# C++ Programming Lab

**Course Code: 22CS11S2**

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**Course Outcomes:** At the end of the Course the student shall be able to
**CO1:** Implement programs using classes and objects(L2)
**CO2:** Develop solutions using inheritance and polymorphism concepts(L2)
**CO3:** Utilize try and catch blocks to handle exceptions(L3)
**CO4:** Make use of generic templates in solving problems(L3)
**CO5:** Apply standard template libraries to linear data structures(L3)

## LIST OF PROGRAMS:

### (Any 12 experiments of the following to be performed)

1. a) Write a program to generate the following sequence
1
1 2
1 2 3
1 2 3 4
b) Write a program which uses function to swap two integers and two float numbers by using reference variable
c) Write a program that demonstrates default arguments
2. a) Write a program Illustrating Class Declarations, Definition, and Accessing Class Members.
b)Write a program to illustrate default constructor, parameterized constructor and copy constructor, destructors for a class
3. a) Write a program that illustrates the following forms of inheritances
    Single    Multiple    Multilevel    Hierarchical
b) Create multiple objects for the class and observe the order in which constructors and destructors are called.
4 a) Write a program to use pointers for both base and derived classes and call the member functions.
b) Write a program that demonstrates function overloading, operator overloading, overriding

5 a) Write a program that demonstrates friend functions, inline functions,
b) Write a program that demonstrates virtual, static functions

6 a) Write a program which uses the concept of pass and return objects to functions.
b) Write a program to create an array of objects.
7 a) Write a program that handles Exceptions. Use a Try Block to Throw it and a Catch Block to Handle it Properly.

b) Write a Program to Demonstrate the Catching of All Exceptions

8. Write a Program to demonstrates user defined exceptions

9. Write a program to create a generic template for adding two integers and two float values and make use of the template to perform addition.

10. Write a program to implement the matrix ADT using a class. The operations supported by this ADT are:

a) Addition of two matrices. b) subtraction of two matrices. c) Multiplication of two matrices.

11. Accept two stacks as input from the user and perform operations on it using stack class available in Standard Template Library (STL).

12. Write a program implementing a queue class with required operations using STL.

13. Write a program implementing a circular queue class with required operations using STL.

14.Write a program to convert an infix expression to a postfix expression using stacks in STL.

15. Write a program to perform all operations of a single linked list using forward list in STL.

16. Write a program to implement binary search tree using traverse the tree using any traversal schema

**WEB REFERENCES:**
1. https://onlinecourses.nptel.ac.in/noc19_cs38/preview
2. https://www.coursera.org/learn/cs-fundamentals-1#syllabus
3. https://www.geeksforgeeks.org/c-plus-plus/