CSC 240

Exercise 2

Extend the `UnsortedType` class with the following function and signature:

`SplitLists(UnsortedType list, ItemType item, UnsortedType& list1, UnsortedType& list2)`

The `SplitLists` function will behave according to the following specifications:

Definition: divides `list` into two lists according to the value of `item`.

Preconditions: `list` has been initialized and is not empty. `list1` and `list2` are empty.

Postconditions: `list1` contains all the items of `list` whose values are less than or equal to the value of `item`. `list2` contains all of the items of `list` whose values are greater than the value of `item`.

Complete the following implementations of the `SplitLists` function:

1) Implement `SplitLists` as an array-based member function of `UnsortedType`.

2) Implement `SplitLists` as a linked member function of `UnsortedType`.

Test each of the implementations in a driver using the following set of integers:

`{ 5, -12, 34, 34, 5, 45, 8, -6, 15, 40, 20, 2, 1, 12 }`

Use the following version of the `ItemType` class provided by the author:

```
class ItemType
{
public:
  ItemType();
  RelationType ComparedTo(ItemType) const;
  void Print(std::ostream&) const;
  void Initialize(int number);
private:
  int value;
};
```