

## Assignment for all Interns

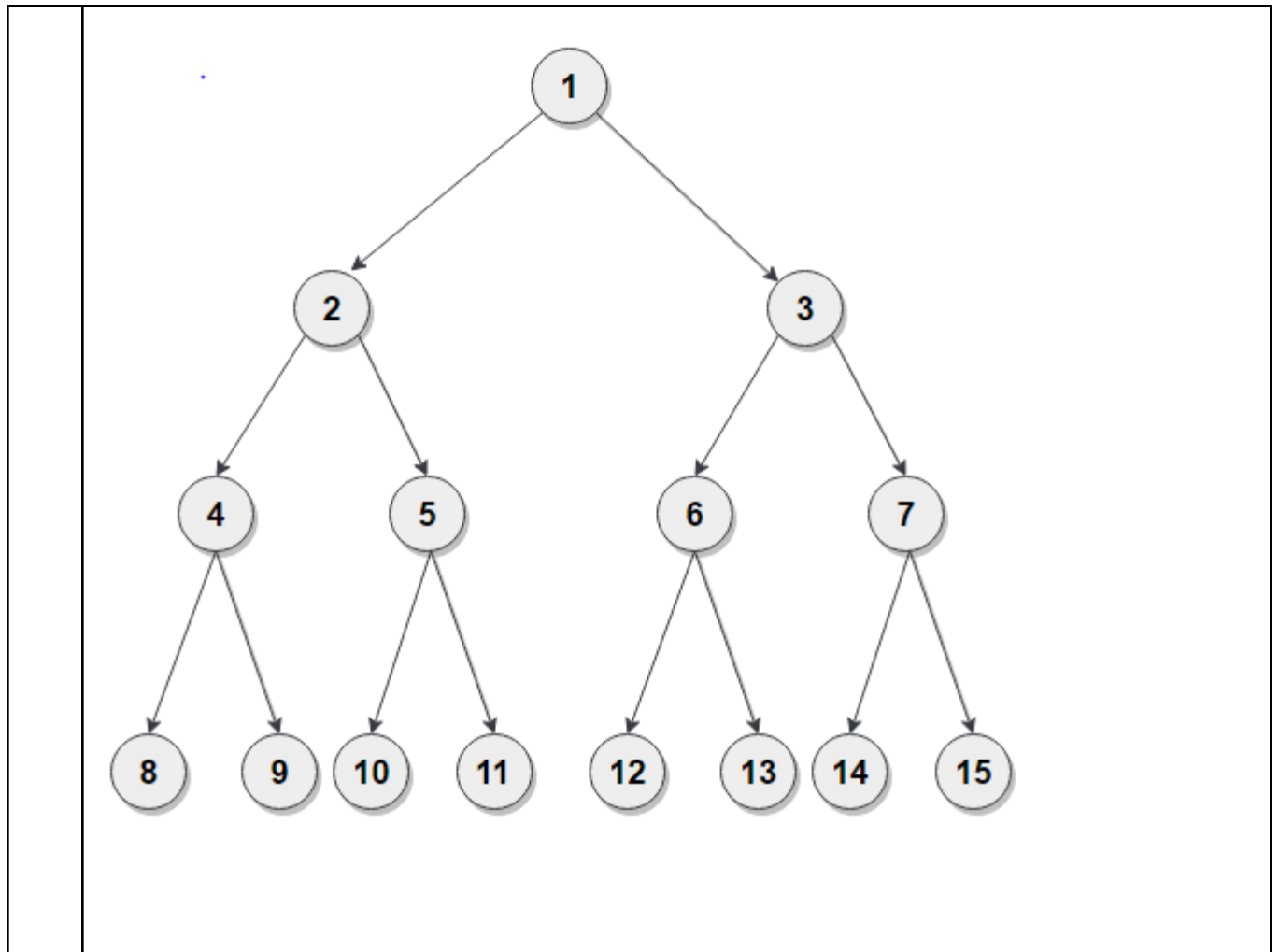
### C Programming Assignment

1.	<p>Write a menu driven program that depicts the working of a library. The menu options should be:</p> <ol style="list-style-type: none"><li>1. Add book information</li><li>2. Display book information</li><li>3. List all books of given author</li><li>4. List the title of specified book</li><li>5. List the count of books in the library</li><li>6. List the books in the order of accession number</li><li>7. Exit</li></ol> <p>Create a structure called library to hold accession number, title of the book, author name, price of the book, and flag indicating whether the book is issued or not.</p>
2.	<p>Write a function that receives marks received by a student in 3 subjects and returns the total and percentage of these marks. Call this function from main( ) and print the results in main( ).</p>
3.	<p>Search and Sequence</p> <p>Consider an integer array 'a' of size 10, where the value of the array elements are {1,5,4,8,9,2,0,6,11,7}. Write a program to</p> <ul style="list-style-type: none"><li>▪ Find whether the given element exists in an array or not. If the element exists in an array, display YES else NO.</li><li>▪ To print a number following a sequence of elements in an array i.e., 15489206117.</li></ul>

### Data Structure Assignment

1.	<p>In-place merge two sorted arrays.</p> <p>Given two sorted arrays, X[ ] and Y[ ] of size m and n each, merge elements of X[ ] with elements of array Y[ ] by maintaining the sorted order, i.e., fill X[ ] with the first m smallest elements and fill Y[ ] with remaining elements.</p> <p>For example,</p> <p><b>Input:</b></p> <p>X[] = { 1, 4, 7, 8, 10 }</p> <p>Y[] = { 2, 3, 9 }</p>
----	--

	<p><b>Output:</b></p> <p>X[] = { 1, 2, 3, 4, 7 }</p> <p>Y[] = { 8, 9, 10 }</p>
2.	<p>Generate binary numbers between 1 to `n` using a queue.</p> <p>Given a positive number n, efficiently generate binary numbers between 1 and n using the queue data structure in linear time.</p> <p>For example, for n = 16, the binary numbers are:</p> <p><b>Input :</b></p> <p>1 10 11 100 101 110 111 1000 1001 1010 1011 1100 1101 1110 1111 10000</p> <p><b>Output:</b></p> <p>1 10 11 100 101 110 111 1000 1001 1010 1011 1100 1101 1110 1111 10000</p>
