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Certificate Course in C & C++

COURSE CODE: CC-07

COURSE CONTENT & SYLLABUS

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Course code - CC-07

ELIGIBILITY: 12TH CLASS & ABOVE

DURATION: 3 MONTH

MODULE - 1

C LANGUAGE

FUNDAMENTAL OF C LANGUAGE

OPERATORS

DECISION MAKING STATEMENT

LOOPING STATEMENT

THE STATEMENT

AN ARRAY

FUNCTION

CHARACTER STRING CATE Course in C &

STRUCTURES

MODULE - 2

C++ LANGUAGE

FUNDAMENTAL OF OBJECT ORIENTED PROGRAMMING

PROGRAMMING IN C++

DATA TYPES, VARIABLE, CONSTANT

ARRAY

USER DEFINED FUNCTIONS

MATHEMATICAL & OTHER FUNCTIONS

CLASSES & OBJECTS

CONSTRUCTOR & DESTRUCTOR

POLYMORPHISM

OPERATOR OVERLOADING

INHERITANCE

FILE HANDLING

MODULE SUBJECT

SUBJECT CODE - NCL

C LANGUAGE

MODULE SUBJECT

SUBJECT CODE - NCL2

C++ LANGUAGE



Certificate Course in C & C++

COURSE SYLLABUS

Module -1

C LANGUAGE

A. FUNDAMENTAL OF C LANGUAGE

- A-1 HISTORY OF C LANGUAGE
- A-2 FEATURES OF C LANGUAGE
- A-3 BASIC STRUCTURE OF C LANGUAGE
- A-4 PROGRAM DEVELOPMENT OF C LANGUAGE
- A-5 COMPONENTS OF C LANGUAGE
- A-6 C TOKENS
- A-7 TYPES OF DATA TYPES
- A-8 INTRODUCTION OF ESCAPE SEQUENCES
- A-9 INTRODUCTION OF FORMAT SPECIFIERS
- A-10 INTRODUCTION OF STANDARD INPUT & OUTPUT FUNCTION
- A-11EXAMPLES OF C PROGRAM

B. OPERATORS

- B-1 INTRODUCTION OF OPERATORS SE IN C C++
- B-2 TYPES OF OPERATORS
- B-3 WORKING WITH ASSIGNMENT OPERATOR
- B-4 WORKING WITH ARITHMATIC OPERATOR
- B-5 WORKING WITH ADDRESS OPERATOR
- B-6 WORKING WITH RELATIONAL OPERATOR
- B-7 WORKING WITH LOGICAL OPERATOR
- B-8 WORKING WITH SIZE OF OPERATOR
- B-9 WORKING WITH CONDITIONAL OPERATOR
- B-10 WORKING WITH INCREMENT/DECREMENT OPERATOR
- B-11 WORKING WITH UNARY MINUS OPERATOR

C. DECISION MAKING STATEMENT

- C-1 INTRODUCTION OF STATEMENT
- C-2 TYPES OF STATEMENT
- C-3 DECISION STATEMENT
 - C-3.I DECISION STATEMENT WITH IF STATEMENT
 - C-3.II STRUCTURE & SYNTAX OF IF STATEMENT
 - C-3.III CREATION OF PROGRAM WITH IF STATEMENT
- **C-4**
- C-4.I DECISION STATEMENT WITH IF ELSE STATEMENT
- C-4.II STRUCTURE & SYNTAX OF IF ELSE STATEMENT
- C-4.III CREATION OF PROGRAM WITH IF ELSE STATEMENT

- **C-5**
- C-5.I DECISION STATEMENT WITH NESTED IF ELSE STATEMENT
 C-5.II STRUCTURE & SYNTAX OF NESTED IF ELSE STATEMENT
 C-5.III CREATION OF PROGRAM WITH NESTED IF ELSESTATEMENT
- **C-6**
- C-6.I DECISION STATEMENT WITH ELSE IF LADDER STATEMENT
 C-6.II STRUCTURE & SYNTAX OF ELSE IF LADDER STATEMENT
 C-6.III CREATION OF PROGRAM WITH ELSE IF LADDERSTATEMENT
- C-7
- C-7.I DECISION STATEMENT WITH SWITCH STATEMENT
- C-7.II STRUCTURE & SYNTAX OF SWITCH STATEMENT
- C-7.III CREATION OF PROGRAM WITH SWITCH STATEMENT

