CPRO N0209 Introduction to Programming in C
11:10 am - 1:00 pm; Hamilton Hall 607,
3:10 pm - 5:00 pm; Hamilton Hall 613

Instructor: Songqiao Li (sl4142@columbia.edu)

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Course Description: An intensive course designed to develop logic and programming skills through immersion in the fundamentals of C. Programming projects involving mathematical problems and word games challenge students to develop their logical reasoning, systematic thinking, and problem-solving skills. Students learn the structure and features of a fundamental programming language as they implement solutions in C. In addition to teaching programming techniques, the course will cover an overview of fundamental computing concepts including data structures, library design, and memory management. Labs are carried out in Linux Virtual Machines configured for the class and installed on the student's personal laptop computer.

Prerequisites: None.

Note: Participants are expected to bring laptops and notebooks to class. Laptops can either be a PC or a Mac, but should have 8GB - 10GB of free space.

Course Objectives:

- **Understanding basic computer science concepts**
- **Program in C and have a solid foundation to extend their knowledge in more complex problems**
- **Think like programmers and apply programming practices in real-life problems**

Piazza: www.piazza.com/columbia/summer2017/cpron0209/home

Course Policies:

- **Each class will consist of lectures and hands-on workshops**
- **All labs will be carried out in a Linux-VM specifically created for this course**
- **Collaboration and discussion is highly encouraged**
- **Attendance is expected and will be taken each class**

Day	Topic
1	**Introduction, History, Basics, Environment Setup**
2	**Variables, Data Types, Basic I/O**
3	**Conditionals and Logic**
4	**Loops** *(Project 1)*
5	**Nested Loops**
6	**Arrays, Strings**
7	**Functions**
8	**Recursion, File I/O**
9	**Pointers, Testing, Debugging** *(Project 2)*
10	**Advanced Types: Structures, Unions, Typedef, Enum**
11	**Dynamic Memory Allocations & Dynamic Data Structures: Linked Lists**
12	**Final Project**
13	**Field Trip: Google HQ + Museum of Mathematics**
14	**Final Project Presentations**