## KCES's College of Engineering and Management, Jalgaon

Activity Report

| Name of The Activity : Student development Program on C and Cpp. | | | |
|---|---|---|---|
| **Category of activity** | | **Co-curricular** | |
| **Date:** | 03/12/2020 to 07/12/2020 | **Participants profile:** | **SE, TE, BE Electrical Students** |
| **Name of Co-ordinator (S)** | 1. Mr. U. R. Kothoke<br>2. Mr. S. M. Nath | | |
| **Guest/ Experts (If any)** | **By Spoken Tutorial IIT Bombay** | | |
| **Objective for conducting activity** | ➢ To get knowledge about high level programming.<br>➢ To get knowledge about how to develop different web applications.<br>➢ About getting knowledge about how to develop C and Cpp language.<br>➢ To get knowledge about how to develop different applications. | | |
| **Methodology** | ➢ Online Sessions were Conducted with help of video lecture by Spoken Tutorial IIT Bombay. | | |
| **Out Come** | ➢ Students are able to develop programming functions using C and Cpp.<br>➢ Students become aware of objective oriented programming. | | |

IQAC coordinator

Principal

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# and Cpp

From Script | Spoken-Tutorial

## Introduction to C

**Powerful features, simple syntax,** and **portability** make **C** a preferred language among programmers for business and industrial applications.**Portability** means that **C** programs written for a computer with a particular kind of processor, say Intel, can be executed on computers with different processors such as Motorola, Sun Sparc, or IBM with little or no modification.**C language** is widely used in the development of operating systems.

An **Operating System(OS)** is a software(collection of programs) that controls the various functions of a computer. Also it makes other programs on your computer work.

**For example**, you cannot work with a word processor program, such as Microsoft Word, if there is no perating system installed on your computer.Windows, Unix, Linux, Solaris, and MacOS are some of the popular operating systems.

**Dennis M. Ritchie**, a systems engineer at **Bell Laboratories**, New Jersey developed **C** in the early **1970's**although designed for the Unix operating system, it soon proved itself a powerful, general purpose programming language.

**C++** is a programming language developed by **Bjarne Stroustrup** starting in **1979** at **Bell Labs**. C++ is a statically typed, free-form, multi-paradigm, compiled, general-purpose, powerful programming language. C++ is an **object oriented language**. It supports features like classes and objects, Polymorphism, Encapsulation, Inheritance etc. C++ is also used for hardware design.

The Spoken Tutorial effort for **C** and **C++** is led by Ashwini Patil from IIT BOMBAY, under the guidance of various Professors from IIT BOMBAY.

Other Contributors : Chaitanya Mokashi, Ritwik Joshi, Dhawal Goyal

**Learners**: High School and UG/PG CSE/CS/IT students and anyone who wishes to learn basic programming.

## Contents


- 1 Introduction to C
- 2 Basic Level
- 3 Intermediate level
- 4 Advanced level


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## Basic Level

### 1) First C Program

- -Header Files
  - example: #include <stdio.h>
- main()

- Curly braces { }
- printf()
- semicolon ;

- Compiling a C program
  - example: gcc filename.c -o output parameter
- Executing a C program
  - example: ./output parameter
- Errors

## 2) First C++ Program

- Header files
  - --example: #include <iostream>
- main()
- Curly braces { }
- -cout<<
- semicolon ;

- Compiling a C++ program
  - example: g++ filename.cpp -o output parameter
- Executing a C program
  - example: ./output parameter

## 3) Tokens in C and C++

- Data types, constants, identifiers
- Keywords
  - example: if, break, else
- Constants
- Data types
  - example: int, float, char, double
- Format specifiers
  - example: %d, %f, %c, %lf
- Range of data types
- Variables
- Identifier
- Errors

## 4) Functions in C and C++

- What is a function
- Syntax for declaration of a function
- Function with arguments
  - example: return-type function-name(parameter);
- Function without arguments
  - example: return-type function-name;
- Calling a function
- Errors

## 5) Scope of Variables in C and C++

- Introduction
- Syntax of declaring a variable

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- example: data-type var-name;
- Syntax for initializing a variable
  - example: data-type var-name = value;
- Scope of variables
- Global variable
- Local variable
- Error

### 6) If And Else If statement in C and C++

- What are Statements.
- Syntax for if and
- If-else Statement
- Errors

### 7) Nested if and switch statement in C and C++

- Nested if statement.
- Switch statement.
- Syntax for nested-if statement
- Syntax for switch statement
- break statement
- Comparison between nested if-else and switch statement
- Errors

### 8) Increment and Decrement Operators in C and C++

- Increment Operator
  - example: ++
- Postfix increment
  - example: a++
- Prefix increment
  - example: ++a
- Decrement Operator
  - example: --
- Postfix decrement
  - example: a--
- Prefix decrement
  - example: --a
- Typecasting
- Errors

