Reasoning and Knowledge Representation

Mini project phase2

Air conditioner system

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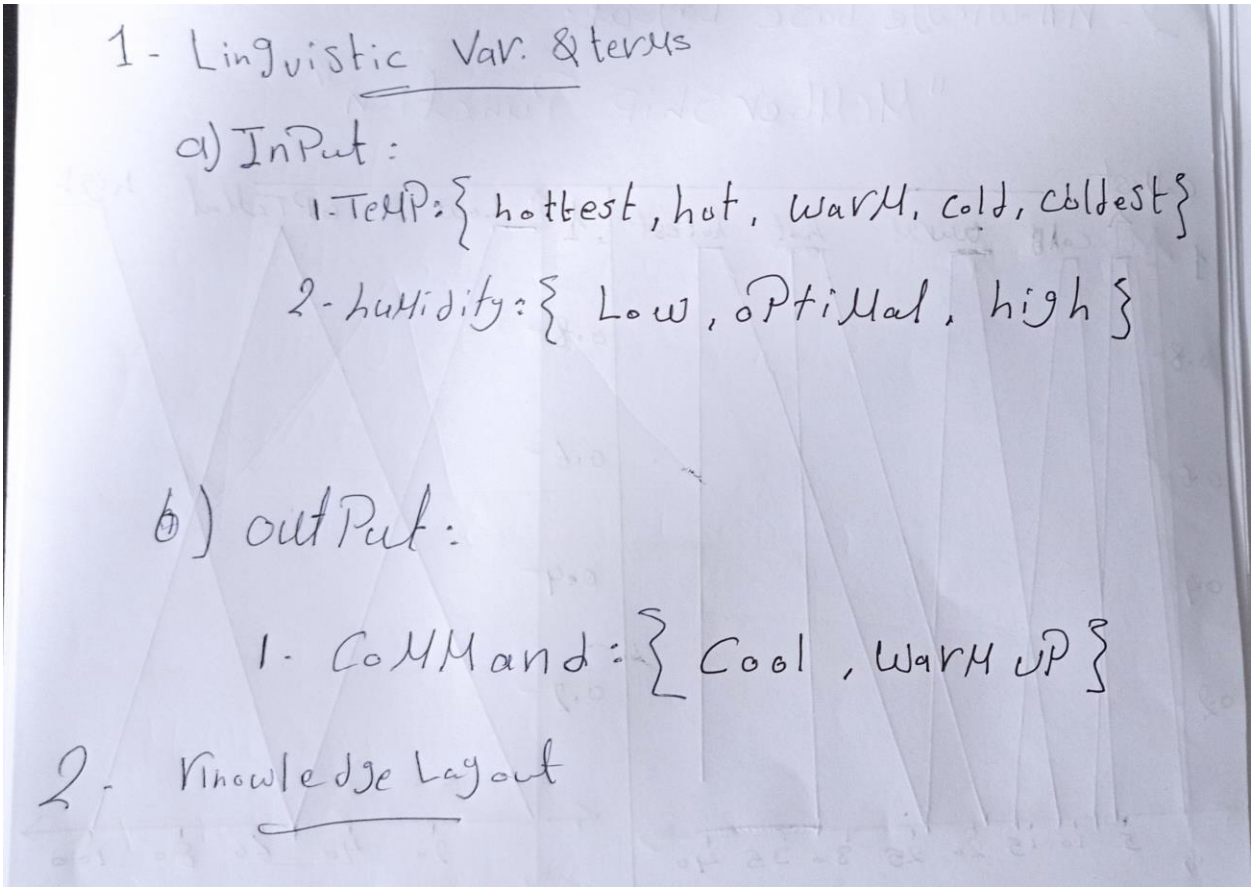
Air conditioner system

Report

- The defined linguistic variables and terms:



