

P22 2.3-6 二分查找插入排序

```
#include <iostream>
#include <string>
using namespace std;
template <class T >
int BinarySearchForInsertionSort(T array[],int first, int last, T value){
    if (first < last){
        int mid = (first+last) / 2;
        if (array[mid] > value){
            return BinarySearchForInsertionSort(array, first, mid-1 , value);
        }
        if(array[mid]<value){
            return BinarySearchForInsertionSort(array, mid+1 , last, value);
        }
    }
    else{
        if (array[first] > value){
            return first;
        }
        else{
            return first + 1;
        }
    }
}
template<class T>
void InsertSort(T array[],int first,int last){
    if (first < last){
        for (int j = 1; j <= last; j++){
            T key = array[j];
            int i = j - 1;
            int position = BinarySearchForInsertionSort(array, first, i, key);
            for (int x = i; x >= position; x--){
                array[i + 1] = array[i];
            }
            array[position] = key;
        }
    }
}
```

```
}  
  
int main(){  
    int n;  
    cout << "输入数组长度: " << endl;  
    cin >> n;  
    int *arrays = new int[n];  
    cout << "输入数组的各个数字: " << endl;  
    int j = 0;  
    while (j < n){  
        cin >> arrays[j];  
        j++;  
    }  
    InsertSort(arrays,0, n-1);  
    j = 0;  
    while (j < n){  
        cout << arrays[j] << " ";  
        j++;  
    }  
    cout << endl;  
    delete arrays;  
    return 0;  
}
```