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FUNDAMENTALS OF ARTIFICIAL INTELLIGENCE

LAB 2: LOGIC

Lecture: Bùi Tiến Lên

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A. Student's information:

- Name: Đặng Ngọc Tiến
- ID: 20127641

B. Test case:

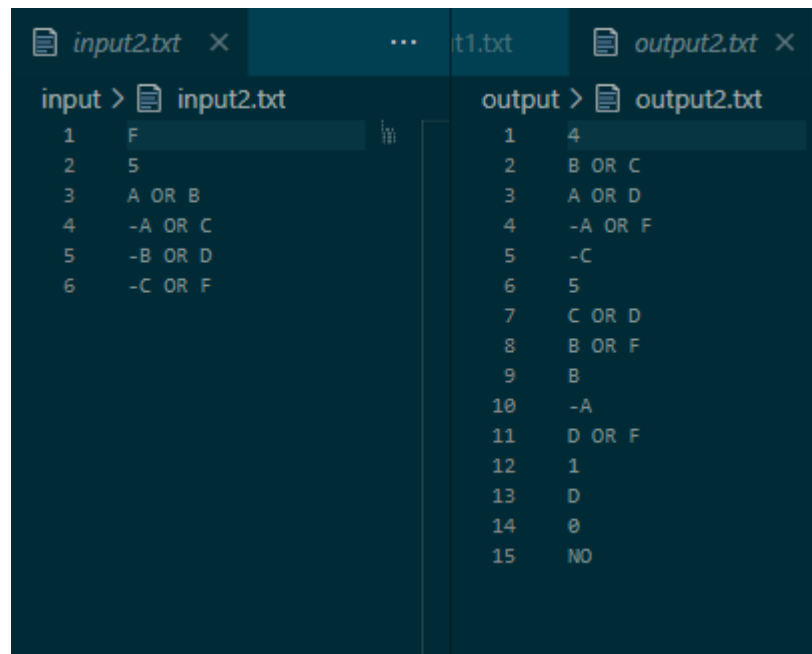
1. Input and output 1:



The screenshot shows a code editor with two files: `input1.txt` and `output1.txt`. The `input1.txt` file contains six lines of text, and the `output1.txt` file contains six lines of text. The lines are numbered 1 through 6.

Line	Input	Output
1	B	4
2	4	-B OR C
3	-A OR C	-A
4	-A OR B	A
5	A OR -B	{}
6	B	YES

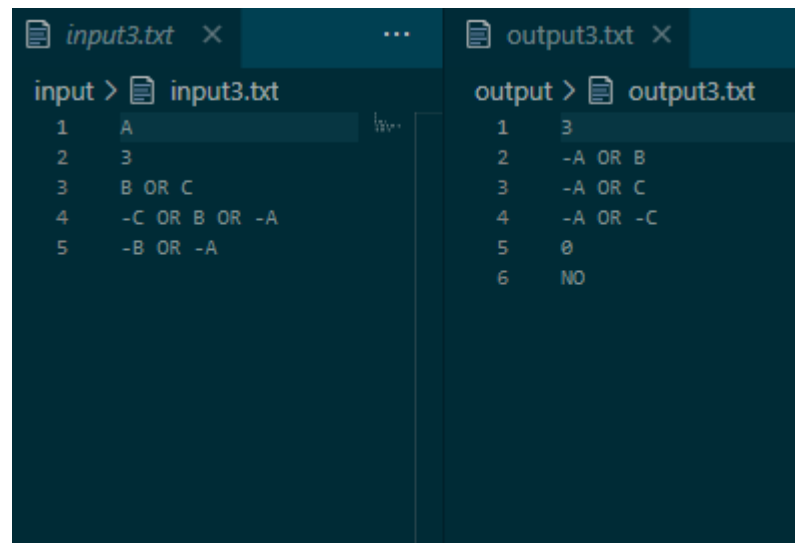
2. Input and output 2



The screenshot shows a text editor with two tabs: `input2.txt` and `output2.txt`. The `input2.txt` tab is active, showing a list of 6 items. The `output2.txt` tab is also visible, showing a list of 15 items. The input and output are as follows:

Input	Output
1 F	1 4
2 5	2 B OR C
3 A OR B	3 A OR D
4 -A OR C	4 -A OR F
5 -B OR D	5 -C
6 -C OR F	6 5
	7 C OR D
	8 B OR F
	9 B
	10 -A
	11 D OR F
	12 1
	13 D
	14 0
	15 NO

