Assignment III – Shopping Cart

Alvin Tung – Kevin Yee

Analyzing the Problem

1.1 Inputs

String inputs in the following format:

<Operations> <Category> <Names> <Price> <Quantity> <Weight> <Opt1> <Opt2>

Possible Operations:

String: Insert, Search, Delete, Update, Print

Category:

String: Groceries, Clothing, Electronics String

Names:

String: Optional

Price:

Double: Number

Quantity:

Integer: Number

Weight:

Double: Number

Opt 1:

For Groceries: Perishable or Non-Perishable. For Electronics: Fragile/NonFragile

Opt 2: For Electronics: State shipped to

1.2 Processing the Solution:

Analyze String Command with the following rules:

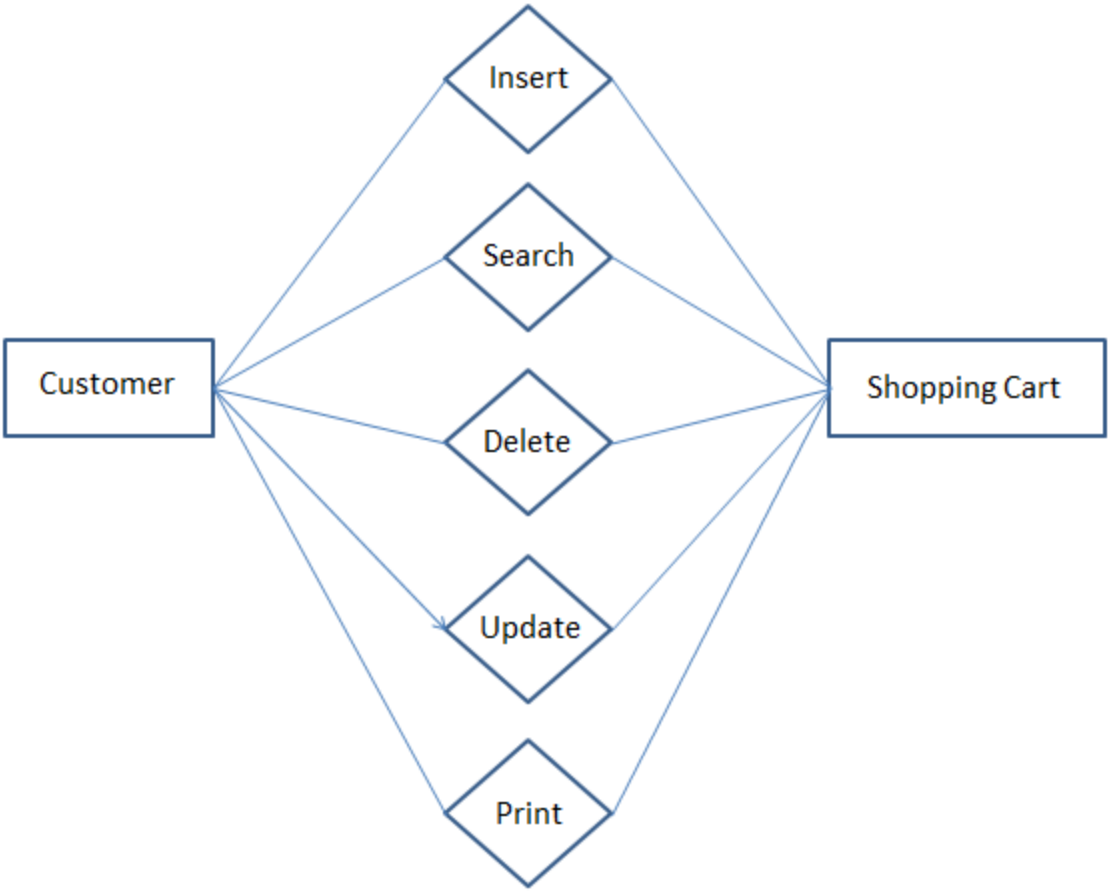
1) Determine Operation
2) Determine Item
3) Determine Price

