**PSG College of Technology**

**Department of Applied Mathematics and Computational Sciences**

**Object Computing Laboratory**

**Problem sheet I**

1. Create a structure **Set** which consists of size, a pointer to the elements and write functions for displaying the values and merge 2 sets into a single set by removing duplicates. The cardinality of data should not exceed 10.
2. Create a structure **Program** that contains Lines of code, number of functions and libraries. Create an array to hold 10 **Program** variables, pass it to a function and check whether each program is a software, package or header file. For software it should be having at least 10 libraries, 100 functions and million lines of code. Packages should have a minimum of 1 library, 50 functions and 1000 lines of code. If it is not, print as header file. Include functions for reading and displaying program details.
3. Create a structure **Dictionary** having term and its meaning as data members. Read the list of 5 terms and its meaning. Write a function to search the meaning of a particular term (key), the prototype for search may be *void Search (struct Dictionary \*,char \*);* Find the list of terms starting with alphabet A.
4. Define a structure type of **Element** to represent one element from the periodic table of elements. Components should include the atomic number, the name, chemical symbol, and class, a numeric field for the atomic weight, and an array of seven integers for the number of electrons in each shell. Store the 10 elements details and list the elements having atomic number greater than 11. The following are the components of an ELEMENT structure for sodium.
5. sodium Na alkali\_metal 22.9898 2 8 1 0 0 0 0
6. Declare a structure called **Vehicle** having the following information. The structure should include the Vehicle Regn. Number, Manufacturer Name, Year of Make, Model, Type of the vehicle (4 wheeler / 2wheeler), Colour. Create an array of vehicles of your choice and perform the following operations.
   1. Display the vehicles manufactured in a particular year.
   2. Get the Manufacturer name and display the Vehicle details.
   3. Given the Registration number, your program should display all the details of the vehicle in a neat format.