

## Re: Help needed for a sorting code in the literature

**Source:** <http://www.derkeiler.com/Newsgroups/sci.crypt/2004-12/1963.html>

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Mok-Kong Shen wrote:

> *The code of the heapsort algorithm as given in books by*  
> *e.g. Sedgewick deals with arrays with indices of the kind*  
> *a[1..n]. For PLs like C, one would like to sort arrays with*  
> *indices of the kind a[0..n-1]. I have found sofar only one*  
> *book that gives code for the latter case, namely "Numerical*  
> *Recipes in C++" by W. H. Press et al. (which itself refers*  
> *to Sedgewick). I adapted the code there (which is in C++*  
> *and is capable of dealing with a variety of data types being*  
> *sorted) to C for sorting arrays of 'int'.*

Here is a C++ version of a bottom up heapsort that should be easy to convert to C. No guarantees that it is correct though – posting code here is a virtual guarantee that someone will find bugs in it :-)

Brian Gladman

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```
template<class T> static void heap_sub(T x[], int i, const int n)
{ int j;
  while((j = i + i) <= n)
  {
    if(j < n && x[j] <= x[j + 1])
      ++j;
    if(x[i] >= x[j])
      return;
    T y(x[i]); x[i] = x[j]; x[j] = y;
    i = j;
  }
}
```

```
template<class T> void heapsort(T x[], const int n)
{
  for(int i = (n >> 1); i > 0; --i)
    heap_sub(x, i - 1, n);
}
```

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```
for(int i = n - 1; i > 0; --i)
{
    T y(x[0]); x[0] = x[i]; x[i] = y;
    heap_sub(x, 0, i - 1);
}
}
```