

LAB ASSIGNMENT-1

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1. Generate a python code to check whether a number is prime or not and take input in dynamic way

The screenshot shows a code editor with a Python file named `ai.py`. The code defines a function `is_prime` that checks if a given number is prime. It then prompts the user for a number and prints whether it is prime or not. Below the code editor is a terminal window showing the execution of the script and its output.

```
ai.py > ...
1  def is_prime(n):
2      if n <= 1:
3          return False
4      if n == 2:
5          return True
6      if n % 2 == 0:
7          return False
8      for i in range(3, int(n ** 0.5) + 1, 2):
9          if n % i == 0:
10             return False
11     return True
12
13 num = int(input("Enter a number: "))
14 if is_prime(num):
15     print(f"{num} is a prime number.")
16 else:
17     print(f"{num} is not a prime number.")

PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS    Python Debug Console + ×
```

● PS C:\Users\PARDHASARADHI\Desktop\ai> & 'c:\Users\PARDHASARADHI\AppData\Local\Programs\Python\Python313\python.exe' 'c:\Users\PARDHASARADHI\.vscode\extensions\ms-python.debugpy-2025.10.0-win32-x64\bundled\libs\debugpy\launcher' '51159' '--' 'c:\Users\PARDHASARADHI\Desktop\ai\ai.py'
Enter a number: 5
5 is a prime number.
○ PS C:\Users\PARDHASARADHI\Desktop\ai>

2. Generate a python code to reverse a string using function and take input in dynamic way

The screenshot shows a Python script named `task3.py` in a code editor. The script defines a function `reverse_string` that returns the reversed version of a string. It then prompts the user for input, calls the function, and prints the result. A yellow lightbulb icon is shown above the code, likely indicating a suggestion or warning.

```
task3.py > [?] user_input
1 def reverse_string(s):
2     return s[::-1]
3
4 user_input = input("Enter a string to reverse: ")
5 reversed_str = reverse_string(user_input)
6 print("Reversed string:", reversed_str)
```

The terminal below shows the execution of the script. The user enters "madam" and the script outputs "Reversed string: madam".

- PS C:\Users\PARDHASARADHI\Desktop\ai> & 'c:\Users\PARDHASARADHI\AppData\Local\Programs\Python\Python313\python.exe' 'c:\Users\PARDHASARADHI\.vscode\extensions\ms-python.debugpy-2025.10.0-win32-x64\bundledlibs\debugpy\launcher' '50541' '--' 'c:\Users\PARDHASARADHI\Desktop\ai\task3.py'
- Enter a string to reverse: madam
- Reversed string: madam

3. Generate both recursive and iterative version of a factorial using comments by python program

```

recursive_and_iteartive.py > ...
1 # Recursive version of factorial with dynamic input
2 def factorial_recursive(n):
3     if n == 0 or n == 1:
4         return 1
5     else:
6         return n * factorial_recursive(n - 1)
7
8 # Iterative version of factorial with dynamic input
9 def factorial_iterative(n):
10    result = 1
11    for i in range(2, n + 1):
12        result *= i
13    return result
14
15 # Get dynamic input from user
16 num = int(input("Enter a number to calculate its factorial: "))
17
18 print(f"Recursive: Factorial of {num} is {factorial_recursive(num)}")
19 print(f"Iterative: Factorial of {num} is {factorial_iterative(num)}")

```

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PS C:\Users\PARDHASARADHI\Desktop\ai> & 'c:\Users\PARDHASARADHI\AppData\Local\Programs\Python\Python313\python.exe' 'c:\Users\PARDHASARADHI\.vscode\extensions\ms-python.debugpy-2025.10.0-win32-x64\bundled\libs\debugpy\launcher' '51467' '--' 'c:\Users\PARDHASARADHI\Desktop\ai\recursive_and_iteartive.py'
Enter a number to calculate its factorial: 5
Recursive: Factorial of 5 is 120
Iterative: Factorial of 5 is 120
PS C:\Users\PARDHASARADHI\Desktop\ai>

4. Generate a python code to find the largest number in a list and assess code *quality* and efficiency

```

largest_number.py > ...
1 # Python program to find the largest number in a list with dynamic input
2 # Take input from user
3 numbers = input("Enter numbers separated by spaces: ").split()
4 # Convert input strings to integers
5 numbers = [int(num) for num in numbers]
6 # Find and print the largest number
7 if numbers:
8     print("The largest number is:", max(numbers))
9 else:
10    print("No numbers were entered.")

```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS Python Debug Console + ×

PS C:\Users\PARDHASARADHI\Desktop\ai> & 'c:\Users\PARDHASARADHI\AppData\Local\Programs\Python\Python313\python.exe' 'c:\Users\PARDHASARADHI\.vscode\extensions\ms-python.debugpy-2025.10.0-win32-x64\bundled\libs\debugpy\launcher' '51521' '--' 'c:\Users\PARDHASARADHI\Desktop\ai\largest_number.py'
Enter numbers separated by spaces: 5 7 25 78 55
The largest number is: 78
PS C:\Users\PARDHASARADHI\Desktop\ai>