1.3 Modeling Details

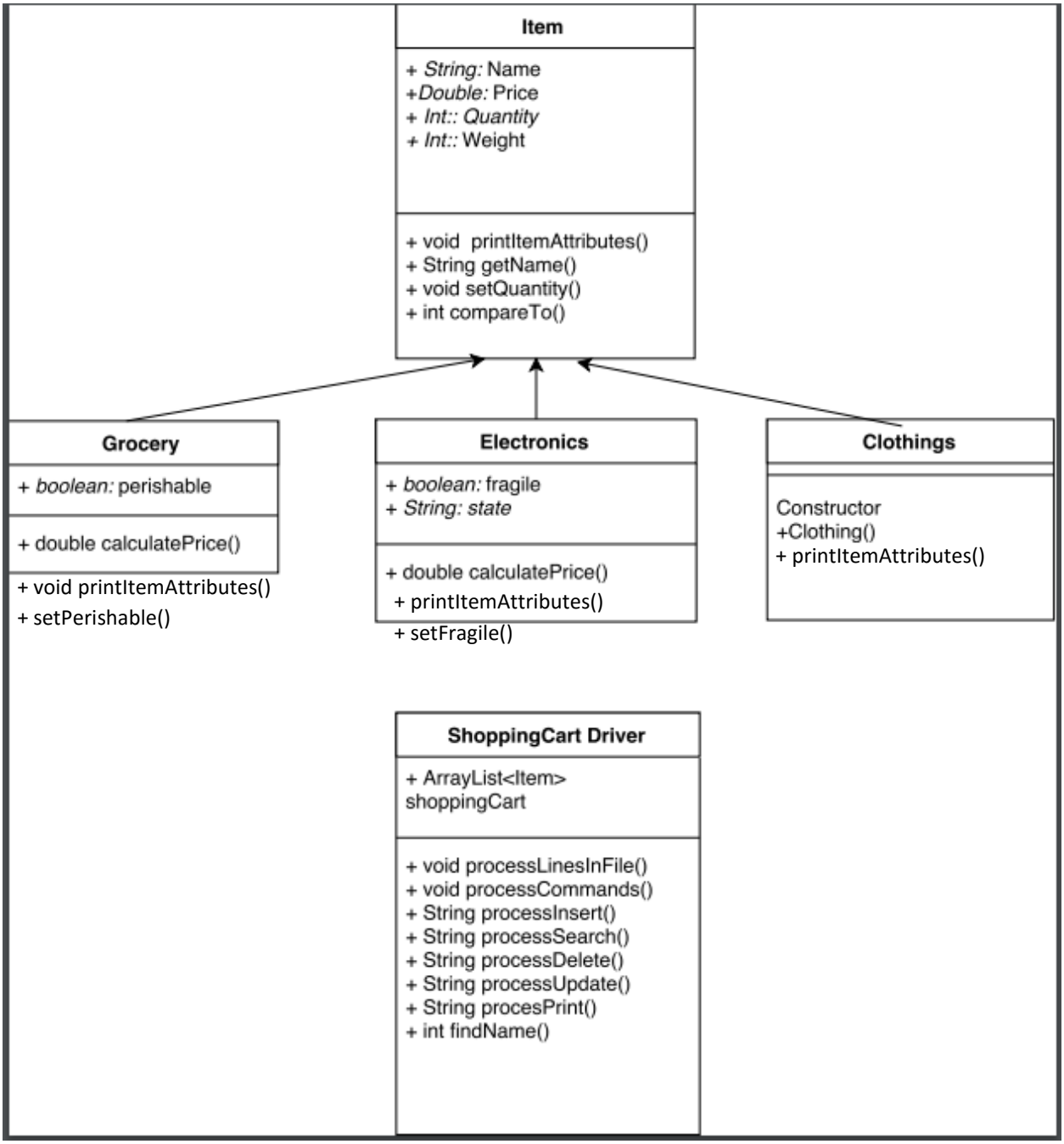
Determining the Price:

- 10% sales Tax on all States Except: TX, NM, VA, AZ, AK
- Shipping Cost Calculated through (20*Weight)*Quantity
- Premium Shipping: 20% over standard shipping cost
- Each Items are sold Separately

System Level Use Case Diagram



UML Model


Item
+ String: Name
+Double: Price
+ Int:: Quantity
+ Int:: Weight
+ void printItemAttributes()
+ String getName()
+ void setQuantity()
+ int compareTo()
Grocery
+ boolean: perishable
+ double calculatePrice()
+ void printItemAttributes()
+ setPerishable()
Electronics
+ boolean: fragile
+ String: state
+ double calculatePrice()
+ printItemAttributes()
+ setFragile()
Clothings
Constructor
+Clothing()
+ printItemAttributes()
ShoppingCart Driver
+ ArrayList<Item>
shoppingCart
+ void processLinesInFile()
+ void processCommands()
+ String processInsert()
+ String processSearch()
+ String processDelete()
+ String processUpdate()
+ String procesPrint()
+ int findName()

4 ADT Level Description

Shopping Cart Driver:

Parses String Inputs dependent on commands:

- Insert
- Search
- Delete
- Update
- Print

Items:

