Ai2 Lecture Series 1

Short Course on Programming in C/C++

Subjects	Week	Tentative Hours
Overview of Programming Languages	1	1
Functional and Imperative Languages		
Introduction to C, "Hello World"		1
First Program in C, Printing "Hello World"		
Data Types and Expressions		1
Data Types Type Conversion(Dynamic, Explicit) Basic I/O (scanf, printf) Arithmetic and Logical Expressions Assignment (concept of r-value, l-value) Statements		
Control Flow		2
Selective Structures Conditional Expression and Statements Nested Conditionals Multi-way Conditional **Repetitive Structures** while loop do-while loop for loop Nested Loops Loop Interruption (break, continue statements)		
Functions		2
Function Definition Function Call (call-by-value) Function Prototypes (header files) Recursion		
Arrays and Pointers		3
Basics of Pointers Array-Pointer Referencing Duality Strings Dynamic Memory Management Function and Pointers(call-by-reference) Multidimensional Arrays and Pointers Pointers to Pointers Pointer to Functions		
Structures and Unions	2	1
Basics of Structures Structures and Functions Structures and Arrays Self-Referential Structures(Structures Containing Pointers) Unions		
File Processing with C		2
Reading From & Writing to Files		

C++

Introduction to C++ and Object Oriented Programming		**2-3**
Difference between C and C++ Classes Friendship and Inheritance Polymorphism		
Advanced Concepts	**3**	**1**
Templates Namespaces Exceptions Type Casting		
C++ Standard Library		**1**
Input / Output with Files in C++		
Standard Template Library(STL)		**2-3**
Sequences vector deque list **Container Classes** stack queue priority queue **Associative Containers** set, multi-set map, multi-map **Operations/Utilities** Iterator Algorithm		

	Lecture 1 (Thursday) 17:00 - 20:00	Lecture 2 (Friday) 17:00 - 20:00	Lecture 3 (Saturday) 09:00 - 12:00
Week 1	Sept. 6	Sept. 7	Sept. 8
Week 2	Sept. 13	Sept. 14	Sept. 15
Week 3	Sept. 20	Sept. 21	Sept. 22

Organized by
Dr. Onur Pekcan
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Applied Innovative and Interdisciplinary (AI2) Research Lab
www.ai2lab.org

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