

# Lab Practice 3 - Python and Compound Statements

## General Instructions

**Objective:** In this lab, you'll practice some concepts of set theory using Python.

- **Attendance:** Ensure you submit your lab work to Canvas. Use the Canvas Lab sections (011,012,013,014) if you are in an In-Person course (COT2000C-001), or use the Canvas lab assignment module if you are in an Online course (COT2000C-042).
- **Use Lab Time Effectively:** Utilize the time to focus on the tasks and seek clarification on any concepts you're unfamiliar with.
- Use the Python notebook published in Canvas as a reference (Lab 3-Truth Tables.ipynb).

## Steps

### 1. Setup Jupyter Notebook for Python

- Set up your system to create a Jupyter notebook.
- Suggested path: Create a free Anaconda Cloud account and launch a sample notebook.

### 2. Markdown Cell

- In your new jupyter notebook create a markdown cell and write a title.

### 3. Logic Statement in $\text{\LaTeX}$

- Create another markdown cell.
- Write a logic statement in  $\text{\LaTeX}$  that involves three variables  $p, q, r$  using conditional, biconditional, and, or, not operators.

### 4. Python Logic Statement

- Create a python code cell.
- Write the logic statement from the previous step as Python code.
- Evaluate and print the result of the logic statement for different values of the variables  $p, q, r$ .

5. **Truth Table for  $p \rightarrow q$**

- Create and print a truth table for the statement  $p \rightarrow q$ .
- Format the table header with the following columns:  $p, q, \neg p, \neg p \vee q, p \rightarrow q$ .

6. **Manual Exercise**

- Solve by hand one of the exercises in “Logic Exercises2.pdf” that involves creating a truth table with  $p, q, r, \neg, \wedge, \vee, \rightarrow, \leftrightarrow$ .