C Program to Implement merge sort

Algorithm

step 1: Input a[10], n
step 2: print enter the elements
step 3: for (i=0; i<n; i++)
{
    scanf (" %d", &a[i])
    printf ("%d \n", a[i])
}

step 3: Repeat step 2 until the condition becomes false
step 4: for (i=1; i<n; i++)
{   j=i;
    while (j>=1 && a[j] < a[j-1])
    {
        if (a[j] < a[j-1])
        {
            ele = a[j]
            a[j] = a[j-1]
            a[j-1] = ele
        }
        j=j-1
    }
}

step 5: Repeat step 4 until test condition becomes false
step 6: Print after merge sort
step 7: for (i=0; i<n; i++)
{
    printf (" %d \t", a[i]);
}

step 8: Repeat step 7 until test condition becomes false.
step 9: return 0
step 10: Stop.

Flowchart

```
                    ( Start )
                       |
                       v
               / Input a[0], ? /
                       |
                       v
            / Enter array element /
                       |
                       v
          < for(i=0; i<n; i++) >------------+
                  | True                    |
                  v                         | False
          / read a[i] /                     |
                  |                         |
                  v                         |
          / print a[i] /                    |
                  |                         |
                  +-------------------------+
                       |
                       v
   False      < for(i=1; i<n; i++) >
      +----------------| True
      |                v
      |             [ j=i ]
      |                |
      |                v
   False      / while \
      +------<  (j>=1 &&  >
      |        \ a(i)<a(j)/
      |                | True
      |                v
      |            / if \        False
      |           < a[i] <  >--------+
      |            \ a(j-1)/          |
      |                | True         |
      |                v              |
      |        +----------------+     |
      |        | ele = a[j]     |     |
      |        | a[j] = a(j-1)  |   [ j=j-1 ]
      |        | a(j-1) = ele   |     |
      |        +----------------+     |
      |                |              |
      +----------------+--------------+
                       |
                       v
            / After merge sort /
                       |
                       v
          < for(i=0; i<n; i++) >
                  | True              False
                  v                     |
          / Print a[i] /                |
                                        v
                                  ( return 0 )
                                        |
                                        v
                                    ( Stop )
```