PROGRAMMING IN C++

PROF. PARTHA PRATIM DAS
Department of Computer Science and Engineering
IIT Kharagpur

TYPE OF COURSE: Rerun | Core | UG/PG
COURSE DURATION: 8 weeks (18 Jan' 21 - 12 Mar' 21)
EXAM DATE: 21 Mar 2021

PRE-REQUISITES: Basic Knowledge of Programming
Data Structure C Programming

Attending a course on OOP with this course will help


INDUSTRIES APPLICABLE TO: Programming in C++ is so fundamental that all companies dealing with
systems as well as application development (including web, IoT, embedded systems) have a need for the same. These include -
Microsoft, Samsung, Xerox, Yahoo, Google, IBM, TCS, Infosys, Amazon, Flipkart, etc.

COURSE OUTLINE:
There has been a continual debate on which programming language/s to learn, to use. As the latest
TIOBE Index for April 2016 indicates - Java (21%), C (14%), C++ (6%), C#(4%), and Python (3%)
together control nearly half the programming community. Given this, it is still important to learn C and
C++ because of the efficiency they offer. While we appreciate that Java is good for applications, for
graphics; and we acknowledge that Python is appropriate for portable software, engineering problem
solving, and graphics; it is worth bearing in mind that the JVM and Python interpreter are indeed written
in C++, making C++ the father of all languages today.

ABOUT INSTRUCTOR:
Prof. Partha Pratim Das received his BTech, MTech and PhD degrees in 1984, 1985 and
1988 respectively from IIT Kharagpur. He served as a faculty in Department of Computer
as a Business Development Manager. From 2001 to 2011, he worked for Interra Systems, Inc as a
Senior Director and headed its Kolkata Center. In 2011, he joined back to Department of
Computer Science and Engineering, IIT Kharagpur as Professor. Dr. Das has also served as a
Visiting Professor with Institute of Radio Physics and Electronics, Calcutta University from 2003 to 2013.

COURSE PLAN:
Week 1: Programming in C++ is Fun : Build and execute a C program in C++, Write equivalent
programs in C++
Week 2: C++ as Better C : Procedural Extensions of C
Week 3: Overview of OOP in C++ : Classes and basic Object-Oriented features (encapsulation)
Week 4: Overview of OOP in C++ : More OO features, overloading, namespace and using struct and union
Week 5: Inheritance : Generalization / Specialization of Object Modeling in C++
Week 6: Polymorphism : Static and Dynamic Binding
Week 7: Type Casting & Exceptions : C++ cast operators; C++ Exceptions & standard exception classes
Week 8: Templates & STL - Function and Class templates and using STL like containers, algorithms