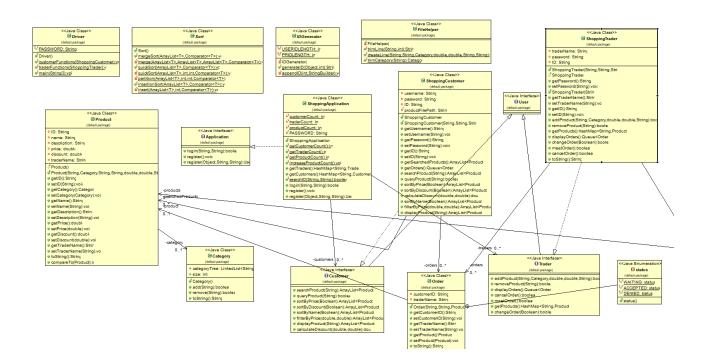
GTU Department of Computer Engineering CSE 222/505 - Spring 2021 Homework 6# Report

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1. CLASS DIAGRAMS

*better version is in the tar.gz file.



2. PROBLEM SOLUTION APPROACH

I used mergeSort and quicksort because theirs average time is better. Insertion sort for nearly sorted file to sort by name.

HashMap for user because they have ID's as key values. ArrayList for product because it is easier to sort.

3. RUNNING AND RESULTS

```
Search Product:
Searching 'women shoe' products
Bootwale Bellies
Bootwale Bellies
Bootwale Bellies
Bootwale Bellies
Bootwale Bellies
BrandTrendz Bellies
BrandTrendz Bellies
ChiragBelhi Stylish and Trendy Bellies
DEEP FASHION Loafers
Delberto Boots
dilli bazaaar Bellies, Corporate Casuals, Casuals
Do Bhai Canvas Shoes
Do Bhai Canvas Shoes
DressBerry Bellies
Footrendz Casual Bellies
GLAMWALK Festive Bellies
GLAMWALK Festive Bellies
Inc.5 Bellies
INDIANO Loafers
Kanvas Bellies
Klaur Melbourne Bellies
Klaur Melbourne Bellies
Klaur Melbourne Bellies
Klaur Melbourne Canvas Shoes
Ladela Bellies
Mobiroy Bellies
MSC Loafers
Naisha Casuals
Nickolas Stylish Casual Bellies
Nickolas Stylish Casual Bellies
Niremo Loafers
Niremo Loafers
Nuride Canvas Shoes
Oggo Deo Bellies
Spick Cricket Shoes
Style Foot Bellies
Treppe Bellies
Treppe Bellies
Treppe Bellies
tryfeet Open Toe Blue Bellies
V4STYLES Loafers
Zappy Boots
```