D. LOOPING STATEMENT

- D-1 INTRODUCTION OF LOOPING STATEMENT
- D-2 TYPES OF LOOPING STATEMENT
- D-3 WHILE LOOP
 - D-3.I INTRODUCTION OF WHILE LOOP STATEMENT
 - D-3.II STRUCTURE & SYNTAX OF WHILE LOOP STATEMENT
 - D-3.III CREATION OF PROGRAM WITH WHILE LOOP STATEMENT
- D-4 DO WHILE STATEMENT
 - D-4.I INTRODUCTION OF DO WHILE LOOP STATEMENT
 - D-4.II STRUCTURE & SYNTAX OF DO WHILE LOOP STATEMENT
 - D-4.III CREATION OF PROGRAM WITH DO WHILE LOOPSTATEMENT
- D-5 FOR LOOP STATEMENT
 - D-5.I INTRODUCTION OF FOR LOOP STATEMENT
 - D-5.II STRUCTURE & SYNTAX OF FOR LOOP STATEMENT
 - D-5.III CREATION OF PROGRAM WITH FOR LOOP STATEMENT
- D-6 NESTED FOR LOOP STATEMENT
 - D-6.I INTRODUCTION OF NESTED FOR LOOP STATEMENT
 - D-6.II STRUCTURE & SYNTAX OF NESTED FOR LOOP STATEMENT
 - D-6.IIICREATION OF PROGRAM WITH NESTED FOR LOOP STATEMENT

E. THE STATEMENT

- E-1 INTRODUCTION OF STATEMENT
- E-2 INTRODUCTION OF JUMP STATEMENT
- E-3 INTRODUCTION OF BREAK STATEMENT
- E-4 STRUCTURE & SYNTAX OF BREAK STATEMENT
- E-5 PROGRAM CREATION USING BREAK STATEMENT
- E-6 INTRODUCTION OF CONTINUE STATEMENT
- E-7 STRUCTURE & SYNTAX OF CONTINUE STATEMENT
- E-8 PROGRAM CREATION USING CONTINUE STATEMENT

F. AN ARRAY

- F-1 INTRODUCTION OF ARRAY
- F-2 TYPES OF ARRAY
- F-3 ONE DIMENSIONAL ARRAY
 - F-3.I INTRODUCTION OF ONE DIMENSIONAL ARRAY
 - F-3.II DECLARATION OF ONE DIMENSIONAL ARRAY

- F-3.III INTIALISATION OF ONE DIMENSIONAL ARRAY
- F-3.IV PROGRAM CREATION USING ONE DIMENSIONAL ARRAY
- F-4 TWO DIMENSIONAL ARRAY
 - F-4.I INTRODUCTION OF TWO DIMENSIONAL ARRAY
 - F-4.II DECLARATION OF TWO DIMENSIONAL ARRAY
 - F-4.III INTIALISATION OF TWO DIMENSIONAL ARRAY
 - F-4.IV PROGRAM CREATION USING TWO DIMENSIONAL ARRAY

G. FUNCTION

- G-1 INTRODUCTION OF FUNCTION
- G-2 TYPES OF FUNCTION
- G-3 ADVANTAGES OF FUNCTION
- G-4 IMPLEMENTATION OF FUNCTION
- G-5 DECLARATION OF FUNCTION
- G-6 CALLING A FUNCTION
- G-7 DEFINING OF USER DEFINED FUNCTION
- G-8 INTRODUCTION OF ACTUAL PARAMETER
- G-9 INTRODUCTION OF FORMAL PARAMETER
- G-10 INTRODUCTION OF CALLING FUNCTION
- G-11 INTRODUCTION OF CALLED FUNCTION
- G-12 PROGRAM CREATION USING FUNCTION
- G-13 CALLING A FUNCTION
 - G-13.I INTRODUCTION OF CALLING A FUNCTION
 - G-13.II INTRODUCTION OF CALL BY VALUE
 - G-13.III PROGRAM CREATION USING CALL BY VALUE
 - G-13.IV INTRODUCTION OF CALL BY REFERENCE
 - G-13.V PROGRAM CREATION USING CALL BY REFERENCE
 - G-13.VI FUNCTION WITH NO ARGUMENTS AND NO RETURN VALUE
- G-13.VII FUNCTION WITH ARGUMENTS AND NO RETURN VALUE
 - G-13.VIII FUNCTION WITH NO ARGUMENTS AND RETURN VALUE
 - G-13.IX FUNCTION WITH ARGUMENTS AND RETURN VALUE
- G-14 ARRAY & FUNCTION
 - G-14.I INTRODUCTION OF ARRAY & FUNCTION
 - G-14.II DECLARATION OF ARRAY & FUNCTION
 - G-14.III PROGRAM CREATION USING ARRAY & FUNCTION
- G-15 RECURSIVE FUNCTION
 - G-15.I INTRODUCTION OF RECURSIVE FUNCTION
 - G-15.II DECLARATION OF RECURSIVE FUNCTION
 - G-15.III PROGRAM CREATION USING RECURSIVE FUNCTION
- G-16 STORAGE CLASSES
 - G-16.I INTRODUCTION OF STORAGE CLASSES
 - G-16.II TYPES OF STORAGE CLASSES
 - G-16.III INTRODUCTION OF AUTOMATIC VARIABLE
 - G-16.IV INTRODUCTION OF EXTERNAL VARIABLE
 - G-16.V INTRODUCTION OF STATIC VARIABLE
 - G-16.VI INTRODUCTION OF REGISTER VARIABLE