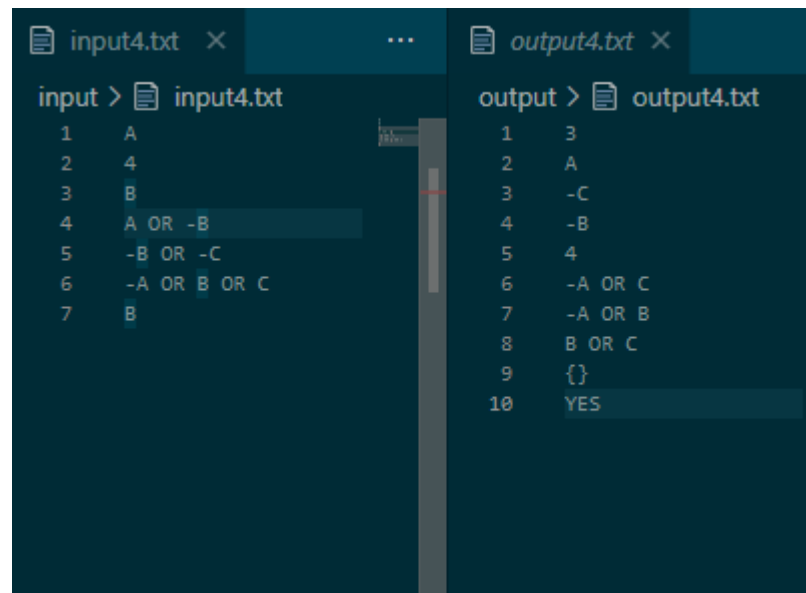
3. Input and output 3:



The screenshot shows a text editor with two tabs: `input3.txt` and `output3.txt`. The `input3.txt` tab is active, showing a list of 5 items. The `output3.txt` tab is also visible, showing a list of 6 items. The input and output are as follows:

Input	Output
1 A	1 3
2 3	2 -A OR B
3 B OR C	3 -A OR C
4 -C OR B OR -A	4 -A OR -C
5 -B OR -A	5 0
	6 NO

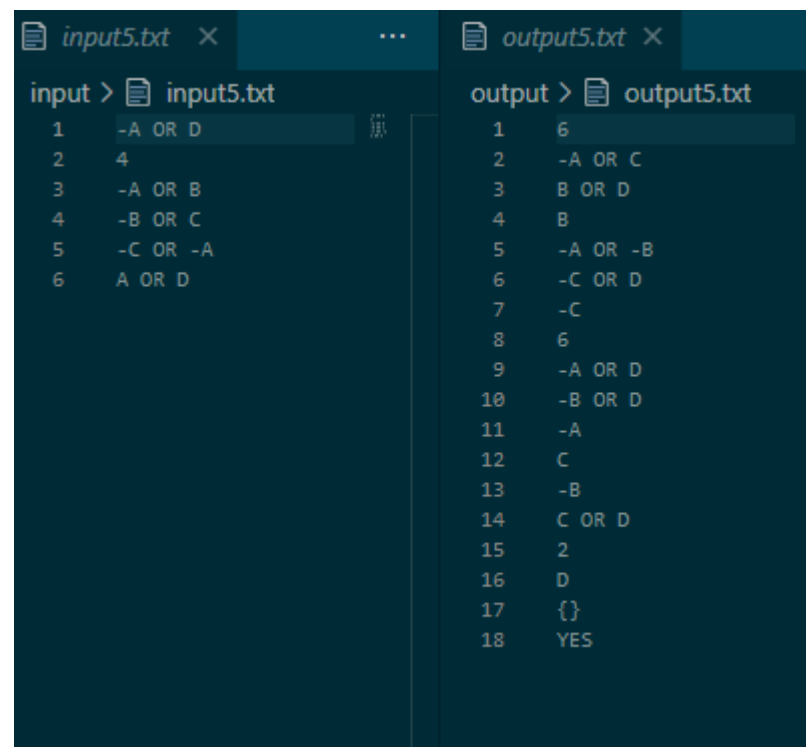
4. Input and output 4:



The screenshot shows a code editor with two files: `input4.txt` and `output4.txt`. The `input4.txt` file contains 7 lines of text, and the `output4.txt` file contains 10 lines of text. The lines are numbered 1 through 10.

Line	input4.txt	output4.txt
1	A	3
2	4	A
3	B	-C
4	A OR -B	-B
5	-B OR -C	4
6	-A OR B OR C	-A OR C
7	B	-A OR B
		B OR C
		{}
		YES

5. Input and output 5:



The screenshot shows a code editor with two files: `input5.txt` and `output5.txt`. The `input5.txt` file contains 6 lines of text, and the `output5.txt` file contains 18 lines of text. The lines are numbered 1 through 18.

Line	input5.txt	output5.txt
1	-A OR D	6
2	4	-A OR C
3	-A OR B	B OR D
4	-B OR C	B
5	-C OR -A	-A OR -B
6	A OR D	-C OR D
		-C
		6
		-A OR D
		-B OR D
		-A
		C
		-B
		C OR D
		2
		D
		{}
		YES

C. Pros and Cons of propositional logic:

1. Pros:

- Propositional logic is declarative: pieces of syntax correspond to facts
- Propositional logic allows partial/disjunctive/negated information
- Propositional logic is compositional
- Meaning in propositional logic is context-independent

2. Cons:

- Propositional logic has very limited expressive power.
E.g., Cannot say “pits cause breezes in adjacent squares” except by writing one sentence for each square.