Searching null products Can't search null product.

```
Sort 'women shoe' products by name increasing
DD-'SDORTYCN/TG/WG7, name-'Bootvale Bellies', price-'799.0', discount-'399.0', traderName-'Bootvale
DD-'SDORTYCN/BWG527, name-'Bootvale Bellies', price-'799.0', discount-'399.0', traderName-'Bootvale
DD-'SDORTYCN/BWG527, name-'Bootvale Bellies', price-'799.0', discount-'399.0', traderName-'Bootvale
DD-SDORTYCN/BWG527, name-'Bootvale Bellies', price-'799.0', discount-'399.0', traderName-'Bootvale
DD-SDORTYCN/BWG527, name-'Bootvale Bellies', price-'799.0', discount-'399.0', traderName-'Bootvale
DD-SDORTYCN/BWG527, name-'Chiragellis Stylish and Trendy Bellies', price-'748.0', discount-'399.0', traderName-'Bootvale
DD-SDORTYCN/BWG527, name-'Chiragellis Stylish and Trendy Bellies', price-'748.0', discount-'399.0', traderName-'Bollberto
DD-SDORTYCN/BWG527, name-'DEP FASHION
DD-SDORTYCN/BWG527, name-'CAMANIK Festive Bellies', price-'1290.0', discount-'390.0', traderName-'Bollies', DEP SDORTYCN/BWG527, name-'CAMANIK Fastive Bellies', price-'1290.0', discount-'390.0', traderName-'CAMANIK Fastive Bellies', price-'390.0', discount-'390.0', traderName-'CAMANIK Fastive Bellies', price-'390.0', discount-'390.0', traderName-'CAMANIK Fastive Bellies', price-'390
```

```
Sort 'women shoe' products by name decreasing
D-'SHDECSER/ANDITHM', name-'INDIANO Loafers', price-'1199.0', discount-'696.0', traderName-'INDIANO
D-SHDENERS(REMENT, name-'Zappy Boots', price-'1199.0', discount-'696.0', traderName-'INDIANO
D-SHDENERS(REMENT, name-'Zappy Boots', price-'1199.0', discount-'899.0', traderName-'INDIANO
D-SHDENERS(REMENT, name-'Zappy Boots', price-'1199.0', discount-'899.0', traderName-'INDIANO
D-SHDENERS(REMENT, name-'Zappy Boots', price-'1199.0', discount-'899.0', traderName-'Incept
D-SHDENERS(REMENT, name-'Incept Bellies', price-'999.0', discount-'399.0', traderName-'Ircept
D-SHDENERS(REMENT, name-'Incept Bellies', price-'999.0', discount-'399.0', traderName-'Ircept
D-SHDENERS(REMENT, name-'Style Foot Bellies', price-'999.0', discount-'499.0', traderName-'Ircept
D-SHDENERS(REMENT, name-'Style Foot Bellies', price-'1999.0', discount-'489.0', traderName-'Trept
D-SHDENERS(REMENT, name-'Style Foot Bellies', price-'1999.0', discount-'489.0', traderName-'Style Foot
D-SHDENERS(REMENT, name-'Style Foot Bellies', price-'1999.0', discount-'489.0', traderName-'Style Foot
D-SHDENERS(REMENT, name-'Style Foot Bellies', price-'1999.0', discount-'489.0', traderName-'Ggo Deo
D-SHDENERS(REMENT, name-'Ggo Deo Bellies', price-'1999.0', discount-'1999.0', traderName-'Ggo Deo
D-SHDENERS(REMENT, name-'Ggo Deo Bellies', price-'1999.0', discount-'1999.0', traderName-'Ggo Deo
D-SHDENERS(REMENT, name-'Ggo Deo Bellies', price-'1999.0', discount-'1999.0', traderName-'Ggo Deo
D-SHDENGERS(REMENT, name-'Ggo Deo Bellies', price-'1999.0', discount-'1999.0', traderName-'Ggo Deo
D-SHDENGERS(REMENT, name-'Huride Canvas Shoes', price-'1999.0', discount-'1999.0', traderName-'Ggo Deo
D-SHDENGERS(REMENT, name-'Huride Canvas Shoes', price-'1999.0', discount-'1999.0', traderName-'Huride
D-SHDENGERS(REMENT, name-'Huride Canvas Shoes', price-'1999.0', discount-'1999.0', traderName-'Huride
D-SHDENGERS(REMENT), name-'Huride Canvas Shoes', price-'1999.0', discount-'1999.0', traderName-'Huride
D-SHDENGERS(REMENT), name-'Huride Ca
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String compareTo takes I as I, I guess so it's wrong.

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Sort 'somen shoe' products by price increasing
D-'SROETHMERATHEG', name" Do Bhai Carvas Shoes, price" 499.0', discount" 449.0', traderName" Do Bhai
D-SROETHMERATHEG', name" Do Bhai Carvas Shoes, price" 499.0', discount" 429.0', traderName" Tyreted Phain D-SROEGHOSTMENTON, name" Footrendz Casual Bellies', price" 699.0', discount" 499.0', traderName" Footrendz
D-SROEGHOSTMENTON, name "Claur Molbourne Bellies', price" 699.0', discount" 499.0', traderName "Klaur Molbourne
D-SROEHOSTMENTON, name" Claur Molbourne Bellies', price" 699.0', discount" 499.0', traderName" Allow Two Holbourne
D-SROEHOSTMENTON, name" Claur Molbourne Bellies', price" 699.0', discount" 499.0', traderName" Allow Two Holbourne
D-SROEHOSTMENTON, name" Claur Molbourne Bellies', price" 699.0', discount" 499.0', traderName" Allow Two Holbourne
D-SROEHOSTMENTON, name" Claur Molbourne
D-SROEHOSTMENTON, name" Bootrale Bellies', price" 799.0', discount" 399.0', traderName" Bootrale
D-SROEHOSTMENTON, name" Bootrale Bellies', price 799.0', discount" 399.0', traderName" Bootrale
D-SROEHOSTMENTON, name" Bootrale Bellies', price 799.0', discount" 399.0', traderName Bootrale
