Data Structure and Algorithm

Quiz #8

Tuesday, March 14th, 2013

Name : _____   **S**tudent ID : _____

Problem 1.   The following code implements a mergesort to find median in a data array without recursion, please fill in the blanks to complete this function.

```
1   unsigned int
2   merge_sort(unsigned int data[], unsigned int temp[], const int N){
3       // len is the length of a sort section, double each iteration
4       for(int len = 1; len < N; len *= 2){
5           // perform mergesort on every section [L, R)
6           // L is the head index
7           for(int L = 0; L+len < N; L += 2*len){
8               int mid = L+len;
9               // R is the right bound of this section
10              int R = min(L+2*len, N);
11
12              // divide into two sections [L, mid), [mid, R)
13              int OffsetL = 0, OffsetR = 0;
14              for(int i = L; i < R; i++)
15              {
16                  // if rightindex out of bound or leftindex not out
17                  //     of bound and data in leftindex < rightindex
                    if( !(mid + OffsetR < R) || (L + OffsetL < mid &&
18
19                      _____) )
20                  {
21                      temp[i] = data[_____];
22
23                      _____++;
24                  }
25                  else {
26                      temp[i] = data[_____];
27
28                      _____++;
29                  }
30              }
31              for(int i = L; i < R; i++)
32                  data[i] = temp[i];
33          }
34      }
35      return data[N/2];
36  }
```