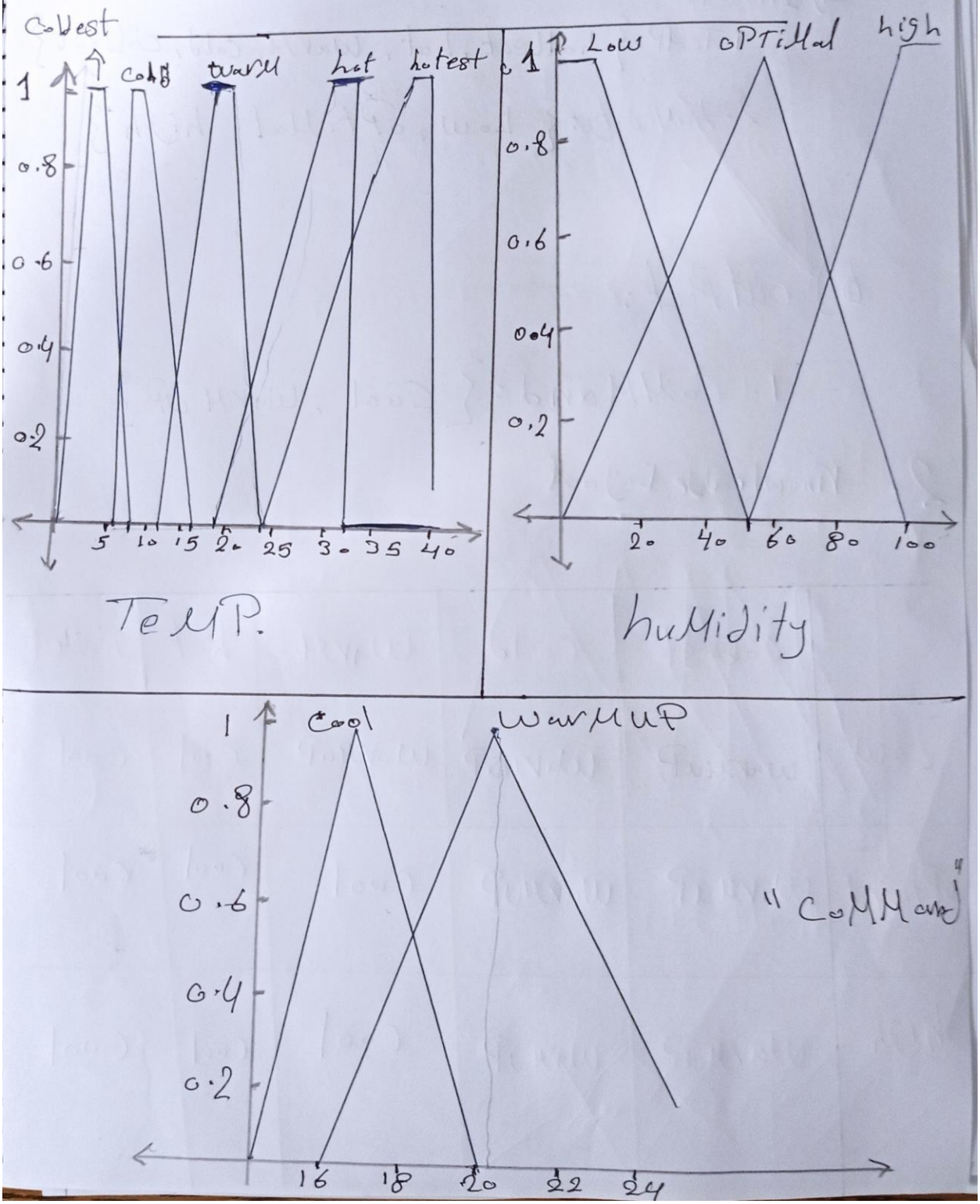
- Knowledge base layout:

