

Algorithm:

shopping cart is an arraylist

Main():

if valid arguments passed then calls on processlinesinfile() else prints error message and exits

ProcessLinesInFile():

access the input file and sends each line to the function parse() else it will throw an error message and exits

parse():

seperates the input with spaces and places the string in a list setting it as input. Then sends the input to executeTransaction()

ExecuteTransaction():

takes the first input to determine if what kind of operation is required, and then sends it to its respective functions. If the operation is an input then it will also compare the item name and sort the shopping cart

insertItem():

this function initially sets up all the possible states there are along with the special states for electronics that do not have any taxes. Then it seperates the input strings and places them in appropriate variable types. Based on the category of the input the insert function then creates an item class with respect to its extended class. Once the item is created, without any issues it will add the item to the shoppingcart. Under any incorrect input or unacceptable data it will return a false with an error message and proceed to the next input.

searchItem():

takes the name of the object that is requested to be searched, runs through the shoppingcart and adds the number of quantities to the tally if the name matches. At the end of it, the function prints the details of the search and returns. Under the case that any incorrect information is supplied it will throw an error message and process the next input.

`deleteItem():`

takes the name of the object that is requested to be deleted, runs through the shopping cart and removes the Item completely from the arraylist, meanwhile keeping a count of the quantity removed and a message detailing all that is removed is printed at the end. Under the case that any incorrect information is supplied it will throw an error message and process the next input.

`updateItem():`

takes the name of the object that is requested to be updated and the amount it needs to be updated too. Then the function runs through the shoppingcart looking for all the instances where the item name could match and updates the quantity. At the end of the function it prints the name of the object and the new quantity. Under the case that any incorrect information is supplied it will throw an error message and process the next input.

`PrintCart():`

for this function it basically prints the detailed information of every item in the cart and then returns at the end of the shoppingcart. Under the case that any incorrect information is supplied it will throw an error message and process the next input.