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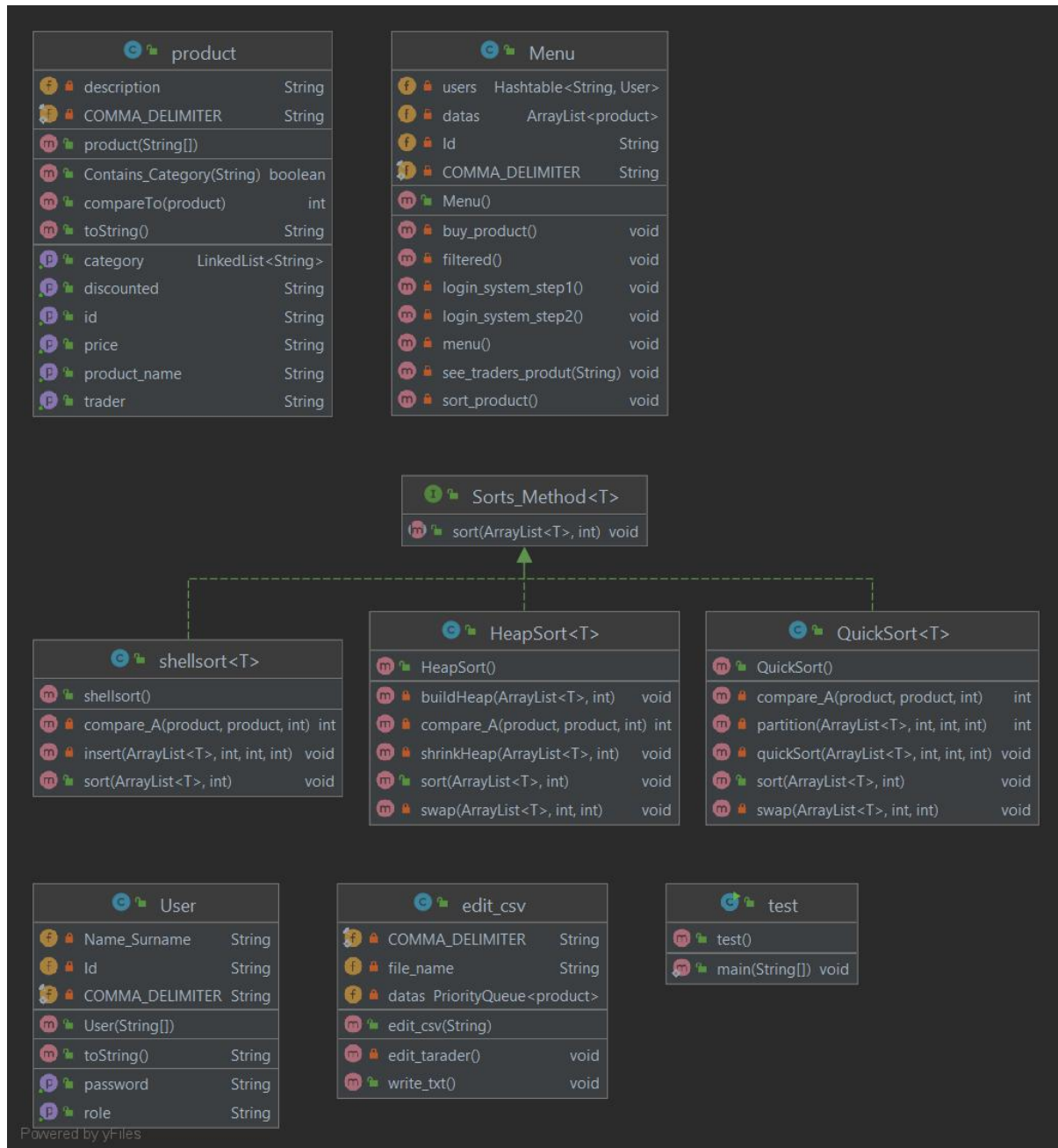# CSE 222/505 - Spring 2021
Homework 6 Report

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1. USE CASE AND CLASS DIAGRAMS

product

f 🔒	description	String
f 🔒	COMMA_DELIMITER	String
m 🔓	product(String[])	
m 🔓	Contains_Category(String)	boolean
m 🔓	compareTo(product)	int
m 🔓	toString()	String
p 🔓	category	LinkedList<String>
p 🔓	discounted	String
p 🔓	id	String
p 🔓	price	String
p 🔓	product_name	String
p 🔓	trader	String

Menu

f 🔒	users	Hashtable<String, User>
f 🔒	datas	ArrayList<product>
f 🔒	Id	String
f 🔒	COMMA_DELIMITER	String
m 🔓	Menu()	
m 🔒	buy_product()	void
m 🔒	filtered()	void
m 🔒	login_system_step1()	void
m 🔒	login_system_step2()	void
m 🔒	menu()	void
m 🔒	see_traders_produt(String)	void
m 🔒	sort_product()	void