2- Knowledge Layout

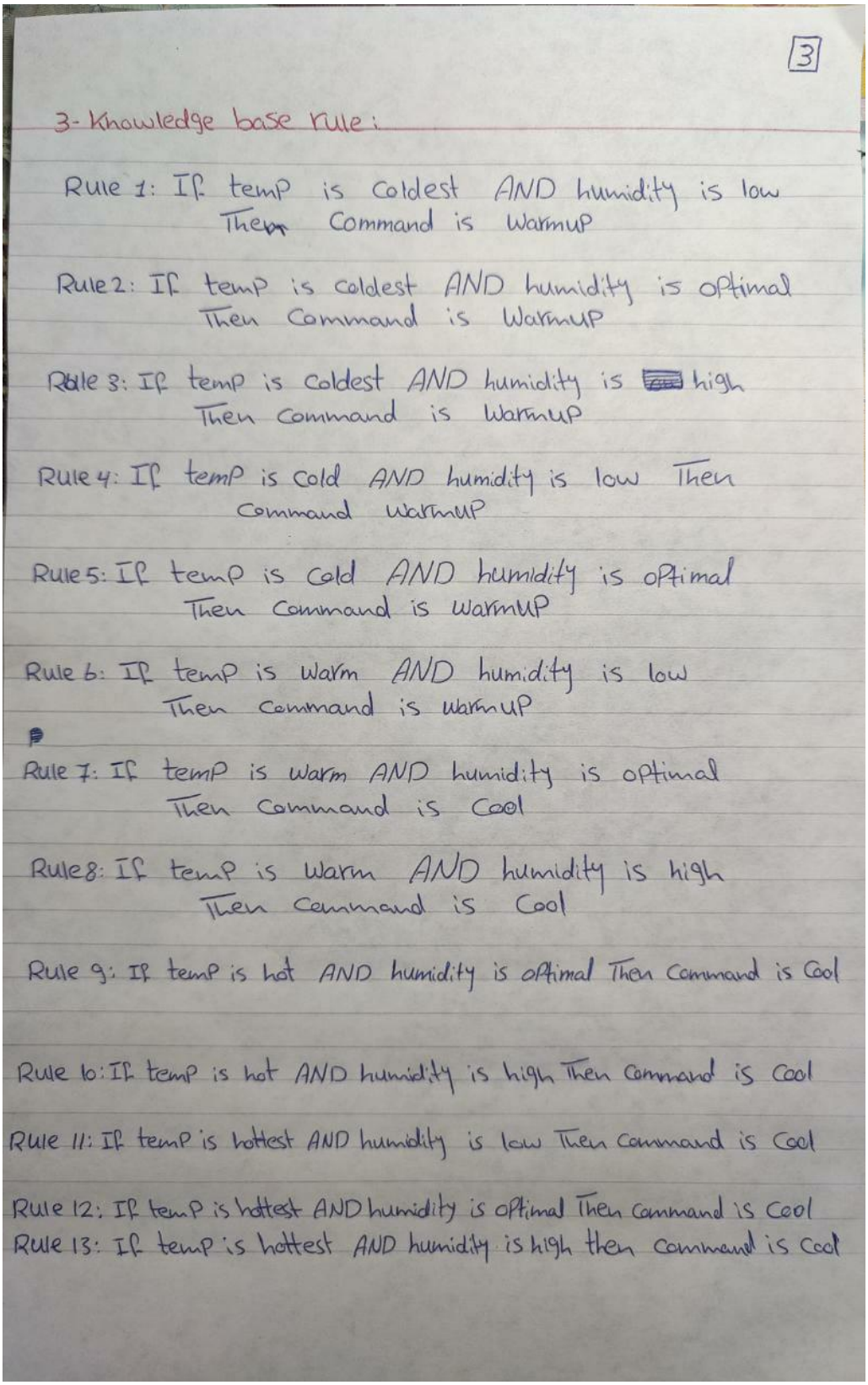
	Coldest	Cold	Warm	hot	hottest
Low	warmup	Warmup	Warmup	Cool	Cool
Optimal	Warmup	Warmup	Cool	Cool	Cool
high	Warmup	Warmup	Cool	Cool	Cool

2- Knowledge base Layout:

"Membership Function"



- Knowledge base content/rules:



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3- Knowledge base rule:

Rule 1: If temp is coldest AND humidity is low
Then Command is WarmUP

Rule 2: If temp is coldest AND humidity is optimal
Then Command is WarmUP

Rule 3: If temp is coldest AND humidity is high
Then Command is WarmUP

Rule 4: If temp is cold AND humidity is low Then
Command WarmUP

Rule 5: If temp is cold AND humidity is optimal
Then Command is WarmUP

Rule 6: If temp is warm AND humidity is low
Then Command is warmUP

Rule 7: If temp is warm AND humidity is optimal
Then Command is Cool

Rule 8: If temp is warm AND humidity is high
Then Command is Cool

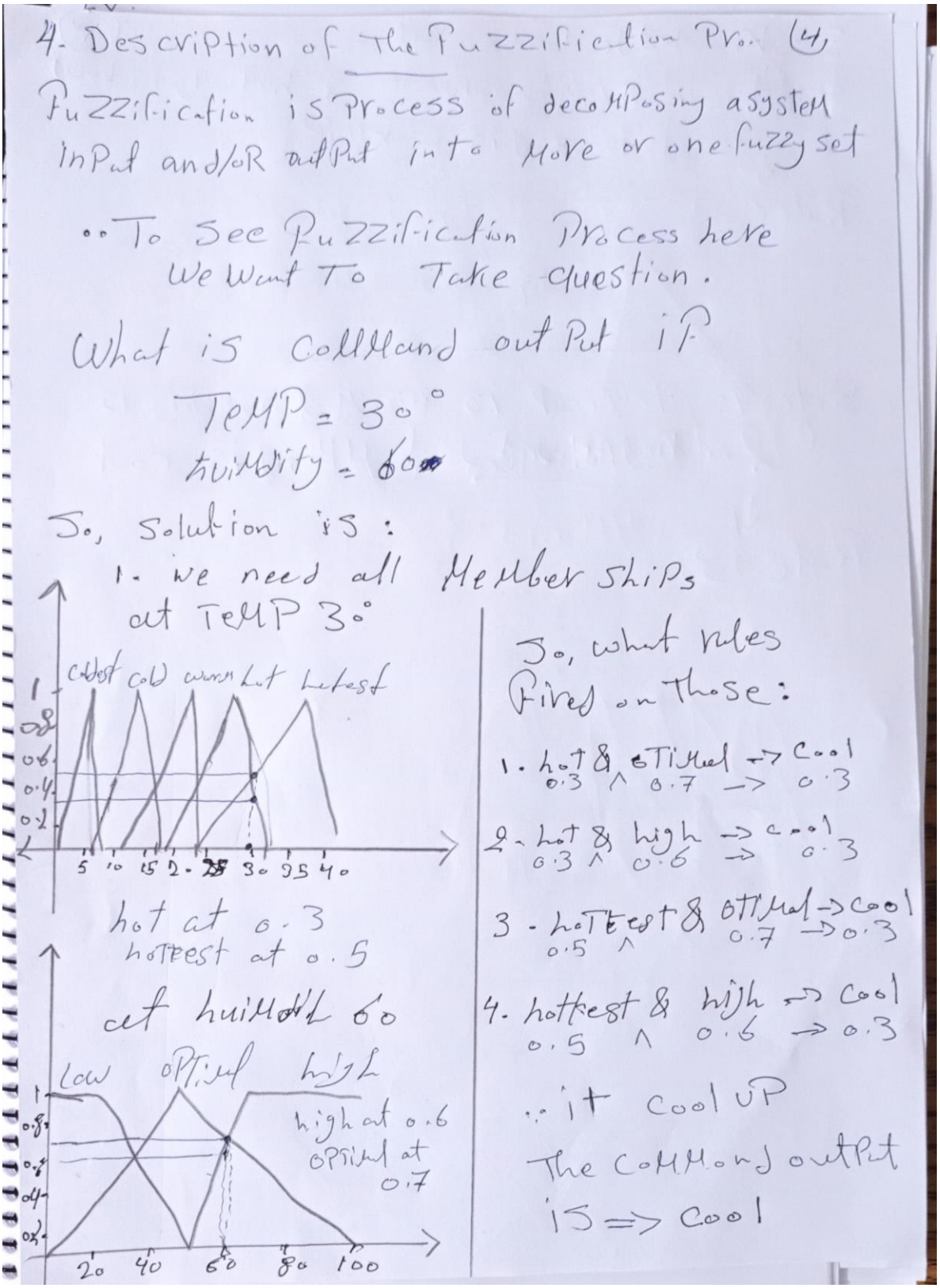
Rule 9: If temp is hot AND humidity is optimal Then Command is Cool

