# Data Structures and Algorithms Assignment

For this assignment, you should use the following array:-

int A[] ={5, 9, 2, 15, 23, 8, 41, 3, 99, 62, 12, 6, 10, 13, 1, 82};

Part A) MergeSort

Demonstrate the state of the array after each iteration of the MergeSort algorithm.

Part B) QuickSort

Demonstrate the state of the array after each iteration of QuickSort – Use the median of the first, middle & last value. In case there are 2 middle values, choose the one with the lower index.

Part C) ShellSort – Use the following implementation of ShellSort and demonstrate the state of the array after each iteration of the outer loop.

```
void sort(int A[], int N)
{
        int i, j, Increment, Tmp;
        for (Increment = N/2; Increment > 0; Increment /=2)
        {
                for (i=Increment; i<N; i++)
                {
                        Tmp = A[i];
                        for ( j=i;  j>=Increment; j -= Increment)
                                if(Tmp < A[j-Increment])
                                        A[j] = A[j-Increment];
                                else
                                        break;
                        A[j] = Tmp;
                }
        }
}
```