**Assignment No: 1**

**Problem Statement:** Develop an object-oriented program in C++ to create a database of student information system containing the following information: Name, Roll number, Class, division, Date of Birth, Blood group, contact address, telephone number, driving license no. etc. Construct the database with suitable member functions viz, static member functions, friend class/ friend function, this pointer, inline code and dynamic memory allocation operators-new and delete. Implement all the keywords as mentioned in the problem statement.

**Aim of Assignment:** Understand the concept of OOP.

**Description:**

1. **Class:** A Class is a user defined data-type which has data members and member functions. Data members are the data variables and member functions are the functions used to manipulate these variables and together these data members and member functions defines the properties and behavior of the objects in a Class.
2. **Friend Class:** A friend class can access private and protected members of other class in which it is declared as friend. It is sometimes useful to allow a particular class to access private members of other class.
3. **Static Member Function:** A static member function is a special member function, which is used to access only static data members, any other normal data member cannot be accessed through static member function
4. **This Pointer:** Every object in C++ has access to its own address through an important pointer called this pointer. This pointer is an implicit parameter to all member functions. Friend functions do not have this pointer, because friends are not members of a class. Only member functions have this pointer.
5. **Inline Code:** C++ inline function is powerful concept that is commonly used with classes. If a function is inline, the compiler places a copy of the code of that function at each point where the function is called at compile time.
6. **Dynamic Memory Allocation:** Dynamic memory allocation in C/C++ refers to performing memory allocation manually by programmer. Dynamically allocated memory is allocated on Heap and non-static and local variables get memory allocated on Stack.
7. **NEW:** The new operator requests for the memory allocation in heap. If the sufficient memory is available, it initializes the memory to the pointer variable and returns its address.
8. **DELETE:** The delete operator is used to deallocate the memory. User has privilege to deallocate the created pointer variable by this delete operator.

**OOP Concept Used:**

1. Static Member Function/Class
2. Class
3. Friend Function/Class
4. This Pointer

**Conclusion:** In this experiment we have learnt regarding new concepts in OOP i.e. Friend Class/Function, This Pointer, New and Delete operators and static class and variable**.**