Rule 10: If temp is hot AND humidity is high Then Command is Cool

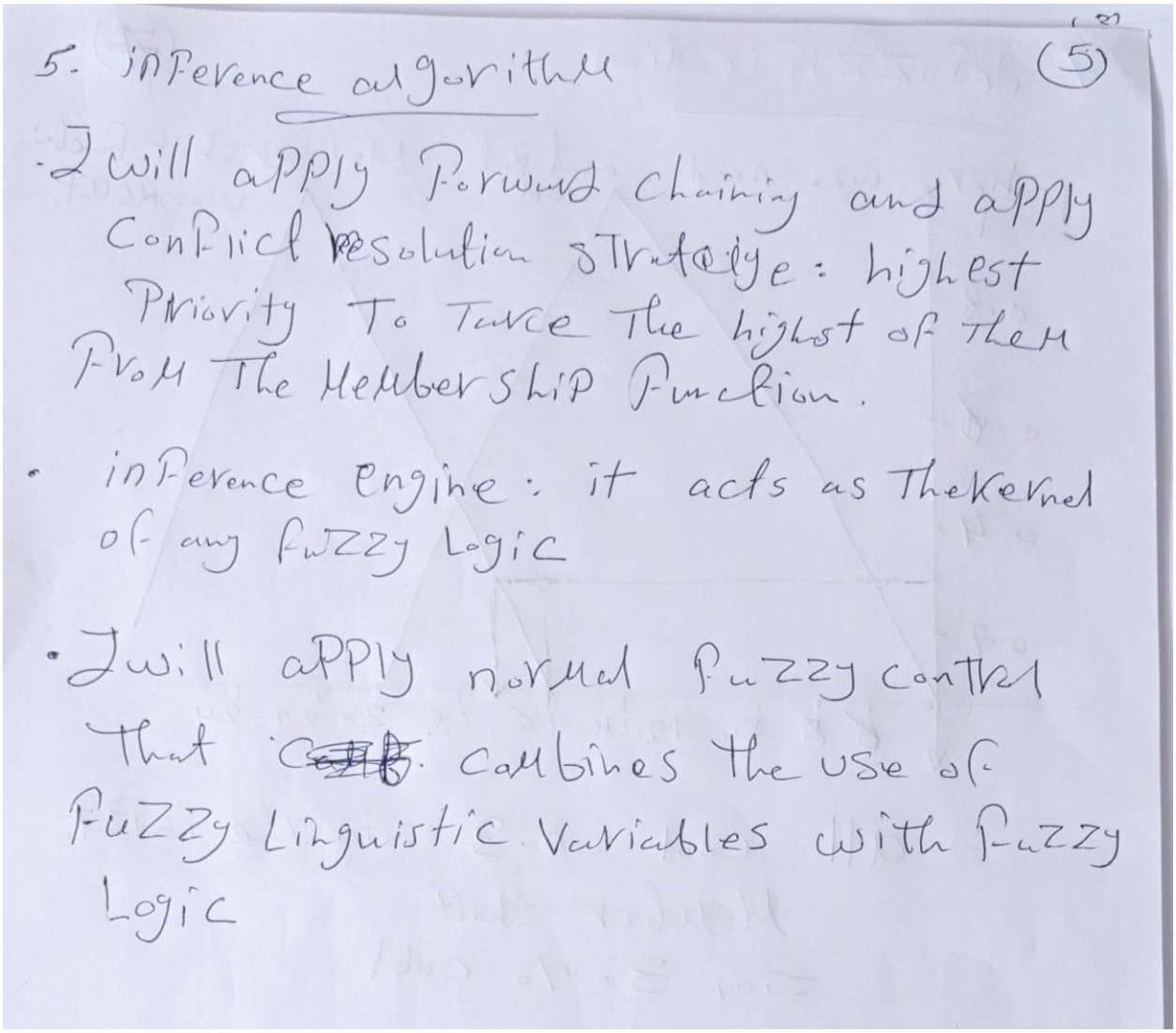
Rule 11: If temp is hottest AND humidity is low Then Command is Cool

