

```

1  #include<iostream>
2  #include<fstream>
3  #include"PQ.h"
4
5  int main(){
6
7      //Open text file for reading
8      std::ifstream file;
9
10     file.open("jouleFile.txt");
11
12     int numItems, capacity = 0;
13
14     file >> numItems >> capacity;
15
16     Priority_Queue pq;
17
18     for(int i = 0; i < numItems; i++){
19         item* knap_item = new item();
20         file >> knap_item-> name >> knap_item-> value >> knap_item-> weight;
21         knap_item-> ratio = (double) knap_item-> value / knap_item-> weight;
22         pq.enqueue(knap_item);
23     }
24
25     file.close();
26     //file closed
27
28     //Used for printing out the priority queue using preorder traversal
29     /*
30     node* head_node = new node();
31     head_node = pq.getHeadNode();
32     pq.printPreorder(head_node);
33     */
34
35     //Beginning the Greedy Algorithm
36     Priority_Queue knapsack;
37     int totalWeight = 0;
38     int numSacked = 0;
39     int totalValue = 0;
40
41     for(int i = 0; i < numItems; i++){
42         item* retrieved_item = new item();
43         retrieved_item = pq.dequeue();
44         if (totalWeight + retrieved_item-> weight < capacity){
45             knapsack.enqueue(retrieved_item);
46             totalValue = totalValue + retrieved_item-> value;
47             totalWeight = totalWeight + retrieved_item-> weight;
48             numSacked++;
49         }
50     }
51
52     //Printing out the results
53     std::cout << numSacked << std::endl;
54     std::cout << totalWeight << std::endl;
55     std::cout << totalValue << std::endl;
56     for(int i = 0; i < numSacked; i++){
57         item* sacked_item = new item();
58         sacked_item = knapsack.dequeue();
59         std::cout << sacked_item-> name << " " << sacked_item-> value << " " <<
            sacked_item-> weight << std::endl;
60     }
61
62     //Finished!
63     return 0;
64 }

```