H. CHARACTER STRING

- H-1 INTRODUCTION OF STRING
- H-2 DECLARATION & INITIALISATION OF STRING VARIABLE
- H-3 READING STRING FROM TERMINAL

- H-4 WRITING STRING TO SCREEN
- H-5 STRING HANDLING LIBRARY FUNCTION
- H-6 PROGRAM CREATION USING CHARACTER STRINGS
- H-7 2-D STRING ARRAY
 - H-7.I INTRODUCTION OF 2-D STRING ARRAY
 - H-7.II DECLARATION OF 2-D STRING ARRAY
 - H-7.III PROGRAM CREATION USING 2-D STRING ARRAY

I. POINTER

- I-1 INTRODUCTION OF POINTER
- I-2 ADVANTAGES OF POINTER
- I-3 ACCESSING THE ADDRESS OF VARIABLE
- I-4 DECLARATION & INITIALIZATION POINTER
- I-5 ACCESSING A VARIABLE VALUE THROUGH ITS POINTER
- I-6 PROGRAM CREATION USING POINTER
- I-7 POINTER & ARRAY
 - I-7.I INTRODUCTION OF POINTER & ARRAY
 - I-7.II DECLARATION ARRAY WITH POINTER
 - I-7.III PROGRAM CREATION USING POINTER & ARRAY
- I-8 POINTER & CHARACTER STRINGS
 - I-8.I INTRODUCTION OF POINTER & CHARACTER STRINGS
 - I-8.II PROGRAM CREATION USING POINTER & CHARACTER STRINGS

I-9 CALL BY REFERENCE

- I-9.I INTRODUCTION OF CALL BY REFERENCE
- I-9.II PROGRAM CREATION USING CALL BY REFERENCE

J. STRUCTURES

- J-PINTRODUCTION OF STRUCTURE ISE IN C & C
- J-2 DEFINING A STRUCTURE
- J-3 DECLARING STRUCTURE VARIABLE
- J-4 ACCESSING STRUCTURE MEMBERS
- J-5 INPUT VALUE IN MEMBERS
- J-6 OUTPUT VALUE IN MEMBERS
- J-7 STRUCTURE INITIZALATION
- J-8 STRUCTURE & SYNTAX OF STRUCTURES
- J-9 PROGRAM CREATION USING STRUCTURE
- J-10 STRUCTURE & ARRAY
 - J-10. INTRODUCTION OF STRUCTURE & ARRAY
 - J-10.II STRUCTURE N SYNTAX OF STRUCTURE N ARRAY
 - J-10.III PROGRAM CREATION USING STRUCTURE & ARRAY
- J-11 STRUCTURE WITHIN STRUCTURE
 - J-11. INTRODUCTION OF STRUCTURE WITHIN STRUCTURES
 - J-11.II STRUCTURE N SYNTAX OF STRUCTURE WITHIN STRUCTURES
 - J-11.III DEFINING OF STRUCTURE WITHIN STRUCTURE
 - J-11.IV PROGRAM CREATION USING STRUCTURE WITHIN STRUCTURE
- J-12 STRUCTURE & FUNCTION
 - J-12.I INTRODUCTION OF STRUCTURE & FUNCTION
 - J-12.II STRUCTURE N SYNTAX OF STRUCTURE & FUNCTION

