```c
#include <stdio.h>
#include <stdlib.h>

#define CAP 1000000

void *xcalloc (int, int);
void input (int[], int);
void output (int[], int);
void sort (int[], int);
void merge_sort (int[], int, int);

int main (int argc, char *argv[])
{
    int *arr;
    int nr_elements;

    if (argc != 2)
    {
        fprintf (stderr, "usage:%s nr_elements\n", argv[0]);
        exit (EXIT_FAILURE);
    }

    nr_elements = atoi (argv[1]);
    arr = xcalloc (nr_elements, sizeof (int));
    input (arr, nr_elements);
    sort (arr, nr_elements);
    output (arr, nr_elements);

    return (0);
}

void input (int arr[], int nr_elements)
{
    int cnt;

    for (cnt=0; cnt < nr_elements; cnt++)
    {
        arr[cnt] = rand () % CAP;
    }
}

void output (int arr[], int nr_elements)
{
    int cnt;

    for (cnt=0; cnt < nr_elements; cnt++)
    {
        fprintf (stdout, "arr[%d]:%d\n", cnt, arr[cnt]);
    }
}

void sort (int arr[], int nr_elements)
```

```
53  {
54      merge_sort (arr, 0, nr_elements-1);
55  }
56
```