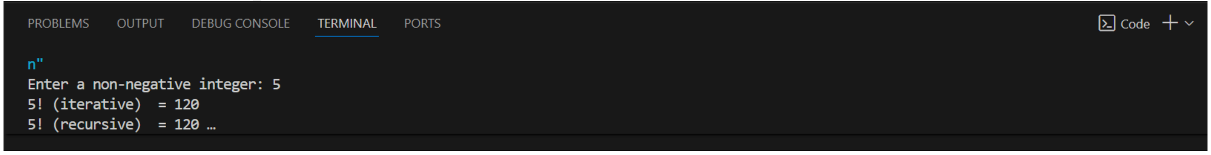
```python
    return result

if __name__ == "__main__":
    try:
        n = int(input("Enter a non-negative integer: ").strip())
        if n < 0:
            raise ValueError
    except ValueError:
        print("Invalid input — please enter a non-negative integer.")
    else:
        print(f"{n}! (iterative)  = {factorial_iterative(n)}")
        try:
            print(f"{n}! (recursive)  = {factorial_recursive(n)}")
        except RecursionError:
            print("Recursive computation failed: recursion depth exceeded.")
```

Expected Output#4

Two working factorial implementations

Practical output:

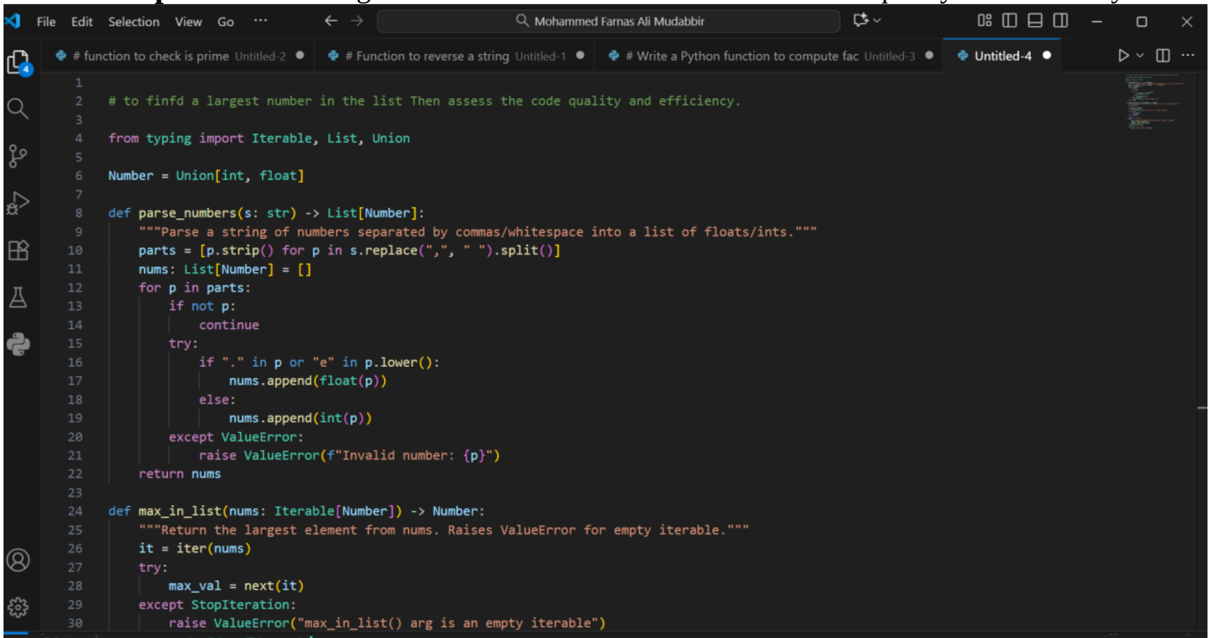


```
n"
Enter a non-negative integer: 5
5! (iterative)  = 120
5! (recursive)  = 120 …
```

Task Description#5

Use Copilot to find the largest number in a list. Assess code quality and efficiency.

Prompt: To finfd a largest number in the list Then assess the code quality and efficiency.



