

Screenshots of Outputs

Note: Application is set as resizable window. It adjusts its size based on the content it displays or can be manually resized by the user.

a. Single Variable

Logical Equation... — □ × Logical Equation... — □ ×

Enter Logical Equation: Enter Logical Equation:

p q

Operator	Symbol
Bi-conditional	\leftrightarrow
Implication	\rightarrow
Conjunction	\wedge
Disjunction	\vee
Negation	\sim

Input from TXT File

Evaluate

p	p
0	0
1	1

q	q
0	0
1	1

b. Negation

Logical Equation...

Enter Logical Equation:

$\sim p$

Operator	Symbol
Bi-conditional	\leftrightarrow
Implication	\rightarrow
Conjunction	\wedge
Disjunction	\vee
Negation	\sim

Input from TXT File

Evaluate

p	$\sim p$
0	1
1	0

Logical Equation...

Enter Logical Equation:

$\sim q$

Operator	Symbol
Bi-conditional	\leftrightarrow
Implication	\rightarrow
Conjunction	\wedge
Disjunction	\vee
Negation	\sim

Input from TXT File

Evaluate

q	$\sim q$
0	1
1	0

c. Conjunction

Logical Equation Evaluator

Enter Logical Equation:

$p \wedge q$

Operator	Symbol
Bi-conditional	\leftrightarrow
Implication	\rightarrow
Conjunction	\wedge
Disjunction	\vee
Negation	\sim

Input from TXT File

Evaluate

p	q	$p \wedge q$
0	0	0
1	0	0
0	1	0
1	1	1

d. Disjunction

Logical Equation Evaluator

Enter Logical Equation:

$p \vee q$

Operator	Symbol
Bi-conditional	\leftrightarrow
Implication	\rightarrow
Conjunction	\wedge
Disjunction	\vee
Negation	\sim

Input from TXT File

Evaluate

p	q	$p \vee q$
0	0	0
1	0	1
0	1	1
1	1	1

e. Implication

Logical Equation Evaluator

Enter Logical Equation:

$p \rightarrow q$


Operator	Symbol
Bi-conditional	\leftrightarrow
Implication	\rightarrow
Conjunction	\wedge
Disjunction	\vee
Negation	\sim

Input from TXT File

Evaluate

p	q	$p \rightarrow q$
0	0	1
1	0	0
0	1	1
1	1	1

f. **Bi-conditional**

 Logical Equation Evaluator

— □ ×

Enter Logical Equation:

$p \leftrightarrow q$

Operator	Symbol
Bi-conditional	\leftrightarrow
Implication	\rightarrow
Conjunction	\wedge
Disjunction	\vee
Negation	\sim

Input from TXT File

Evaluate

p	q	$p \leftrightarrow q$
0	0	1
1	0	0
0	1	0
1	1	1

Complex Outputs

a. Multiple Negation (Will work no matter how many negations are present)

Logical Equation Ev...

—

□

×

Enter Logical Equation:

~~p

Logical Equation Ev...

