

Assignment – 4.5

Hall Ticket No.: 2303A510D9

Bt– 29

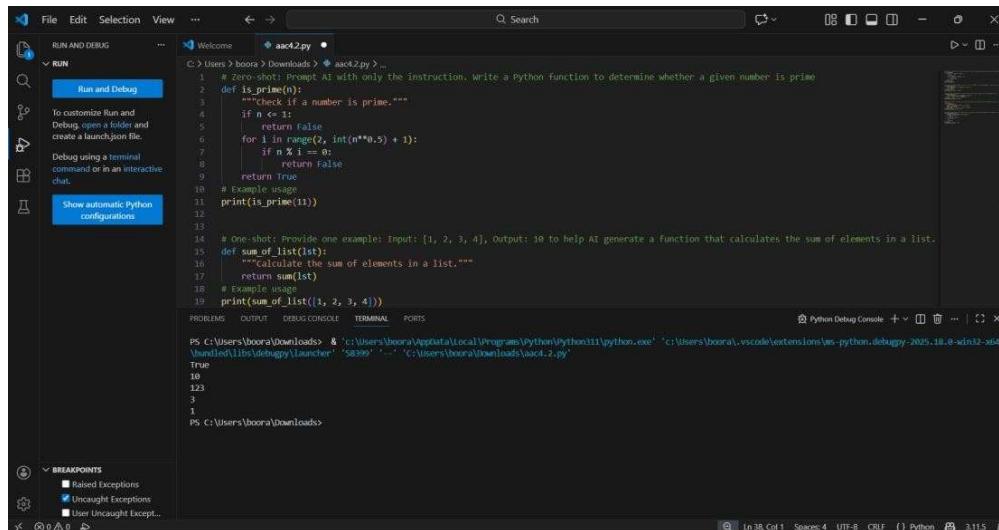
Task Description-1

- Zero-shot: Prompt AI with only the instruction. Write a Python function to determine whether a given number is prime

Expected Output-1

- A basic Python function to check if a number is prime, demonstrating correct logical conditions without relying on examples or additional context

CODE & OUTPUT



The screenshot shows the Visual Studio Code interface with the following details:

- File Explorer:** Shows a folder structure with 'aac4.2.py' as the active file.
- Code Editor:** Displays the Python code for a prime number checker and a sum calculator.
- Terminal:** Shows the command-line output of running the script 'aac4.2.py' with the input [1, 2, 3, 4] and output 10.
- Status Bar:** Shows the current file is 'aac4.2.py', with 38 columns, 4 spaces, and encoding as UTF-8.

```
C:\Users\boora>cd "C:\Users\boora\Downloads" & python aac4.2.py
1 # Zero-shot: Prompt AI with only the instruction. Write a Python function to determine whether a given number is prime
2 def is_prime(n):
3     """Check if a number is prime."""
4     if n < 2:
5         return False
6     for i in range(2, int(n**0.5) + 1):
7         if n % i == 0:
8             return False
9     return True
10 # Example usage
11 print(is_prime(11))
12
13 # One-shot: provide one example: Input: [1, 2, 3, 4], Output: 10 to help AI generate a function that calculates the sum of elements in a list.
14 def sum_of_list(lst):
15     """Calculate the sum of elements in a list."""
16     return sum(lst)
17 # Example usage
18 print(sum_of_list([1, 2, 3, 4]))
19
```

PS C:\Users\boora\Downloads> & "c:\users\boora\appdata\local\programs\python\python311\python.exe" "c:\users\boora\.vscode\extensions\ms-python.python-2025.18.0-win32-x64\jupyter\lib\site-packages\jupyter\launcher" "8899" -- "C:\Users\boora\Downloads\aac4.2.py"
True
10
123
3
1
PS C:\Users\boora\Downloads>

OUTPUT - True

Task Description-2

- One-shot: Provide one example: Input: [1, 2, 3, 4], Output: 10 to help AI generate a function that calculates the sum of elements in a list.

Expected Output-2

- A correct conversion function guided by the single example.

