Assignment No. 1
EECS 210
Discrete Structures
Due: 11:59 PM, Thursday, September 1, 2022
Submit deliverables in a single zip file to Canvas
Name of the zip file: FirstnameLastname_Assignment1 (with your first and last name)
Name of the Assignment folder within the zip file: FirstnameLastname_Assignment1

Deliverables:

1. Copy of Rubric1.docx with your name and ID filled out (do not submit a PDF)
2. Source code.
3. Screen print showing the successful execution of your code or copy and paste the output from a console screen to a Word document and PDF it.

Assignment:

- You may use any language you want, but if you want help from me or one of the SIs, you should probably use C++ or Python.
- Create a program that prints out a truth table showing the logical equivalence of the following propositions:
  1. De Morgan's First Law
  2. De Morgan's Second Law
  3. First Associative Law
  4. Second Associative Law
  5. $[(p \vee q) \wedge (p \rightarrow r) \wedge (q \rightarrow r)] \rightarrow r \equiv T$
  6. $p \leftrightarrow q \equiv (p \rightarrow q) \wedge (q \rightarrow p)$
- For example, to show $p \rightarrow q \equiv \neg q \rightarrow \neg p$:

p	q	p → q	¬q → ¬p
T	T	T	T
T	F	F	F
F	T	T	T
F	F	T	T

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- Do not hardcode the tables, instead use the logical/Boolean variables and operators of the language to calculate the values in the table.
- Use logical equivalences of ¬, ∨, and ∧ to perform the → and ↔ operations (see Table 7 and Table 8 in the Propositional Logic lecture).
- Use the following plain letter substitutions for the logical operators:
  - ¬ = !
  - ∨ = +
  - ∧ = *
  - → = ->

    - ↔ = <->
- Print out a line between tables indicating which proposition number the truth table is for.
- Provide comments that explain what each line of code is doing. See rubric below.

Rubric for Program Comments		
Exceeds Expectations (90-100%)	**Meets Expectations (80-89%)**	**Unsatisfactory (0-79%)**
Software is adequately commented with prologue comments, comments summarizing major blocks of code, and comments on every line.	Prologue comments are present but missing some items or some major blocks of code are not commented or there are inadequate comments on each line.	Prologue comments are missing all together or there are no comments on major blocks of code or there are very few comments on each line.

Remember:

- Your Programming Assignments are individual-effort.
- You can brainstorm with other students and help them work through problems in their programs, but everyone should have their own unique assignment programs.