—

□

×

Enter Logical Equation:

~~~p

| Operator       | Symbol |
|----------------|--------|
| Bi-conditional | <->    |
| Implication    | ->     |
| Conjunction    | ^      |
| Disjunction    | v      |
| Negation       | ~      |

Input from TXT File

Evaluate

| p | ~~p |
|---|-----|
| 0 | 0   |
| 1 | 1   |

| Operator       | Symbol |
|----------------|--------|
| Bi-conditional | <->    |
| Implication    | ->     |
| Conjunction    | ^      |
| Disjunction    | v      |
| Negation       | ~      |

Input from TXT File

Evaluate

| p | ~~~p |
|---|------|
| 0 | 1    |
| 1 | 0    |

### b. Nested Parenthesis

Logical Equation Ev...

—

□

×

Enter Logical Equation:

$(p \wedge (p \vee q)) \wedge p$

| Operator       | Symbol |
|----------------|--------|
| Bi-conditional | <->    |
| Implication    | ->     |
| Conjunction    | ^      |
| Disjunction    | v      |
| Negation       | ~      |

Input from TXT File

Evaluate

| p | q | $(p \wedge (p \vee q)) \wedge p$ |
|---|---|----------------------------------|
| 0 | 0 | 0                                |
| 1 | 0 | 1                                |
| 0 | 1 | 0                                |
| 1 | 1 | 1                                |

c. Negation beside Operators/Parenthesis

Logical Equation Ev... — □ ×

Enter Logical Equation:

$\sim(\sim p \vee q) \wedge \sim p \vee q$

| Operator       | Symbol            |
|----------------|-------------------|
| Bi-conditional | $\leftrightarrow$ |
| Implication    | $\rightarrow$     |
| Conjunction    | $\wedge$          |
| Disjunction    | $\vee$            |
| Negation       | $\sim$            |

Input from TXT File

Evaluate

| p | q | $\sim(\sim p \vee q) \wedge \sim p \vee q$ |
|---|---|--------------------------------------------|
| 0 | 0 | 0                                          |
| 1 | 0 | 0                                          |
| 0 | 1 | 1                                          |
| 1 | 1 | 1                                          |

## Precedence Application



From Sir Gerry's Module.

Logical Equation Evaluator

Enter Logical Equation:

$\sim \sim ( (p \rightarrow \sim q) \leftrightarrow \sim (p \vee \sim q) )$

| Operator       | Symbol            |
|----------------|-------------------|
| Bi-conditional | $\leftrightarrow$ |
| Implication    | $\rightarrow$     |
| Conjunction    | $\wedge$          |
| Disjunction    | $\vee$            |
| Negation       | $\sim$            |

Input from TXT File

Evaluate

| p | q | $\sim \sim ( (p \rightarrow \sim q) \leftrightarrow \sim (p \vee \sim q) )$ |
|---|---|-----------------------------------------------------------------------------|
| 0 | 0 | 0                                                                           |
| 1 | 0 | 0                                                                           |
| 0 | 1 | 1                                                                           |
| 1 | 1 | 1                                                                           |

## Additional Complex Logical Equations

Logical Equation Evaluator

Enter Logical Equation:

$\sim (\sim (p \vee q)) \wedge (\sim (p \wedge q) \wedge \sim q \vee p) \rightarrow \sim (\sim q \wedge \sim p) \leftrightarrow p$

| Operator       | Symbol            |
|----------------|-------------------|
| Bi-conditional | $\leftrightarrow$ |
| Implication    | $\rightarrow$     |
| Conjunction    | $\wedge$          |
| Disjunction    | $\vee$            |
| Negation       | $\sim$            |

Input from TXT File

Evaluate

| p | q | $\sim (\sim (p \vee q)) \wedge (\sim (p \wedge q) \wedge \sim q \vee p) \rightarrow \sim (\sim q \wedge \sim p) \leftrightarrow p$ |
|---|---|------------------------------------------------------------------------------------------------------------------------------------|
| 0 | 0 | 1                                                                                                                                  |
| 1 | 0 | 1                                                                                                                                  |
| 0 | 1 | 1                                                                                                                                  |
| 1 | 1 | 1                                                                                                                                  |

Logical Equation Evaluator

Enter Logical Equation:

$\sim \sim (p \leftrightarrow (q \rightarrow \sim p)) \vee \sim (\sim p \wedge q)$

| Operator       | Symbol            |
|----------------|-------------------|
| Bi-conditional | $\leftrightarrow$ |
| Implication    | $\rightarrow$     |
| Conjunction    | $\wedge$          |
| Disjunction    | $\vee$            |
| Negation       | $\sim$            |

Input from TXT File

Evaluate

| p | q | $\sim \sim (p \leftrightarrow (q \rightarrow \sim p)) \vee \sim (\sim p \wedge q)$ |
|---|---|------------------------------------------------------------------------------------|
| 0 | 0 | 1                                                                                  |
| 1 | 0 | 1                                                                                  |
| 0 | 1 | 0                                                                                  |
| 1 | 1 | 1                                                                                  |

Logical Equation Evaluator

Enter Logical Equation:

$(p \rightarrow q) \leftrightarrow (\sim q \rightarrow \sim p) \wedge (p \leftrightarrow (q \rightarrow \sim p))$

| Operator       | Symbol            |
|----------------|-------------------|
| Bi-conditional | $\leftrightarrow$ |
| Implication    | $\rightarrow$     |
| Conjunction    | $\wedge$          |
| Disjunction    | $\vee$            |
| Negation       | $\sim$            |

Input from TXT File

Evaluate

| p | q | $(p \rightarrow q) \leftrightarrow (\sim q \rightarrow \sim p) \wedge (p \leftrightarrow (q \rightarrow \sim p))$ |
|---|---|-------------------------------------------------------------------------------------------------------------------|
| 0 | 0 | 0                                                                                                                 |
| 1 | 0 | 1                                                                                                                 |
| 0 | 1 | 0                                                                                                                 |
| 1 | 1 | 0                                                                                                                 |