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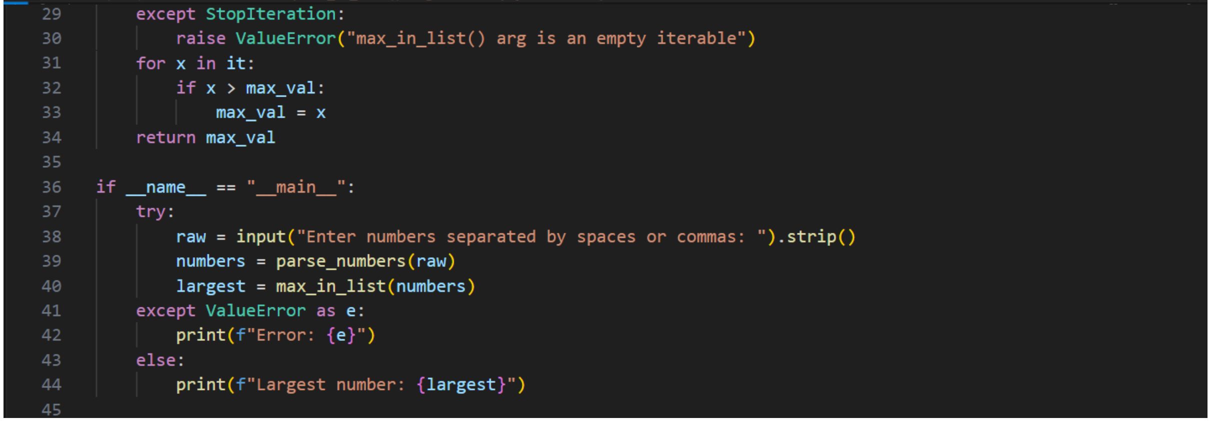
Mohammed Farnas Ali Mudabbir
# function to check is prime Untitled-2
# Function to reverse a string Untitled-1
# Write a Python function to compute fac Untitled-3
Untitled-4

```python

# to finfd a largest number in the list Then assess the code quality and efficiency.

from typing import Iterable, List, Union

Number = Union[int, float]

def parse_numbers(s: str) -> List[Number]:
    """Parse a string of numbers separated by commas/whitespace into a list of floats/ints."""
    parts = [p.strip() for p in s.replace(",", " ").split()]
    nums: List[Number] = []
    for p in parts:
        if not p:
            continue
        try:
            if "." in p or "e" in p.lower():
                nums.append(float(p))
            else:
                nums.append(int(p))
        except ValueError:
            raise ValueError(f"Invalid number: {p}")
    return nums

def max_in_list(nums: Iterable[Number]) -> Number:
    """Return the largest element from nums. Raises ValueError for empty iterable."""
    it = iter(nums)
    try:
        max_val = next(it)
    except StopIteration:
        raise ValueError("max_in_list() arg is an empty iterable")
```

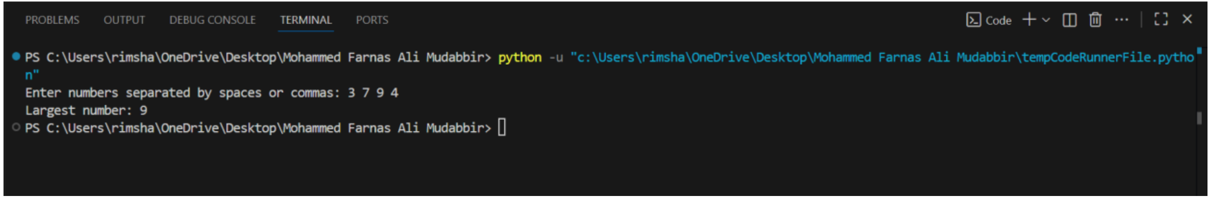


```python
    except StopIteration:
        raise ValueError("max_in_list() arg is an empty iterable")
    for x in it:
        if x > max_val:
            max_val = x
    return max_val

if __name__ == "__main__":
    try:
        raw = input("Enter numbers separated by spaces or commas: ").strip()
        numbers = parse_numbers(raw)
        largest = max_in_list(numbers)
    except ValueError as e:
        print(f"Error: {e}")
    else:
        print(f"Largest number: {largest}")

```

Expected Output#5

A valid function with your review

Practical output:



```
PS C:\Users\rimsha\OneDrive\Desktop\Mohammed Farnas Ali Mudabbir> python -u "c:\Users\rimsha\OneDrive\Desktop\Mohammed Farnas Ali Mudabbir\tempCodeRunnerFile.pytho
n"
Enter numbers separated by spaces or commas: 3 7 9 4
Largest number: 9
PS C:\Users\rimsha\OneDrive\Desktop\Mohammed Farnas Ali Mudabbir> 
```