

Lab # 3

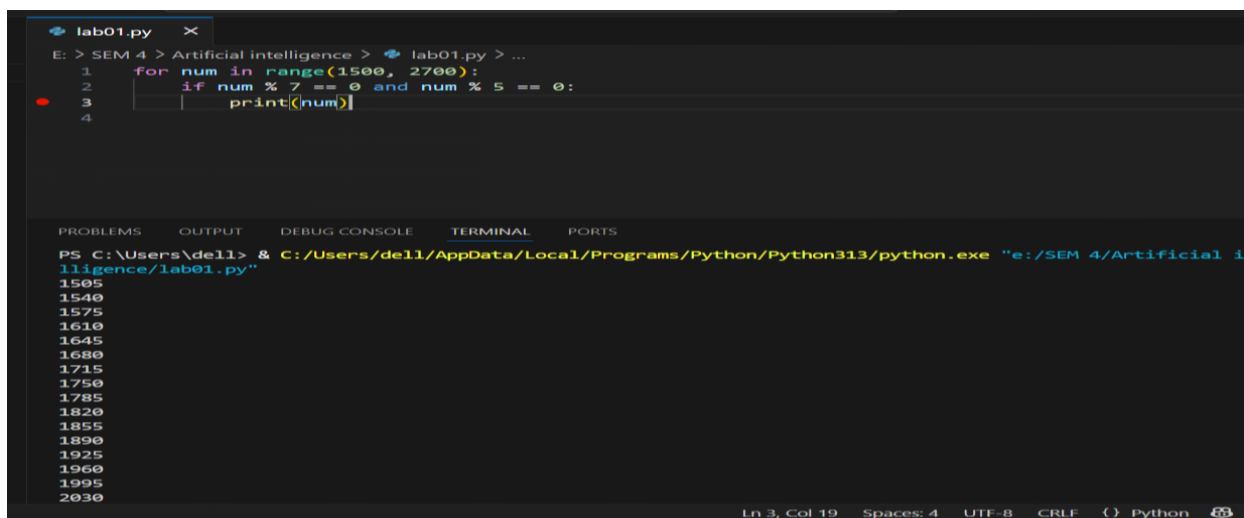
Q.1

Write a Python program to find those numbers which are divisible by 7 and multiple of 5, between 1500 and 2700 (both included).

```
for num in range(1500, 2701):
```

```
    if num % 7 == 0 and num % 5 == 0:
```

```
        print(num)
```



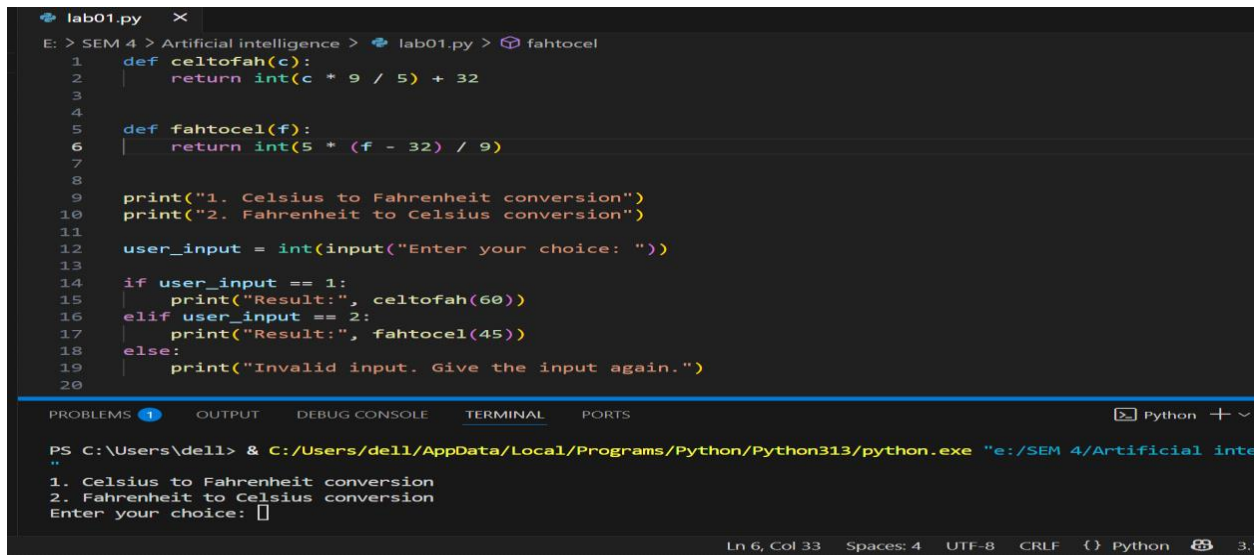
The screenshot shows a Python IDE with a file named 'lab01.py'. The code in the editor is:

```
1 for num in range(1500, 2700):
2     if num % 7 == 0 and num % 5 == 0:
3         print(num)
4
```