- J-12.III DEFINING OF STRUCTURE & FUNCTION
- J-12.IV PROGRAM CREATION USING STRUCTURE & FUNCTION

Module -2

C++ LANGUAGE

A. FUNDAMENTAL OF OBJECT ORIENTED PROGRAMMING

- A-1 INTRODUCTION OF DOP'S
- A-2 FEATURES OF DOP'S
- A-3 INTRODUCTION OF OBJECTS
- A-4 INTRODUCTION OF CLASSES
- A-5 INTRODUCTION OF INHERITANCE
- A-6 INTRODUCTION OF REUSABILITY
- A-7 INTRODUCTION OF OVERLOADING
- A-8 CONCEPT OF OBJECTS & CLASSES

B. PROGRAMMING IN C++

- **B-1** INTRODUCTION OF PROGRAMMING
- B-2 INTRODUCTION OF CHARACTER SET
- B-3 INTRODUCTION OF C++ TOKENS
- B-4 STRUCTURE OF C++ PROGRAM
- B-5 INTRODUCTION OF FUNCTION
- B-6 INTRODUCTION OF HEADER FILES
- B-7 INTRODUCTION OF INPUT/OUTPUT OF C++
- B-8 USE OF MANIPULATORS
- B-9 USE OF EDITOR
- B-10 USE OF BASIC COMMANDS OF EDITORS
- B-11introduction of compiling & Linking

C. DATA TYPES, VARIABLE, CONSTANT

- C-1 INTRODUCTION OF CONSTANTS
- C-2 TYPES OF CONSTANTS
- C-3 INTRODUCTION OF DATA TYPES
- C-4 TYPES OF DATA TYPES
- C-5 INTRODUCTION OF VARIABLE & INITIALIZATION OF VARIABLE
- C-6 INTRODUCTION OF OPERATORS & EXPRESSIONS
- C-7 TYPES OF OPERATORS & EXPRESSIONS
- C-8 PROGRAM CREATION USING OPERATORS & EXPRESSION
- C-9 INTRODUCTION OF AUTOMATIC TYPE CONVERSION IN EXPRESSION
- C-10 INTRODUCTION OF TYPE CASTING
- C-11 INTRODUCTION OF SHORT HANDS OF C++
- C-12 INTRODUCTION OF CONDITIONAL EXPRESSION
- C-13 INTRODUCTION OF NESTED IF
- C-14 INTRODUCTION OF SWITCH CASE DEFAULT
- C-15 PROGRAM CREATION USING CONDITIONAL EXPRESSION
- C-16 INTRODUCTION OF BREAK STATEMENT
- C-17 INTRODUCTION OF LOOP
- C-18 INTRODUCTION OF WHILE, DO WHILE & FOR LOOP
- C-19 PROGRAM CREATION USING LOOPS

D. ARRAY

- D-1 INTRODUCTION OF ARRAY
- D-2 NEED OF ARRAY
- D-3 TYPES OF ARRAY
- D-4 DECLARATION OF ARRAY
- D-5 INITIALISATION OF ONE DIMENSIONAL ARRAY
- D-6 INTRODUCTION N EXAMPLE OF AVERAGE OF ARRAY ELEMENTS
- D-7 INTRODUCTION N EXAMPLE OF LINEAR SEARCHING
- D-8 INTRODUCTION N EXAMPLE OF FINDING MAX/MIN VALUE FROM ARRAY
- D-9 DECLARATION OF STRING
- D-10 INITIALISATION OF STRING
- D-11 COUNTING VOWELS/CONSTANTS/DIGITS/SPECIAL CHARACTERS
- D-12 INTRODUCTION OF ISALNUM, ISALPHA, ISDIGIT, ISLOWER, ISUPPER, TOLOWER, TOUPPER, STRCPY, STRCAT, STRLEN, STRCMP
- D-13 INTRODUCTION OF 2-D ARRAY
 - D-13.I DECLARATION OF 2-D ARRAY
 - D-13.II INITIALIZATION OF 2-D ARRAY
 - D-13.III INTRODUCTION OF DIAGONAL ELEMENTS