### 9) Arithmetic Operators in C and C++

- Arithmetic Operators
- Addition Operator
  - example: a + b
- Subtraction Operator
  - example: a - b
- Multiplication Operator
  - example: a * b
- Division Operator
  - example: a \ b
- Modulus Operator

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- example: a % b
- Errors

10) **Relational Operators in C and C++**

- Double Equal to
  - example: a == b
- Not Equal to
  - example: a != b
- Greater Than
  - example: a > b
- Less Than
  - example: a < b
- Greater than Equal To
  - example: a >= b
- Less Than Equal To
  - example: a <= b
- Errors

**Logical Operators in C and C++**

- And &&
- Or ||
- Not !
- Errors

# Intermediate level

12) **Loops in C and C++**

- Loops
- Syntax for while and do-while loop
- Comparison of while and do-while loop
- Syntax for
- for loop
- Errors

13) **Arrays in C and C++**

- What are arrays
- 1-D Arrays
- Syntax for Declaration of arrays
  - example: data type array_name [size];
- Syntax for Initialization of arrays
  - example: data type array_name [size]=value;
- Accepting values from the user
- Errors

14) **Working with 2-D Arrays in C and C++**

- What are 2-D Arrays.

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- Range of arrays
- Syntax for Declaration of 2-D arrays
  - example: data type array_name[row][column];
- Syntax for initialization of 2-D arrays
  - example: data type array_name[row][column]=

{

{row-val},{col-val}

};

- Errors

15) **Strings in C and C++**

- What is a string
- Syntax for declaring a string
- Syntax for initializing a string
- To read a string from keyboard
- Errors

16) **String Library Functions in C and C++**

- What are string library functions.
- Types of string library functions
  - Strcpy
  - Strlen
  - Strcmp
  - Strcat
- Errors

# Advanced level

17) **Working with Structures in C and C++**

- Introduction
- Syntax of structures
- Declaration and initialization
- Declaration of structure variable
- Accessing structure variables

18) **Understanding Pointers in C and C++**

- Introduction
- Syntax of Pointer
  - example: int *iptr;
- Declaration
  - example:

int a; (integer a) int *aptr; (pointer to an integer *aptr) aptr = &a; (aptr set to address of a) Address Pointer

- Errors

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**unction call in C and C++**

- types of function calls
- function pass by value
- function pass by reference

20) **File Handling in C**

- File handling functions
- Opening a File closing a file
  - example: fopen, fclose
- Reading data from a File

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Electrical Engineering Department

Academic Year 2020-21 SEM – I

DATE: 27/11/2020

# Schedule for C and Cpp

| Sr.no. | Date | Topic |
|---|---|---|
| 1 | 03/12/2020 | Introduction to C |
| 2 | 03/12/2020 | Powerful Features |
| 3 | 03/12/2020 | Simplex Syntax |
| 4 | 03/12/2020 | Portability |
| 5 | 04/12/2020 | First C Program |
| 6 | 04/12/2020 | Operating System |
| 7 | 04/12/2020 | Introduction to Cpp |
| 8 | 04/12/2020 | Function In C and C++ |
| 9 | 05/12/2020 | Scope of Variables in C and C++ |
| 10 | 05/12/2020 | If and Else If Statement in C and C++ |
| 11 | 05/12/2020 | Nested if and switch statement in C and C++ |
| 12 | 05/12/2020 | Increment and Decrement operators in C and C++ |
| 13 | 06/12/2020 | Arithmetic operation in C and C++ |
| 14 | 06/12/2020 | Relational Operators in C and C++ |
| 15 | 06/12/2020 | Logical Operators in C and C++ |
| 16 | 06/12/2020 | Arrays in C and C++ |
| 17 | 07/12/2020 | Working with 2D Arrays in C and C++ |
| 18 | 07/12/2020 | Function call in C and C++ |
| 19 | 07/12/2020 | File Handling in C |

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Mr. Kalpesh M. Mahajan

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### A.Y 2020-21

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A comprehensive set of topics pertaining to **C and Cpp** were covered in the training.

August 30th 2020

**Prof. Kannan M Moudgalya**
**IIT Bombay**

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Spoken Tutorial is a project at IIT Bombay, started with funding from the National Mission on Education through ICT, Ministry of Education (previously MHRD), Govt. of India .

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# Certificate of Participation

This is to certify that **NILESH DAYMA** participated in the **C and Cpp** training organized at **KHANDESH COLLEGE EDUCATION SOCIETY'S COLLEGE OF ENGINEERING AND MANAGEMENT, JALGAON** in **July 2020** semester, with course material provided by the Spoken Tutorial Project, IIT Bombay.

A comprehensive set of topics pertaining to **C and Cpp** were covered in the training.

August 30th 2020

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# Certificate of Participation

This is to certify that **PIYUSH TIWARI** participated in the **C and Cpp** training organized at **KHANDESH COLLEGE EDUCATION SOCIETY'S COLLEGE OF ENGINEERING AND MANAGEMENT, JALGAON** in **July 2020** semester, with course material provided by the Spoken Tutorial Project, IIT Bombay.

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