Sorts_Method<T>

m 🔓	sort(ArrayList<T>, int)	void

shellsort<T>

m 🔓	shellsort()	
m 🔒	compare_A(product, product, int)	int
m 🔒	insert(ArrayList<T>, int, int, int)	void
m 🔓	sort(ArrayList<T>, int)	void

HeapSort<T>

m 🔓	HeapSort()	
m 🔒	buildHeap(ArrayList<T>, int)	void
m 🔒	compare_A(product, product, int)	int
m 🔒	shrinkHeap(ArrayList<T>, int)	void
m 🔓	sort(ArrayList<T>, int)	void
m 🔒	swap(ArrayList<T>, int, int)	void

QuickSort<T>

m 🔓	QuickSort()	
m 🔒	compare_A(product, product, int)	int
m 🔒	partition(ArrayList<T>, int, int, int)	int
m 🔒	quickSort(ArrayList<T>, int, int, int)	void
m 🔓	sort(ArrayList<T>, int)	void
m 🔒	swap(ArrayList<T>, int, int)	void

User

f 🔒	Name_Surname	String
f 🔒	Id	String
f 🔒	COMMA_DELIMITER	String
m 🔓	User(String[])	
m 🔓	toString()	String
p 🔓	password	String
p 🔓	role	String

edit_csv

f 🔒	COMMA_DELIMITER	String
f 🔒	file_name	String
f 🔒	datas	PriorityQueue<product>
m 🔓	edit_csv(String)	
m 🔒	edit_tarader()	void
m 🔓	write_txt()	void

test

m 🔓	test()	
m 🔓	main(String[])	void

2. PROBLEM SOLUTION APPROACH

first needed to correct the given file, I did this by sorting the traders.
I used PriorityQueue for this operation, so the sorting became time complexity logn.I filled in my own file with the poll method.In the menu, I stored the user information I got from Users.txt in the Hash Table.
In this way, I can access user information at that O(1) time.
After the operations in the menu, I stored the desired search results in Arraylist.
I kept the categories on LinkedList in my product class.

While sorting the products, I made the order of the prices with QuickSort so that I reached my goal in O (nlogn) time.

While sorting the products, I did the name sort with HeapSort so I reached my goal in O (nlogn) time

While I was listing the products, I did the discount order with ShellSort so that I reached my goal in O (n ^ 1,5) time.

I think the filtering process is efficient because I did not upload all the data to the ram, I used it efficiently.

3. RUNNING ,RESULTS AND TEST CASES

Customer login (Users have been kept with hashtable)

```
Enter Id
00000001
Enter password
000000
LOGGED IN
COSTUMER MENU
1) Search and query the product
2) Display all the products of a trader
3)Exit
|
```

Trader login (Users have been kept with hashtable)

```
Enter Id
00000004
Enter password
000000
LOGGED IN
Trader Menu
```

Products resulting from any word search(the products here are kept arraylist)

```
COSTUMER MENU
1) Search and query the product
2) Display all the products of a trader
3)Exit
1
Please Enter the word
foot
[SHOEGRUNZPJDGG2Y;ADIWALK ATOM Running Shoes;["otwear >> Men's Footwear >> Sports Shoes >> ADIWALK Sports Shoes >> AD
, SNDEHZH4TCGSJQXU;Adorn Women Heels;["otwear >> Women's Footwear >> Heels >> Adorn Women Heels>>"];1199;499;Key Feat
, SNDEHZH4RXCE8AGJ;Adorn Women Heels;["otwear >> Women's Footwear >> Heels >> Adorn Women Heels>>"];1399;649;Key Feat
, SNDEHZH4S5GKC2ZU;Adorn Women Heels;["otwear >> Women's Footwear >> Heels >> Adorn Women Heels>>"];1399;649;Key Feat
, SHOEHEP5EWSGZ7XA;Asics Gel-Cumulus 17 Running Shoes;["ics Gel-Cumulus 17 Running Shoes>>"];9499;9499;Key Features o
, SHOEHEP5H5XGFZJY;Asics Gel-Kayano 22 Running Shoes;["ics Gel-Kayano 22 Running Shoes>>"];12499;12499;Key Features o
, SFFEHBHYHYFGY63U;Atithi Flip Flops;["otwear >> Kids' & Infant Footwear >> For Girls >> Slippers & Flip Flops >> Ati
, SNDEJKRZRSNSGFM7;Metro Men Sandals;["otwear >> Men's Footwear >> Sandals & Floaters >> Metro Sandals & Floaters >>
, SHOEHTXAFGDFHJEV;Port NuWave Football Shoes;["otwear >> Kids' & Infant Footwear >> For Girls >> Sports Shoes >> Por
, SHOEJKRFZ5B2AZZZ;Bootwale Stylish Casual Shoes Casuals;["otwear >> Men's Footwear >> Casual Shoes >> Bootwale Casua
, SNDEGGRYTVYGPR6F;D&D Women Flats;["D Women Flats>>"];999;499;Key Features of D&D Women Flats Comfortable Non-Noisy
, SNDEGGRJCFZZKK7Q;D&D Women Flats;["D Women Flats>>"];999;499;Key Features of D&D Women Flats Comfortable Non-Noisy
, SHOEGHFQKGQVSGHH;DressBerry Bellies;["otwear >> Women's Footwear >> Ballerinas >> DressBerry Bellies>>"];1799;1259;
, SHOEGH57PWW9SBZU;Footrendz Casual Bellies;["otwear >> Women's Footwear >> Ballerinas >> Footrendz Casual Bellies>>"
, SNDEHW9GP5PQGYKH;Footshez Women Flats;["otwear >> Women's Footwear >> Flats >> Footshez Women Flats>>"];499;449;Key
, SNDEHW9HMGABQSEG;Footshez Women Flats;["otwear >> Women's Footwear >> Flats >> Footshez Women Flats>>"];499;449;Key
, SHOEHX7JCNXWHWHZ;GLAMWALK Festive Bellies;["otwear >> Women's Footwear >> Ballerinas >> GLAMWALK Festive Bellies>>"
, PLLEHQV78ZFHTE7X;IBS Plastic Portable Laptop Table;["rniture >> Study & Home Office Furniture >> Portable Laptop Ta
```

