

```

1  #include <iostream>
2  #include <vector>
3  #include <sstream>
4  using namespace std;
5
6  void heapify(vector<int>& heap, int n, int i)
7  {
8      int largest = i;
9      int left = 2 * i + 1;
10     int right = 2 * i + 2;
11
12     if (left < n && heap[left] > heap[largest])
13         largest = left;
14
15     if (right < n && heap[right] > heap[largest])
16         largest = right;
17
18     if (largest != i) {
19         swap(heap[i], heap[largest]);
20         heapify(heap, n, largest);
21     }
22 }
23
24 void insertToHeap(vector<int>& heap, int val)
25 {
26     heap.push_back(val);
27     int i = heap.size() - 1;
28
29     while (i != 0 && heap[(i - 1) / 2] < heap[i])
30     {
31         swap(heap[i], heap[(i - 1) / 2]);
32         i = (i - 1) / 2;
33     }
34 }
35
36 void printHeap(const vector<int>& heap)
37 {
38     for (int speed : heap)
39         cout << speed << " ";
40     cout << endl;
41 }
42
43 int main() {
44     vector<int> heap;
45     string input;
46     cout << "Please enter the speeds of the cars (e.g., 10,25,15,40,5): ";
47     getline(cin, input);
48
49     // Split the input into individual speeds
50     stringstream ss(input);
51     string temp;
52     while (getline(ss, temp, ','))
53     {
54         int speed = stoi(temp);
55         insertToHeap(heap, speed);
56         cout << "Heap after inserting " << speed << ": ";
57         printHeap(heap);
58     }
59
60     return 0;
61 }

```