Assignment-I

Compile the following merge sort program to Intel x86 assembly language program using the command cc -S mergeSort.c. Write comments in the assembly language program

- **explaining actions at every step and**
- **showing its connection with the C program.**

The assembly language code should remain compilable after commenting.

mergeSort.c

```
#define SIZE 100
int m[SIZE], t[SIZE] ;
void CopyBackToBack(int low, int high, int mid) {
 int i ;
 for(i = mid ; i >= low ; t[i] = m[i--]);
 for(i = mid + 1 ; i <= high ;
        t[high + mid + 1 - i] = m[i++]);
}
void Merge(int low, int high) {
 int i, j, k ;
 i = low ; j = high ;
 for(k = low ; k <= high ; k++)
```

```
    if(t[i] < t[j]) m[k] = t[i++];
    else m[k] = t[j--];
  }
  void mergesort(int low, int high)
  {
   int mid, i, j, k ;
   if(high > low) {
      mid = (high + low)/2;
      mergesort(low, mid);
      mergesort(mid + 1, high);
      CopyBackToBack(low, high, mid) ;
      Merge(low, high) ;
     }
  }
```

```
int main() {
 int n, i;
 printf("Enter the number of data :") ;
 scanf("%d",&n);
 printf("\nEnter the data\n") ;
 for(i = 0 ; i < n ; scanf("%d", &m[i++]));
 mergesort(0,n-1);
 printf("The sorted data are\n") ;
 for(i = 0 ; i < n ; printf("%d ", m[i++]));
 printf("\n") ;
}
```