3.	<p>Print all nodes of a perfect binary tree in a specific order.</p> <p>Given a perfect binary tree, print the values of alternating left and right nodes for each level in a top-down and bottom-up manner.</p> <p>For example, there are two ways to print the following tree:</p> <p>Variation 1: Print Top-Down</p> <p>(1, 2, 3, 4, 7, 5, 6, 8, 15, 9, 14, 10, 13, 11, 12)</p> <p>Variation 2: Print Bottom-Up</p> <p>(8, 15, 9, 14, 10, 13, 11, 12, 4, 7, 5, 6, 2, 3, 1)</p>



### C++ Assignment

1.	<p>Write a program by creating an 'Employee' class having the following functions and print the final salary.</p> <p>1 - 'getInfo()' which takes the salary, number of hours of work per day of employee as parameters</p> <p>2 - 'AddSal()' which adds \$10 to the salary of the employee if it is less than \$500.</p> <p>3 - 'AddWork()' which adds \$5 to the salary of the employee if the number of hours of work per day is more than 6 hours.</p>
2.	<p>Create a class called 'Matrix' containing a constructor that initialises the number of rows and the number of columns of a new Matrix object. The Matrix class has the following information:</p> <p>1 - number of rows of matrix</p> <p>2 - number of columns of matrix</p>

	<p>3 - elements of matrix (You can use 2D vector)</p> <p>The Matrix class has functions for each of the following:</p> <p>1 - get the number of rows</p> <p>2 - get the number of columns</p> <p>3 - set the elements of the matrix at a given position (i,j)</p> <p>4 - adding two matrices.</p> <p>5 - multiplying the two matrices</p> <p>You can assume that the dimensions are correct for the multiplication and addition.</p>
3.	<p>Suppose you have a Piggie Bank with an initial amount of Rs.50 and you have to add some more amount to it. Create a class 'AddAmount' with a data member named 'amount' with an initial value of Rs. 50. Now make two constructors of this class as follows:</p> <p>1 - without any parameter - no amount will be added to the Piggie Bank</p> <p>2 - having a parameter which is the amount that will be added to the Piggie Bank</p> <p>Create an object of the 'AddAmount' class and display the final amount in the Piggie Bank.</p>

### Linux Assignment

1.	
2.	
3.	