

# CS 1200 FS20 Homework 1 (Paper)

Due 2020-09-14 (Monday) at 11:59 PM

## Submit your assignment to Canvas:

1. A PDF file that contains all the answers to the individual questions. If the problems require to write Python or C++ codes, you need to put the codes and all code output in the pdf file as well. This should all be well organized. Points will be deducted for sloppy or disorganized work.
2. All the Python or C++ codes.

If you need a program that helps, you put PDF files together into a single PDF file, try <http://www.pdfsam.org/>. The program there is open source and available for free.

## Homework 1 problems:

1. The following problem is variation on problems 6-10 in Section 2.3:  
(1) Using truth tables to determine whether the argument form is valid. Indicate which columns represent the premises and which represent the conclusion, and include a sentence explaining how the truth table supports your answer. Your explanation should show that you understand what it means for a form of argument to be valid or invalid.

$$\begin{array}{l} p \wedge r \rightarrow q \\ r \vee \sim q \\ \hline q \rightarrow p \\ \hline \therefore p \wedge q \rightarrow r \end{array}$$

- (2) Write programs in Python or C++ to verify the results in Problem (1). (For your reference, see lecture6.py in Canvas).
2. Given the following argument:
  - a. If today is not Monday and I have a test in Computer Science, then I don't have a test in History.
  - b. If I do not have a test in Computer Science, then today is not Monday or I do not have a test in History.

**Conclusion:** If today is Monday then I have a test in Computer Science.

Furthermore, let the variables C, H, and M represent the truth values of "I have a test in CS", "I have a test in History", and "Today is Monday", respectively.

(1) Translate the argument into symbolic form:

Hypothesis 1: \_\_\_\_\_

Hypothesis 2: \_\_\_\_\_

Conclusion: \_\_\_\_\_

- (2) Using truth tables to determine whether the argument form is valid.
- (3) Write programs in Python or C++ to verify the results in (2).

3. (1) Problem 44 in Section 2.3 (see textbook)

- (2) Write programs in Python or C++ to verify the results in (1).