CODE & OUTPUT

The screenshot shows the Visual Studio Code interface. On the left, the sidebar displays 'RUN AND DEBUG' and 'RUN' sections. The main editor area shows a Python file named 'aac42.py' with the following code:

```
def is_prime(n):
    for i in range(2, int(n**0.5) + 1):
        if n % i == 0:
            return False
    return True

# Example usage
print(is_prime(11))

# One-shot: Provide one example: Input: [1, 2, 3, 4], Output: 10 to help AI generate a function that calculates the sum of elements in a list.
def sum_of_list(lst):
    """Calculate the sum of elements in a list."""
    return sum(lst)

# Example usage
print(sum_of_list([1, 2, 3, 4]))

# Few-shot: Give 2-3 examples to create a function that extracts digits from an alphanumeric string.
def extract_digits(s):
```

The terminal at the bottom shows the command being run and its output:

```
PS C:\Users\boora\Downloads> & "c:\Users\boora\AppData\Local\Programs\Python\Python311\python.exe" "c:\Users\boora\vscode\extensions\ms-python.python\2025.18.0-win32-x64\Python\lib\idlelib\idleLauncher.pyw" -- -- "c:\Users\boora\Downloads\aac42.py"
Traceback (most recent call last):
  File "c:\Users\boora\Downloads\aac42.py", line 1, in <module>
    print(extract_digits("123"))
  File "c:\Users\boora\Downloads\aac42.py", line 21, in extract_digits
    raise ValueError(f"Input '{s}' is not a valid alphanumeric string")
ValueError: Input '123' is not a valid alphanumeric string
PS C:\Users\boora\Downloads>
```

OUTPUT - 10

Task Description-3

- Few-shot: Give 2–3 examples to create a function that extracts digits from an alphanumeric string.

Expected Output-3

- Accurate function that returns only the digits from alphanumeric string.

CODE & OUTPUT

The screenshot shows the VS Code interface with the following details:

- File Explorer:** Shows a folder structure with 'RUN AND DEBUG' and 'RUN' selected.
- Search Bar:** Contains the text 'Q. Search'.
- Terminal:** Displays the command `python aac4.2.py` and its output:

```
C:\Users\boora\Downloads> python aac4.2.py
19 print(sum_of_list([1, 2, 3, 4]))
20
21
22 # Few-shot: Give 2-3 examples to create a function that extracts digits from an alphanumeric string.
23 def extract_digits(s):
24     """Extract digits from an alphanumeric string."""
25     return ''.join(filter(str.isdigit, s))
26
27 # Examples:
28 print(extract_digits("a1b2c3"))
29
30
31 #Compare zero-shot vs few-shot prompting for generating a function that counts the number of vowels in a string.
32
33
34
35
36
37
38
39
```

PS C:\Users\boora\Downloads> & 'c:\Users\boora\AppData\Local\Programs\Python\Python311\python.exe' 'c:\Users\boora\.vscode\extensions\ms-python.python-2025.18.0-win32-x64\bundled\libs\debugpy\launcher' '58399' '--' 'C:\Users\boora\Downloads\aac4.2.py'

```
True
16
123
3
1
PS C:\Users\boora\Downloads>
```
- Bottom Status Bar:** Shows 'Ln 38, Col 1' and other system icons.

OUTPUT - 123

Task Description-4

- Compare zero-shot vs few-shot prompting for generating a function that counts the number of vowels in a string.

Expected Output-4

- Output comparison + student explanation on how examples helped the model.

CODE & OUTPUT

The screenshot shows the Visual Studio Code interface with the following details:

- File Explorer:** Shows a folder structure with 'RUN AND DEBUG' and 'RUN' sections.
- Search Bar:** Contains the text 'aac4.2.py'.
- Code Editor:** Displays the content of 'aac4.2.py'. The code defines a function 'count_vowels' that counts vowels in a string. It includes a docstring, a comment, and a return statement using a generator expression.
- Terminal:** Shows the output of running the script. The command 'python aac4.2.py' is run, followed by the output: 'True', '19', '123', '3', and '1'.
- Bottom Status Bar:** Shows 'Ln 38, Col 1' and other file-related information.
- Sidebar:** Includes sections for 'BREAKPOINTS' (with 'Raised Exceptions' checked), 'OUTPUT' (empty), 'DEBUG CONSOLE' (empty), 'TERMINAL' (empty), and 'PORTS' (empty).

