Assignment-2

Learning Outcome: Implementing and evaluating Encapsulation

1. You are given the radius R and length L of a cylinder in metres.
    a. Write a C program with functions to respectively find (a) the surface area of the cylinder, (b) the volume of the cylinder, (c) the cost of painting the cylinder at the rate of Rs. X per sq. metre.
    b. You are given access modifiers Private and Public. Use these to build a data structure that provides encapsulation of state and behaviour.
    c. Which of the two programs is better?

2. A student has student identification number and obtains marks in six subjects. All marks are out of 100.
    a. Write a C program with functions to respectively (a) calculate the average marks scored by the student, (b) find the best marks, (c) find the worst marks.
    b. Now use access modifiers Private and Public in an appropriate data structure to provide the same functionality.
    c. Which of the two programs is better?

3. Passport number 27 is an object. It belongs to a person Raman Venkateshan, who was born on 15 July 1987 and lives on 47 Bhaskar Street, in the city of Malgudi in Tamil Nadu. We can change the number, street, city, and state of the object. Draw pictorial views of the object to bring out the two definitions of an object.

4. A main program in C has local variables X and Y. It calls a program Temp(X). Write the contents of the stack before and after the call.

    a. Now consider an object called MAIN sending a message to an object called SECOND that has Temp as an operation. What is the structure of the message and how is the message sent?
    b. Why is message passing used and not calling of functions in OO systems?