D-SROEHOSTMENTON, name" Bootrale Bellies', price 899.0', discount" 399.0', traderName Bootrale
D-SROEHOSTMENTON, name" Bootrale Bellies', price 899.0', discount" 399.0', traderName Bootrale
D-SROEHOSTMENTON, name" HOLD THE ARABIN DEEP FASHION Indiana Bootrale Bullies', price 899.0', discount" 399.0', traderName Bootrale
D-SROEHOSTMENTON, name" The Bootrale Bellies', price 899.0', discount" 399.0', traderName Britane
D-SROEHOSTMENTON, name "Troppe Bellies', price" 399.0', discount" 399.0', traderName "Report Mark Molbourne
D-SROEHOSTMENTON, name "Troppe Bellies', price" 399.
```

```
Sort 'women shoe' products by price decreasing

ID-'SHOEVENTYMOKES', name-Moritod Canwas Shoes', price-'1899.0', discount-'690.0', traderName-'Moritod

ID-'SHOEVENTYMOKES', name-'Moritony Bellies', price-'1899.0', discount-'690.0', traderName-'Moritod

ID-'SHOEMENTYMOKES', name-'Ladela Bellies', price-'1774.0', discount-'690.0', traderName-'Ladela Bellies', price-'1890.0', discount-'690.0', traderName-'Ladela Bellies', price-'1890.0', discount-'690.0', traderName-'Notes ID-'SHOEMENTYMOKES', name-'Inc.'S Bellies', price-'1890.0', discount-'1890.0', discount-'799.0', traderName-'Nickolas SUD-'SHOEMENTYMOKES', name-'Nickolas SUD-'SHOEMENTYMOKES', name-'Nickolas', na
```

```
Sort 'somen shoe' products by discount increasing

D-'SHORMYDRATCHUZ', name-'Do Bhai Canvas Shoes', price-'129.0', discount-'1299.0', traderName-'Oggo Deo

D-'SHORMYDRATCHUZ', name-'Oggo Deo Bellies', price-'1399.0', discount-'1299.0', traderName-'Oggo Deo

D-'SHORMYDRATCHUZ', name-'Oggo Deo Bellies', price-'1399.0', discount-'1299.0', traderName-'Oggo Deo

D-'SHORMYDRATCHUZ', name-'Oggo Deo Bellies', price-'1399.0', discount-'1399.0', traderName-'Oggo Deo

D-'SHORMYDRANDRAM', name-'Name-'Oggo Deo Bellies', price-'1399.0', discount-'1399.0', traderName-'Oggo Deo

D-'SHORMYDRANDRAM', name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name-'Name
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```
Sort 'somen shoe' products by discount decreasing

D-'SDOENFGONEFYBH', name-Nickolas Stylish Casual Bellies', price-1499.0', discount-'299.0', traderName-Nickolas

D-'SDOENFGONEFYBH, name-Nickolas Stylish Casual Bellies', price-1499.0', discount-'299.0', traderName-Wickolas

D-'SDOENFGYCWGOS', name-Nickolas Stylish Casual Bellies', price-1499.0', discount-'399.0', traderName-'DEF FASHION

D-'SDOENFGYCWGOS', name-'DEF FASHION Coafers', price-'999.0', discount-'399.0', traderName-'DEF FASHION

D-'SDOENFGYCWGOS', name-'Treppe Billies', price-'1990.0', discount-'399.0', traderName-'DEF FASHION

D-'SDOENFGYCWGOS', name-'Treppe Billies', price-'1990.0', discount-'399.0', traderName-'DEF FASHION

D-'SDOENFGYCWGOS', name-'Inc, SBellies', price-'1990.0', discount-'399.0', traderName-'Spick

D-'SDOENFGYGWGOS', name-'GLAWALK Festive Bellies', price-'1200.0', discount-'390.0', traderName-'GLAWALK

D-'SDOENFGYGWGSCY, name-'GLAWALK Festive Bellies', price-'1200.0', discount-'390.0', traderName-'GLAWALK

D-'SDOENFGYGWGSCY, name-'GLAWALK Festive Bellies', price-'1200.0', discount-'399.0', traderName-'GLAWALK

D-'SDOENFGYGWGSCY, name-'GLAWALK Festive Bellies', price-'1200.0', discount-'399.0', traderName-'GLAWALK

D-'SDOENFGYGWGSCY, name-'GLAWALK Festive Bellies', price-'1200.0', discount-'399.0', traderName-'GLAWALK

D-'SDOENFGYGWGSCY, name-'Bootsale Bellies', price-'790.0', discount-'399.0', traderName-'Bootsale

D-'SDOENFGYGWGSCY, name-'Bootsale Bellies', price-'790.0', discount-'390.0', traderName-'Bootsale

D-'SDOENFGYGWGSCY, name-'Boots
```

```
Display Products of 'Zyxel'

ID-'KTRKEFSVHK9ZUQE7V', name-'Zyxel 3D 1440 - 3G Data Card', price='1699.0', discount-'950.0', traderName-'Zyxel

ID-'KTRKE4SRGQSPGYF', name-'Zyxel Amg1312-T10b', price-'3990.0', discount-'1850.0', traderName-'Zyxel

ID-'KTRKE3YSYZMGCE3AB', name-'Zyxel Amg1312-T10b Wireless N Ads12 4-Port Gateway with Usb', price-'3570.0', discount-'1700.0', traderName-'Zyxel

ID-'KTRKE7YSYZMGCE3AB', name-'Zyxel NBG 6593 Simultaneous Dual-Band Wireless AC750', price-'9030.0', discount-'3000.0', traderName-'Zyxel

ID-'KTRDYZCGG1FBU6XM', name-'Zyxel NMA1100N 802.11 b/g/n PoE Access Point', price-'13617.0', discount-'5250.0', traderName-'Zyxel

ID-'KTRDYZCGG1FBU6XM', name-'Zyxel PLA-4205', price-'19999.0', discount-'4042.0', traderName-'Zyxel

ID-'KTRDYZYDYGHXXINZ', name-'Zyxel PLA-4205', price-'10999.0', discount-'8100.0', traderName-'Zyxel

ID-'KTRDWGAKYZKSVQ9R', name-'Zyxel PLA-4231 500 Mbps Powerline Wireless N Extender (Single Pack)', price-'8646.0', discount-'4800.0', traderName-'Zyxel

ID-'KTRDWGAKYZKSVQ9R', name-'Zyxel VMG1312-B10A VDS12 Wireless N VDSL2 4-port Gateway with USB', price-'7192.0', discount-'5700.0', traderName-'Zyxel
```