

POAexp9.py - C:\Users\welcome\AppData\Local\Programs\Python\Python311\POAexp9.py (3.11.5)

File Edit Format Run Options Window Help

```
def temperature_membership(temp):
    low = max(0, min(1, (25 - temp) / 25))
    medium = max(0, min(1, (temp - 15) / 10, (30 - temp) / 10))
    high = max(0, min(1, (temp - 25) / 15))
    return low, medium, high

def humidity_membership(humidity):
    low = max(0, min(1, (50 - humidity) / 50))
    high = max(0, min(1, (humidity - 50) / 50))
    return low, high

def fan_speed_membership(fan_speed):
    low = max(0, min(1, (50 - fan_speed) / 50))
    high = max(0, min(1, (fan_speed - 50) / 50))
    return low, high

def fuzzy_inference(temp, humidity):
    low_temp, medium_temp, high_temp = temperature_membership(temp)
    low_hum, high_hum = humidity_membership(humidity)
    rule1 = min(low_temp, low_hum)
    rule2 = min(high_temp, high_hum)
    fan_low_value = rule1 * 1.0
    fan_high_value = rule2 * 1.0
    numerator = fan_low_value * 25 + fan_high_value * 75
    denominator = fan_low_value + fan_high_value
    if denominator == 0:
        return 0
    return numerator / denominator

temp_input = 28
humidity_input = 60
fan_speed_output = fuzzy_inference(temp_input, humidity_input)
print(f"Fan Speed Output (Crisp Value): {fan_speed_output:.2f}%")
```



The image shows a screenshot of the Python IDLE Shell 3.11.5 window. The window has a title bar with the text "IDLE Shell 3.11.5" and standard Windows window controls (minimize, maximize, close). Below the title bar is a menu bar with the following options: File, Edit, Shell, Debug, Options, Window, and Help. The main area of the window is a text editor displaying the output of a Python script. The output starts with the Python version and build information: "Python 3.11.5 (tags/v3.11.5:cce6ba9, Aug 24 2023, 14:38:34) [MSC v.1936 64 bit (AMD64)] on win32". It then prompts the user to type "help", "copyright", "credits" or "license()" for more information. The user has entered two lines of code, each preceded by a prompt ">>>". The first line is "= RESTART: C:\Users\welcome\AppData\Local\Programs\Python\Python311\POAIexp9.py", and the second line is "Fan Speed Output (Crisp Value): 75.00%". The output of the first line is "Fan Speed Output (Crisp Value): 75.00%". The output of the second line is "Fan Speed Output (Crisp Value): 75.00%". The prompt ">>>" is shown again at the end of the second line, indicating that the user can enter more code.

```
IDLE Shell 3.11.5
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Python 3.11.5 (tags/v3.11.5:cce6ba9, Aug 24 2023, 14:38:34) [MSC v.1936 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
= RESTART: C:\Users\welcome\AppData\Local\Programs\Python\Python311\POAIexp9.py
Fan Speed Output (Crisp Value): 75.00%
>>>
= RESTART: C:\Users\welcome\AppData\Local\Programs\Python\Python311\POAIexp9.py
Fan Speed Output (Crisp Value): 75.00%
>>>
```