

C++/Cplex-Tutorial

The codes for the C++-Cplex-Tutorial given on the virtual session organized by ISE-GSA and INFORMS NCSU Student Chapter. The tutorial designed for any OR practitioner planning to start coding OR problems in C++ and solve by ILOG Cplex.

Video of Part 1: https://www.youtube.com/watch?v=k_Z-F8nbXjU&t=0s&ab_channel=INFORMSNCSUStudentChapter

Video of Part 2: https://www.youtube.com/watch?v=1pahj3lX9ms&t=2501s&ab_channel=INFORMSNCSUStudentChapter

In the first part of the tutorial, I start with why C++ and Cplex and explain how to setup Cplex for C++ and Visual Studio. I then build and solve a simple problem (transportation problem). I develop several versions of this problem, each with an additional layer of automation. The last version allows the user to run a batch of instances from the command window. For each instance, a proper set of parameters is randomly generated, and the results is stored in a text file.

The second part of the tutorial presented on March 11th where implementation of column generation and Bender's decomposition algorithms discussed for two problems. I picked two simple problem that are general enough for educational purposed and simple enough for our limited time. As such, a column generation algorithm is implemented for a cutting-stock problem and Bender's decomposition for a fixed cost transportation problem (FCTP).

Comments and Suggestions are very much appreciated (rkhorra@ncsu.edu).