Rule 12: If temp is hottest AND humidity is optimal Then command is Cool
Rule 13: If temp is hottest AND humidity is high then Command is Cool

- Description of the fuzzification process:



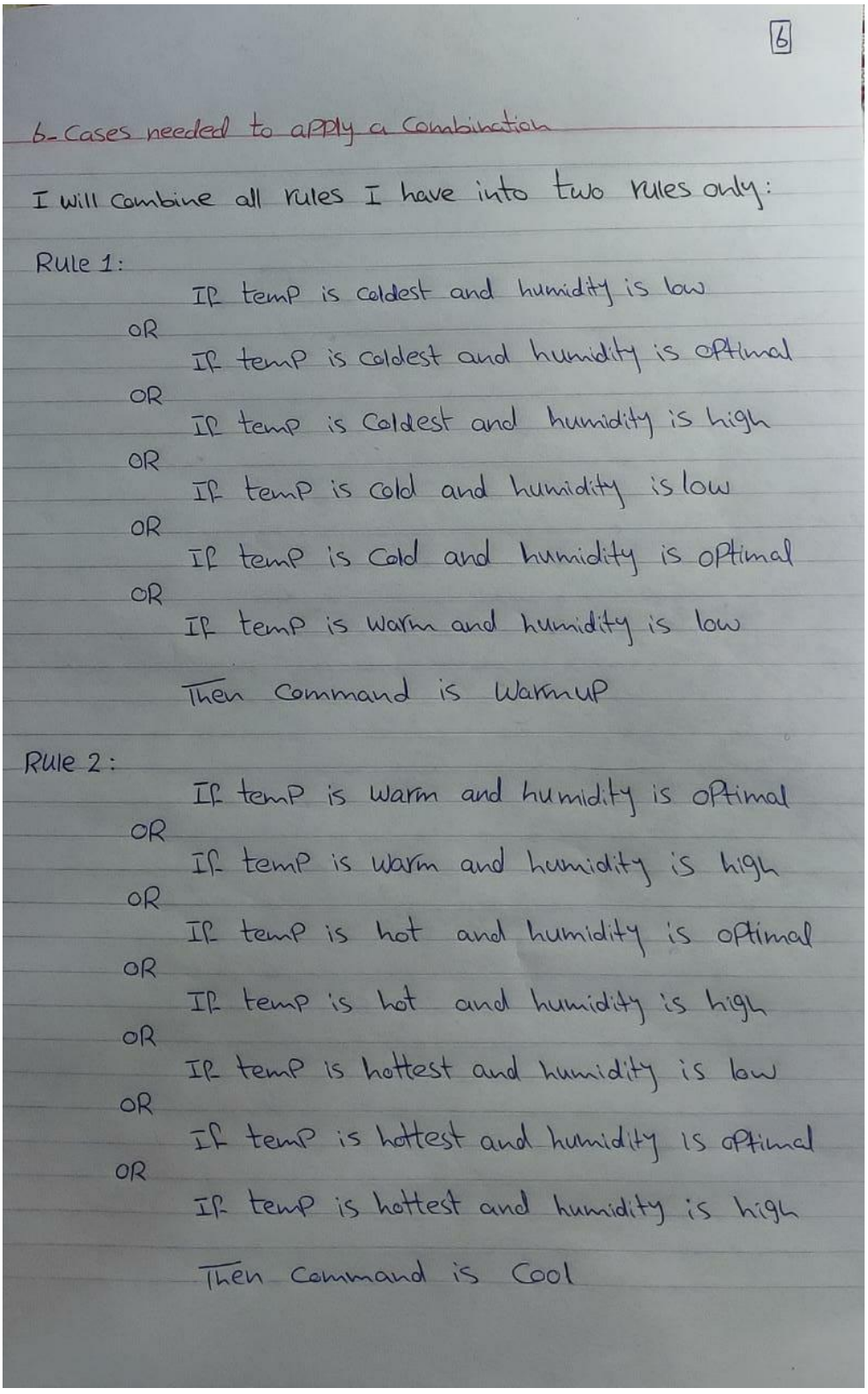
- Description of the inference algorithm the you will apply in your inference engine:



5. inference algorithm (5)

- I will apply forward chaining and apply conflict resolution strategy: highest priority to take the highst of them from the membership function.
- inference engine: it acts as the kernel of any fuzzy logic
- I will apply normal fuzzy control that combines the use of fuzzy linguistic variables with fuzzy logic

- Illustrate the cases needed to apply a combination of more than one rule (aggregation):



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6- Cases needed to apply a Combination

I will combine all rules I have into two rules only:

Rule 1:

If temp is coldest and humidity is low
OR
If temp is coldest and humidity is optimal
OR
If temp is Coldest and humidity is high
OR
If temp is cold and humidity is low
OR
If temp is Cold and humidity is optimal
OR
If temp is warm and humidity is low

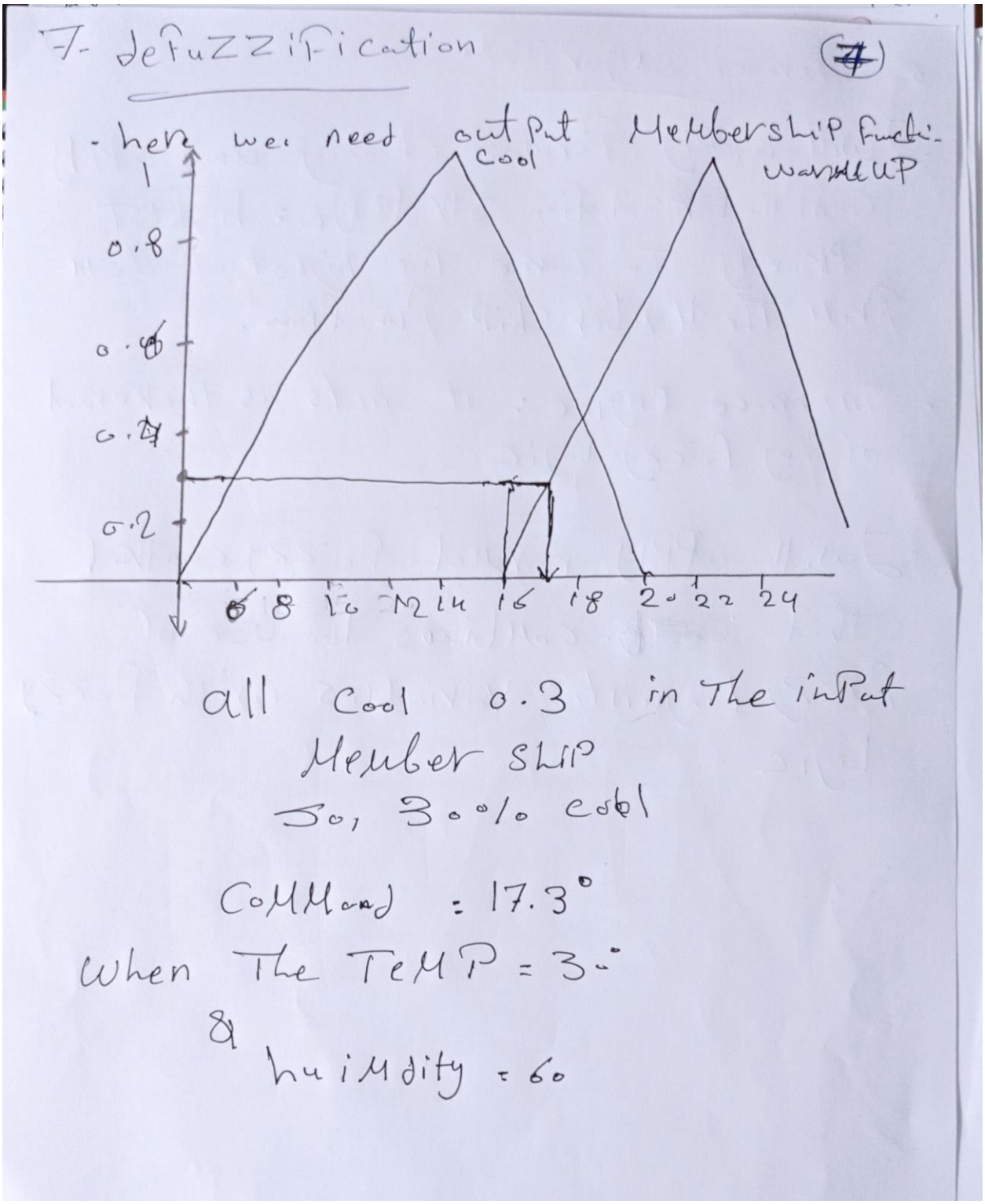
Then Command is WarmUp

Rule 2:

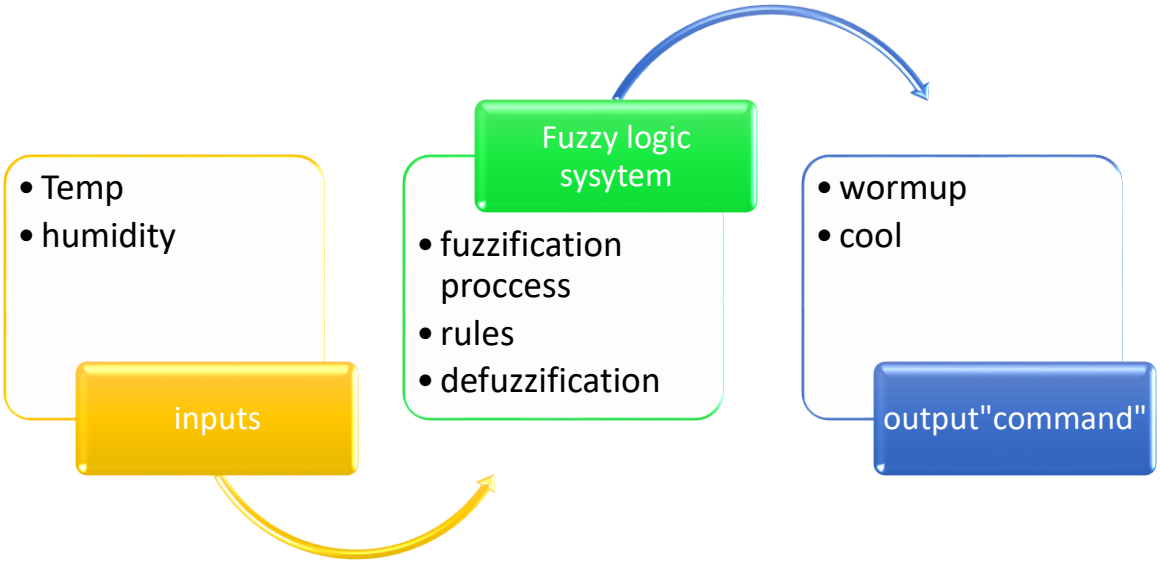
If temp is warm and humidity is optimal
OR
If temp is warm and humidity is high
OR
If temp is hot and humidity is optimal
OR
If temp is hot and humidity is high
OR
If temp is hottest and humidity is low
OR
If temp is hottest and humidity is optimal
OR
If temp is hottest and humidity is high

Then Command is Cool

- Description of the defuzzification component that convert the output data into non-fuzzy values:



- Architecture diagram illustrating the main components of the designed project:



- Task distribution table; containing a mapping of the implementation responsibility for each component I the architecture diagram to each student in the team:

Name	Responsibility
Ahmed kadry	• Knowledge base layout • Description of the fuzzification process • Description of the inference algorithm the you will apply in your inference engine • Description of the defuzzification component that convert the output data into non-fuzzy values
Loai gamal	• The defined linguistic variables and terms • Knowledge base content/rules • Illustrate the cases needed to apply a combination of more than one rule (aggregation) • Architecture diagram illustrating the main components of the designed project