The terminal output shows the following numbers: 1505, 1540, 1575, 1610, 1645, 1680, 1715, 1750, 1785, 1820, 1855, 1890, 1925, 1960, 1995, 2030.

Q # 2

Write a Python program to convert temperatures to and from Celsius, Fahrenheit. [Formula: $c/5 = f-32/9$ [where c = temperature in Celsius and f = temperature in Fahrenheit



The screenshot shows a Python IDE with a file named `lab01.py`. The code defines two functions: `celtofah(c)` for Celsius to Fahrenheit conversion and `fahtocel(f)` for Fahrenheit to Celsius conversion. It then prompts the user to choose between the two conversions. The terminal output shows the program running, displaying the menu and the user's choice.

```
lab01.py x
E: > SEM 4 > Artificial intelligence > lab01.py > fahtocel
1  def celfoh(c):
2      return int(c * 9 / 5) + 32
3
4
5  def fahtocel(f):
6      return int(5 * (f - 32) / 9)
7
8
9  print("1. Celsius to Fahrenheit conversion")
10 print("2. Fahrenheit to Celsius conversion")
11
12 user_input = int(input("Enter your choice: "))
13
14 if user_input == 1:
15     print("Result:", celfoh(60))
16 elif user_input == 2:
17     print("Result:", fahtocel(45))
18 else:
19     print("Invalid input. Give the input again.")
20
```

PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL PORTS Python +

```
PS C:\Users\dell> & C:/Users/dell/AppData/Local/Programs/Python/Python313/python.exe "e:/SEM 4/Artificial inte
"
1. Celsius to Fahrenheit conversion
2. Fahrenheit to Celsius conversion
Enter your choice: 
```

Ln 6, Col 33 Spaces: 4 UTF-8 CRLF {} Python 3.

Q # 3

Write a Python program to guess a number between 1 to 9.

```
C: > Users > USER > OneDrive > Documents > AI-Lab-1 > LAB 2 > ...
4  input_num = int(input("enter a number"))
5  while num == input_num:
6      print("Well guessed")
7      break
8  else:
9      print("try again")
10
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
PS C:\Users\USER> & C:/Users/USER/AppData/Local/Microsoft/WindowsApps/
10
enter a number 10
Well guessed
PS C:\Users\USER> 
```

Q # 4

Write a Python program to construct the following pattern, using a nested loop.

```
*
* *
* * *
* * * *
* * * * *
* * * *
* * * *
```

* *

*

```
C: > Users > USER > OneDrive > Documents > AI-Lab-1 > LAB 2 > ...  
1   for i in range(1,6):  
2   |   print("*" * i)  
3   for i in range(4,0,-1):  
4   |   print("*" * i)
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
PS C:\Users\USER> & C:/Users/USER/AppData/Local/Microsoft/WindowsApps  
*  
* *  
* * *  
* * * *  
* * * * *  
* * * * *  
* * * * *  
* * * *  
* * *  
* *  
*  
PS C:\Users\USER>
```

Q # 5

Write a Python program that accepts a word from the user and reverse it.

