C201 Homework 5

1. What will be the output of the following program

```cpp
#include <iostream>
#include <string>
using namespace std;

int main()
{
    string w1 = "Happy";
    string w2 = "Birthday";
    string w3 = "To";
    string w4 = "You";

    string sentence = w1 + " " + w2 + " " + w3 + " " + w4;
    cout << sentence << endl;
    int length = sentence.length();
    cout << "The number of characters is " << length << endl;

    int i = length-1;
    int j = length-1;

    while(j>0)
    {
        if (sentence[j] == ' ' || sentence[j] == '	')
        {
            cout << sentence.substr(j+1, i-j) << endl;
            i = j-1;
        }
        j = j - 1;
    }

    cout << sentence.substr(j, i-j+1) << endl;
    return 0;
}
```

Submission: Print the source code and write down the output.

2. Problem Description: In this exercise, you are going to complete a program that organizes the order history information.

Two types of struct have been defined for you. They are `order` and `customer`. The relationship between them can be found by reading the code provided for you. If you have any questions, please ask the instructor.

The main program (`order_application.cpp`) and the header file (`order.h`) have been written for you. You task is to complete three functions in `order.cpp`. 
- **void** insert_to_head(order * & head, order * node)
  - insert a node to the head of a linked list
  - parameter head is the head of the original linked list
  - parameter node is the new node

- **string** search_customer_name_by_order_id(order * head, int order_id)
  - search the linked list pointed by head and return the customer name (first name, space, last name) who placed order order_id.
  - If no such order_id is found, return string "No Body"

- **double** total_orders_by_customer_id(order * head, int customer_id)
  - search the linked list, return the total orders (cost) placed by customer_id
  - if no such customer id is found, return 0

The draft of the program is at
http://www.cs.iusb.edu/~yul/C201/source/hw5/order_application.cpp;
http://www.cs.iusb.edu/~yul/C201/source/hw5/order.h;
http://www.cs.iusb.edu/~yul/C201/source/hw5/order.cpp;

The executable is at
http://www.cs.iusb.edu/~yul/C201/source/hw5/hw5.ex

Submission: Print the source code of *order.cpp*