OUTPUT - 3

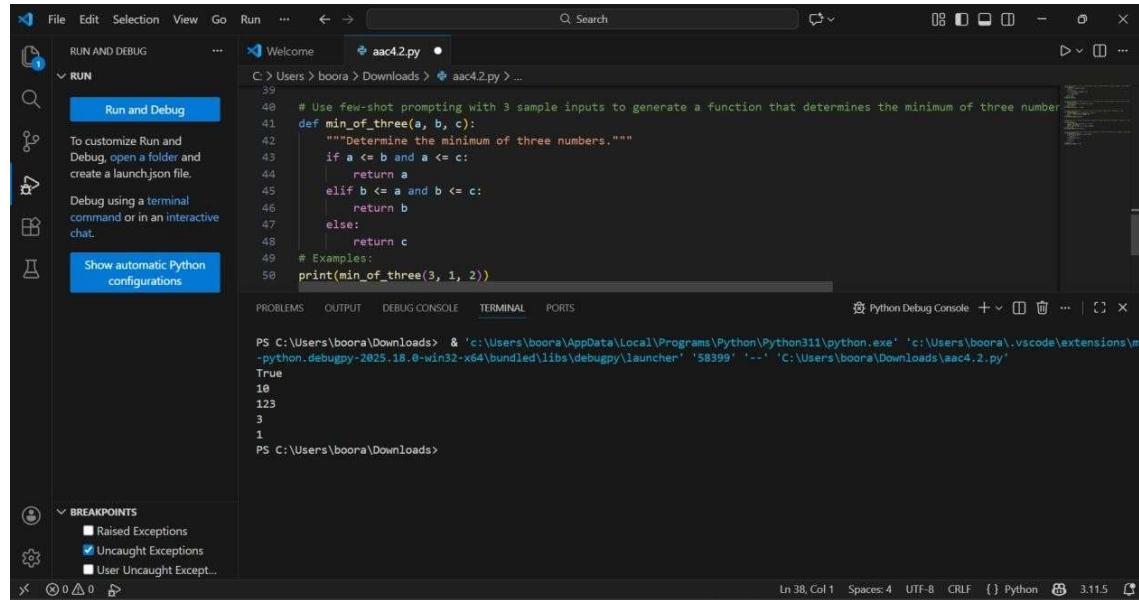
Task Description-5

- Use few-shot prompting with 3 sample inputs to generate a function that determines the minimum of three numbers without using the built-in min() function.

Expected Output-5

- A function that handles all cases with correct logic based on example patterns.

CODE & OUTPUT



The screenshot shows the Visual Studio Code interface. The left sidebar has 'RUN AND DEBUG' selected under 'RUN'. The main editor area contains a Python script named 'aac4.2.py' with the following code:

```
39  # Use few-shot prompting with 3 sample inputs to generate a function that determines the minimum of three numbers
40  def min_of_three(a, b, c):
41      """Determine the minimum of three numbers."""
42      if a <= b and a <= c:
43          return a
44      elif b <= a and b <= c:
45          return b
46      else:
47          return c
48  # Examples:
49  print(min_of_three(3, 1, 2))
```

The terminal below shows the execution of the script:

```
PS C:\Users\boora\Downloads> & 'c:\Users\boora\AppData\Local\Programs\Python\Python311\python.exe' 'c:\Users\boora\.vscode\extensions\ms-python.python.debugpy-2025.18.0-win32-x64\bundled\libs\debugpy\launcher' '58399' '--' 'C:\Users\boora\Downloads\aac4.2.py'
True
10
123
3
1
PS C:\Users\boora\Downloads>
```

OUTPUT - 1