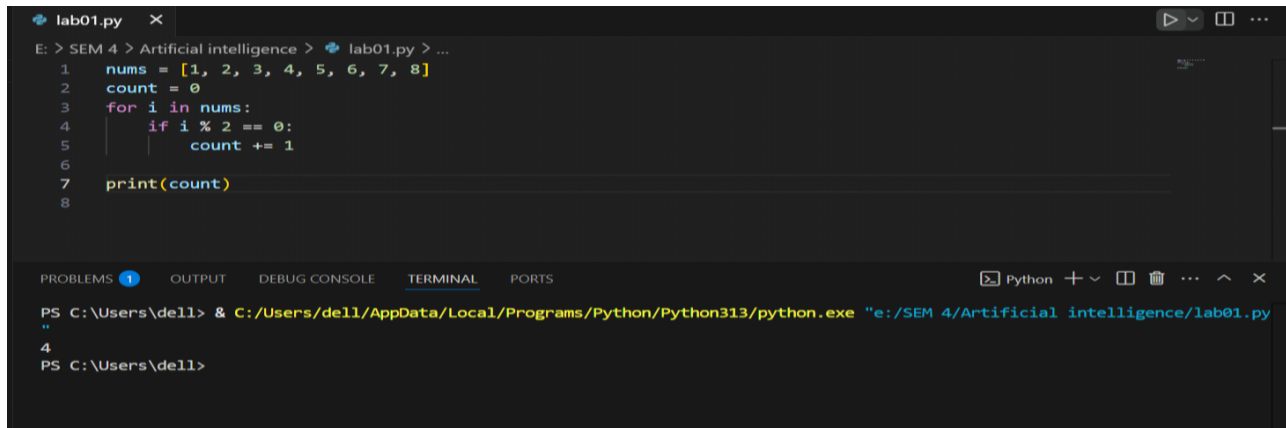
```
E: > SEM 4 > Artificial intelligence > lab01.py > ...  
1   word = input("Enter the number ")  
2   reverse_word = word[::-1]  
3   print("reversed word", reverse_word)  
4
```

PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
PS C:\Users\dell> & C:/Users/dell/AppData/Local/Programs/Python/Python313/python.exe "e:/SEM 4/Artificial intelligence/lab01.py"  
Enter the number horse  
reversed word esroh  
PS C:\Users\dell>
```

Q # 6

Write a Python program to count the number of even and odd numbers from a series of numbers.



```
lab01.py x
E: > SEM 4 > Artificial intelligence > lab01.py > ...
1  nums = [1, 2, 3, 4, 5, 6, 7, 8]
2  count = 0
3  for i in nums:
4      if i % 2 == 0:
5          count += 1
6
7  print(count)
8

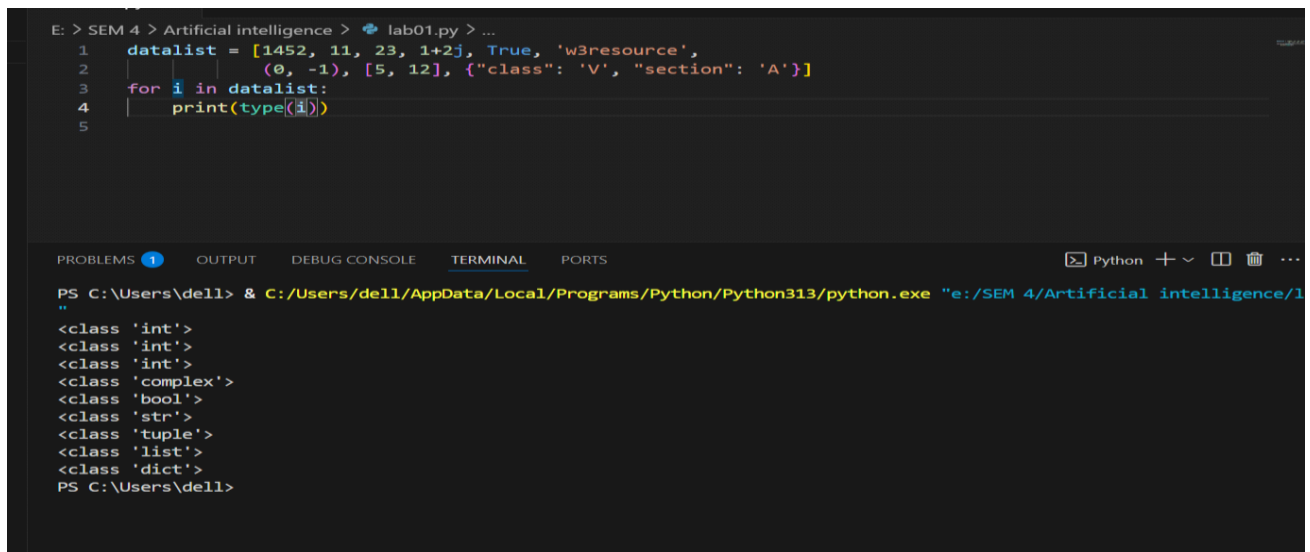
PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL PORTS
Python + - [ ] [ ] ... ^ x