E. USER DEFINED FUNCTIONS

- E-1 INTRODUCTION OF USER DEFINED FUNCTION
- E-2 DEFINING OF USER DEFINED FUNCTION
- E-3 INTRODUCTION OF FUNCTION PROTOTYPE
- E-4 INTRODUCTION OF CALLING A FUNCTION
- E-5 INTRODUCTION OF DEFAULT ARGUMENT
- E-6 INTRODUCTION OF CONSTANT ARGUMENT
- E-7 INTRODUCTION OF CALL BY VALUE
- E-8 INTRODUCTION OF CALL BY REFERENCE
- E-9 INTRODUCTION OF RETURNING VALUE FROM A FUNCTION
- E-10 INTRODUCTION OF CALLING A FUNCTION WITH ARRAY
- E-11INTRODUCTION OF SCOPE RULE OF FUNCTION & VARIABLE

F. MATHEMATICAL & OTHER FUNCTIONS

- F-1 INTRODUCTION OF MATHEMATICAL FUNCTION
- F-2 INTRODUCTION OF STANDARD LIBRARY FILE

G. CLASSES & OBJECTS

- G-1 INTRODUCTION OF CLASSES
- G-2 INTRODUCTION OF SPECIFYING A CLASS
- G-3 DECLARATION OF CLASSES
- G-4 DEFINITION OF CLASSES INSIDE/ OUTSIDE
- G-5 DECLARATION OF OBJECTS
- G-6 ACCESSING CLASS MEMBER
- G-7 DEFINING MEMBER FUNCTION
- G-8 MAKING AN OUTSIDE INLINE FUNCTION
- G-9 NESTING OF MEMBER FUNCTION
- G-10 PRIVATE MEMBER FUNCTION
- G-11 ARRAY WITHIN A CLASS
- G-12 MEMORY ALLOCATION OF OBJECTS

- G-13 STATIC DATA MEMBERS & FUNCTION MEMBERS
- G-14 ARRAY OF OBJECTS
- G-15 OBJECTS AS FUNCTION
- G-16 RETURNING OBJECTS

H. CONSTRUCTOR & DESTRUCTOR

- H-1 INTRODUCTION OF CONSTRUCTOR
- H-2 SYNTAX N EXAMPLE OF CONSTRUCTOR
- H-3 INTRODUCTION OF DESTRUCTOR
- H-4 INTRODUCTION OF OBJECT & MEMORY
- H-5 INTRODUCTION OF STRUCTURE & CLASS
- H-6 INTRODUCTION OF FREE STORE IN C++
- H-7 INTRODUCTION OF FUNCTION OVERLOADING
- H-8 INTRODUCTION OF COPY CONSTRUCTOR

I. POLYMORPHISM

- I-1 INTRODUCTION OF POLYMORPHISM
- I-2 ADVANTAGES OF POLYMORPHISM
- I-3 TYPES OF POLYMORPHISM
- I-4 INTRODUCTION OF VIRTUAL FUNCTION
- I-5 SYNTAX N EXAMPLE OF VIRTUAL FUNCTION

J. OPERATOR OVERLOADING

- J-1 INTRODUCTION OF OVERLOADING
- J-2 TYPES OF OVERLOADING
- J-3 INTRODUCTION OF FUNCTION OVERLOADING
- J-4 SYNTAX N EXAMPLE OF FUNCTION OVERLOADING
- J-5 INTRODUCTION OF OPERATOR OVERLOADING
- J-6 SYNTAX N EXAMPLE OF OPERATOR OVERLOADING

K. INHERITANCE

- K-1 INTRODUCTION OF INHERITANCE
- K-2 SYNTAX N EXAMPLE OF INHERITANCE
- K-3 TYPES OF INHERITANCE
- K-4 INTRODUCTION N EXAMPLE OF SIMPLE INHERITANCE
- K-5 INTRODUCTION N EXAMPLE OF MULTIPLE INHERITANCE
- K-6 INTRODUCTION N EXAMPLE OF HIERARCHICAL INHERITANCE
- K-7 INTRODUCTION N EXAMPLE OF MULTILEVEL INHERITANCE

L. FILE HANDLING

- L-1 INTRODUCTION OF DATA FILE
- L-2 INTRODUCTION OF TEXT FILE
- L-3 INTRODUCTION OF BINARY FILE
- L-4 INTRODUCTION OF INPUT/OUTPUT STREAM
- L-5 INTRODUCTION OF OPENING & DECLARATION OF FILE
- L-6 INTRODUCTION OF CLOSING FILE
- L-7 INTRODUCTION OF TEXT FILE
- L-8 INTRODUCTION OF CHECKING STATE FLAGS
- L-9 READING N WRITING A TEXT FILE USING FSTREAM CLASS
- L-10 EXAMPLES OF FILE HANDLING