Super Class for Groceries, Clothing, Electronics

Stores Name of Items, Price, Quantity, and Weight

Groceries:

Extends Items

Determines if Items are perishable/non-perishable

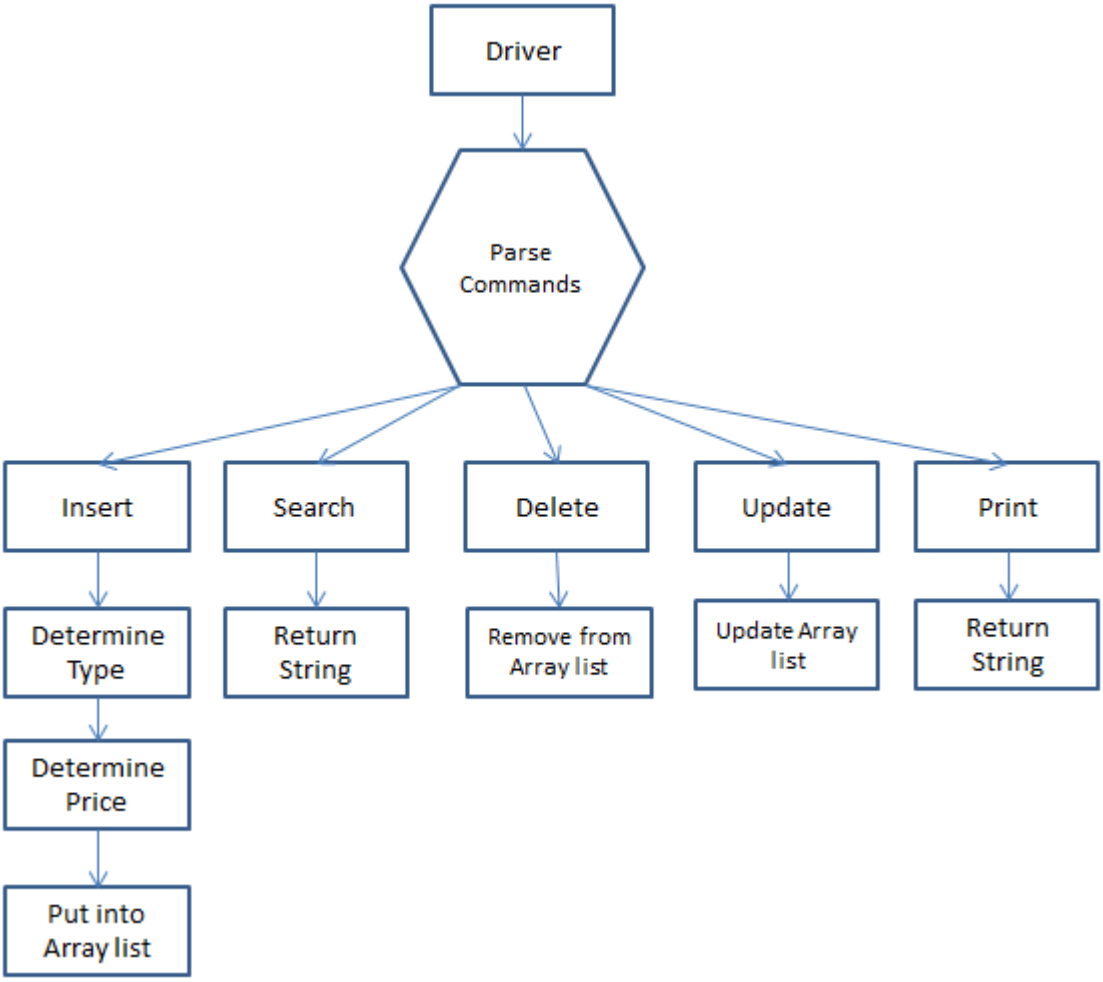
Electronics:

Extends Items

Determines if Items are Fragile/Non-Fraigle

Determines which States it must be shipped to.

Functional Block Diagram



Algorithm

```
While readline.next()
    Commands[] = readlines.next();
    If Commands[0] equals “insert” parseInsert()
    If Commands[0] equals “delete” parseDelete()
    If Commands[0] equals “search” parseSearch()
    If Commands[0] equals “update” parseUpdate()
    If Commands[0] equals “print” parsePrint()

Return



parseInsert()
    GenerateItem(Commands);
Return

parseDelete()
    Find item from Arraylist
    Remove Index
Return

parseSearch()
    Find item from Arraylist
Return Index

parseUpdate()
    Find item from Arraylist
```

    Update Values
Return

parsePrint()
    Print Arraylist
Return