PS C:\Users\dell> & C:/Users/dell/AppData/Local/Programs/Python/Python313/python.exe "e:/SEM 4/Artificial intelligence/lab01.py"
4
PS C:\Users\dell>
```

Q # 7

Write a Python program that prints each item and its corresponding type from the following list.

***Sample List:** `datalist = [1452, 11.23, 1+2j, True, 'w3resource', (0, -1), [5, 12], {"class": 'V', "section": 'A'}]`



```
E: > SEM 4 > Artificial intelligence > lab01.py > ...
1  datalist = [1452, 11.23, 1+2j, True, 'w3resource',
2              (0, -1), [5, 12], {"class": 'V', "section": 'A'}]
3  for i in datalist:
4      print(type(i))
5

PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL PORTS
Python + - [ ] [ ] ... ^ x

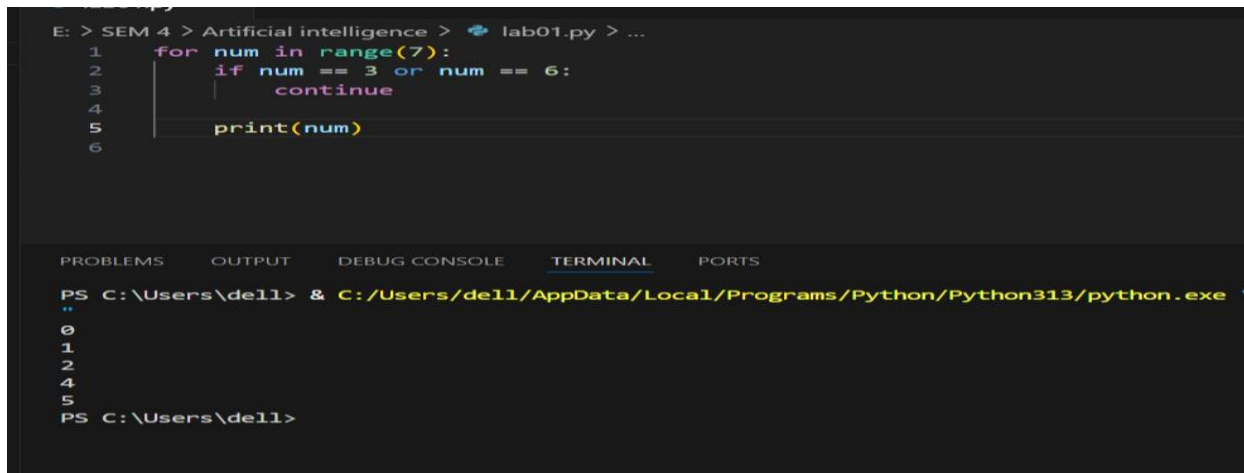
PS C:\Users\dell> & C:/Users/dell/AppData/Local/Programs/Python/Python313/python.exe "e:/SEM 4/Artificial intelligence/lab01.py"
<class 'int'>
<class 'float'>
<class 'complex'>
<class 'bool'>
<class 'str'>
<class 'tuple'>
<class 'list'>
<class 'dict'>
PS C:\Users\dell>
```

Q # 8

Write a Python program that prints all the numbers from 0 to 6 except 3 and 6.

Note: Use 'continue' statement.

Expected Output: 0 1 2 4 5



```
E: > SEM 4 > Artificial intelligence > lab01.py > ...
1  for num in range(7):
2      if num == 3 or num == 6:
3          continue
4
5      print(num)
6

PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS C:\Users\dell> & C:/Users/dell/AppData/Local/Programs/Python/Python313/python.exe
0
1
2
4
5
PS C:\Users\dell>
```

Q # 9

Write a Python program to get the Fibonacci series between 0 to 50. *Note:*
The Fibonacci Sequence is the series of numbers:

0, 1, 1, 2, 3, 5, 8, 13, 21,

Every next number is found by adding up the two numbers before it.

Expected Output: 1 1 2 3 5 8 13 21 34

Write a Python program which iterates the integers from 1 to 50. For multiples of three print "Fizz" instead of the number and for the multiples of five print "Buzz". For numbers which are multiples of both three and five print "FizzBuzz".

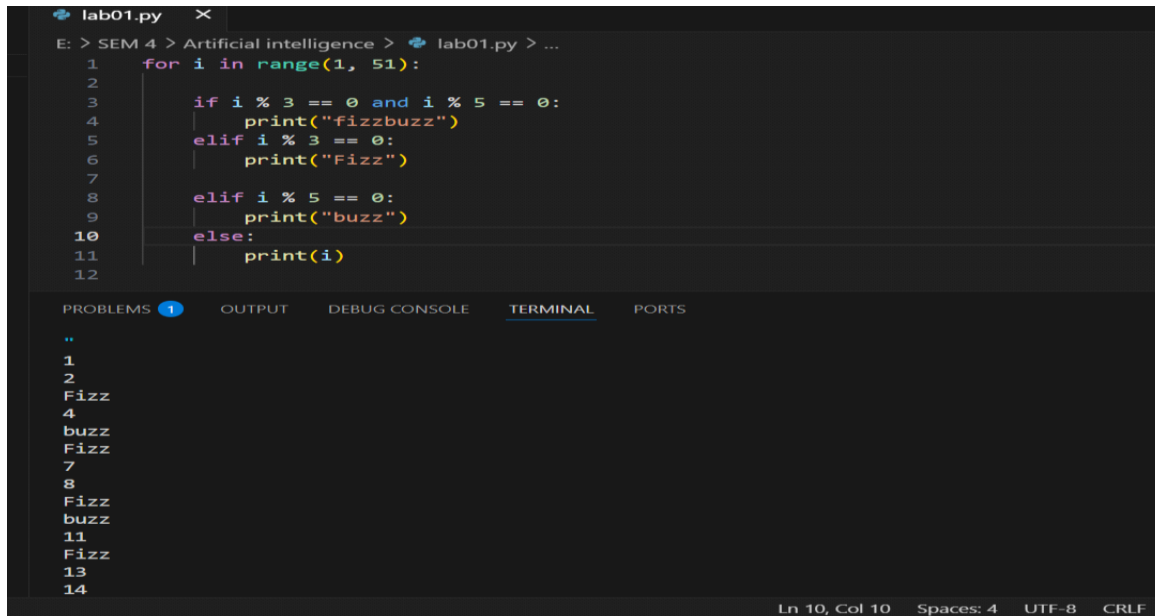
Sample Output: fizzbuzz

2

fizz

4

buzz



The screenshot shows a Python IDE with a file named 'lab01.py'. The code is a FizzBuzz program that iterates from 1 to 51. It checks if a number is divisible by both 3 and 5 (fizzbuzz), 3 (Fizz), 5 (buzz), or neither (print the number). The output window shows the results of the program, which are: 1, 2, Fizz, 4, buzz, Fizz, 7, 8, Fizz, buzz, 11, Fizz, 13, 14.

```
lab01.py X
E: > SEM 4 > Artificial intelligence > lab01.py > ...
1  for i in range(1, 51):
2
3      if i % 3 == 0 and i % 5 == 0:
4          print("fizzbuzz")
5      elif i % 3 == 0:
6          print("Fizz")
7
8      elif i % 5 == 0:
9          print("buzz")
10     else:
11         print(i)
12
```

PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL PORTS

"
1
2
Fizz
4
buzz
Fizz
7
8
Fizz
buzz
11
Fizz
13
14

Ln 10, Col 10 Spaces: 4 UTF-8 CRLF

Q # 10

Write a Python program which takes two digits m (row) and n (column) as input and generates a two-dimensional array. The element value in the i-th row and j-th column of the array should be $i*j$.

Note:

$i = 0, 1, \dots, m-1$

$j = 0, 1, \dots, n-1$.

Test Data: Rows = 3, Columns = 4

Expected Result: $[[0, 0, 0, 0], [0, 1, 2, 3], [0, 2, 4, 6]]$

```
E: > SEM 4 > Artificial intelligence > lab01.py > ...
1  m = int(input("enter the number of rows"))
2  n = int(input("enter number of columns"))
3
4  result = []
5  for i in range(m):
6      row = []
7      for j in range(n):
8          row.append(i*j)
9          result.append(row)
10
11  print(row)
12
```

PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL PORTS Python + - [] [] ... ^ x

```
PS C:\Users\de11> & C:/Users/de11/AppData/Local/Programs/Python/Python313/python.exe "e:/SEM 4/Artificial intelligence/lab01.py"
enter the number of rows3
enter number of columns4
[0, 2, 4, 6]
PS C:\Users\de11>
```

Q # 11

Write a Python program that accepts a sequence of lines (blank line to terminate) as input and prints the lines as output (all characters in lower case).

```
lab01.py
E: > SEM 4 > Artificial intelligence > lab01.py > ...
1  lines = []
2  while True:
3      line = input()
4      if line == "":
5          break
6      lines.append(line.lower())
7  for l in lines:
8      print(l)
9
```

PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL PORTS Python + - [] [] ... ^ x

```
PS C:\Users\de11> & C:/Users/de11/AppData/Local/Programs/Python/Python313/python.exe "e:/SEM 4/Artificial intelligence/lab01.py"
hello
how are youu
are you okk

hello
how are youu
are you okk
PS C:\Users\de11>
```

Q # 12

Write a Python program which accepts a sequence of comma separated 4 digit binary numbers as its input and print the numbers that are divisible by 5 in a comma separated sequence.

Sample Data: 0100,0011,1010,1001,1100,1001

Expected Output: 1010

```
E: > SEM 4 > Artificial intelligence > lab01.py > ...
1 print("Enter comma-separated 4-digit binary numbers:")
2 nums = input().split(',')
3
4 valid_nums = []
5
6 for num in nums:
7     num = num.strip() # Remove spaces
8     if len(num) == 4 and all(c in "01" for c in num):
9         if int(num, 2) % 5 == 0:
10             valid_nums.append(num)
11 print(",".join(valid_nums))
12
```

PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL PORTS Python + - [] [] ... ^ x

```
PS C:\Users\de11> & C:/Users/de11/AppData/Local/Programs/Python/Python313/python.exe "e:/SEM 4/Artificial intelligence/lab01.py"
Enter comma-separated 4-digit binary numbers:
0110,1100,1010
1010
PS C:\Users\de11> [ ]
```

Q # 13

Write a Python program that accepts a string and calculate the number of digits and letters.

Sample Data: Python 3.2

Expected OUTPUT:

Letters 6

Digits 2

```
E: > SEM 4 > Artificial intelligence > lab01.py > ...
1  print("Enter a string:")
2  text = input()
3
4  letters = sum(c.isalpha() for c in text)
5  digits = sum(c.isdigit() for c in text)
6
7  print("Letters", letters)
8  print("Digits", digits)
9

PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL PORTS

PS C:\Users\dell> & C:/Users/dell/AppData/Local/Programs/Python/Python313/python.exe "e:/SEM
"
Enter a string:
Hello world
Letters 10
Digits 0
PS C:\Users\dell> █
```

Q # 14

Write a Python program to check the validity of password input by users.

Validation:

- At least 1 letter between [a-z] and 1 letter between [A-Z].
- At least 1 number between [0-9].
- At least 1 character from [\$#@].
- Minimum length 6 characters.
- Maximum length 16 characters.

```
C:\Users\USER\OneDrive\Documents\AI-Lab-1\LAB 2\...
1  import re
2  def valid_password(password):
3      # Check length
4      if len(password) < 6 or len(password) > 16:
5          return "Pass must be btween 6 and 16 charcters"
6      # Check for lowercase, uppercase, digit, and special character
7      if not any(c.islower() for c in password):
8          return "Pass must contain at least one lowercase letter"
9      if not any(c.isupper() for c in password):
10         return "Pass must contain at least one lowercase letter"
11     if not any(c.isdigit() for c in password):
12         return "Pass must contain at least one number"
13     return "Pass valid"
14 # Ask user for password
15 user_password = input("Enter your password: ")
16 result = valid_password(user_password)
17 print(result)

PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS C:\Users\USER> & C:/Users/USER/AppData/Local/Microsoft/WindowsApps/python3.11.exe "c:/Use
Enter your password: Sidra11
Pass valid
PS C:\Users\USER> |
```