Product filtred with the lower price limit

```
Please Select

1) Lower-Price

2) Upper-Price

3)Lower-Upper-Price

4)Category

5)Buy Product

6)Sort Page

7)Back Page

1
Please Enter the Lower-Price

1800
[SHOEHEP5EWSGZ7XA;Asics Gel-Cumulus 17 Running Shoes;["ics Gel-Cumulus 17 Running Shoes>>"];9499;9499;Key Features of Asics Gel-Cumulus 17 Running
, SHOEHEP5H5XGFZJY;Asics Gel-Kayano 22 Running Shoes;["ics Gel-Kayano 22 Running Shoes>>"];12499;12499;Key Features of Asics Gel-Kayano 22 Running
, PLLEHQV78ZFHTE7X;IBS Plastic Portable Laptop Table;["rniture >> Study & Home Office Furniture >> Portable Laptop Tables >> IBS Plastic Portable
, PLLEHQTTGJSKEGXQ;IBS ADJUSTABLE FOLDING KIDS MATE HOME OFFICE READING WRITING TABLEMATE WITH CUPHOLDER Plastic Portable Laptop Table;["rniture >
, PLLEHQW7BYQDVKAY;IBS Plastic Portable Laptop Table;["rniture >> Study & Home Office Furniture >> Portable Laptop Tables >> IBS Plastic Portable
, PLLEHQWA23AWQQJH;IBS Plastic Portable Laptop Table;["rniture >> Study & Home Office Furniture >> Portable Laptop Tables >> IBS Plastic Portable
, PLLEHQVCWUAFATP5;IBS Plastic Portable Laptop Table;["rniture >> Study & Home Office Furniture >> Portable Laptop Tables >> IBS Plastic Portable
, PLLEHQUGEB6D5FCX;IBS ADJUSTABLE FOLDING KIDS MATE HOME OFFICE READING WRITING STUDY TABLEMATE WITH CUPHOLDER Plastic Portable Laptop Table;["rni
, CRTEJQ9W3VZRQKCY;Kingsway Noodle Floor Mats Car Mat Chevrolet Enjoy;["tomotive >> Car & Bike Accessories >> Car Interior & Exterior >> Car Inter
, CRTEJQ9X2ZWJG2HW;Kingsway Noodle Floor Mats Car Mat Chevrolet Tavera;["tomotive >> Car & Bike Accessories >> Car Interior & Exterior >> Car Inte
, CRTEJQ9XTZWDFSTX;Kingsway Noodle Floor Mats Car Mat Ford Ecosport;["tomotive >> Car & Bike Accessories >> Car Interior & Exterior >> Car Interio
, SNDEHZEFZTFMTFRQ;Lavie Women Heels;["otwear >> Women's Footwear >> Heels >> Lavie Women Heels>>"];3295;2965;Key Features of Lavie Women Heels Oc
, SHOEJ5YSJMX2HXRF;N Five Running Shoes;["otwear >> Kids' & Infant Footwear >> For Boys >> Sports Shoes >> N Five Running Shoes>>"];2398;959;Key F
, SHOEFFHZZGWGNZSE;Puma Adreno FG Jr Sports Shoes;["otwear >> Kids' & Infant Footwear >> For Boys >> Sports Shoes >> Puma Adreno FG Jr Sports Shoe
, SHOEHFB7WU5C4HBD;Taurus Black & white Lace Up;["urus Black & white Lace Up>>"];2499;1999;Key Features of Taurus Black & white Lace Up Very Light
]
```

Then upper limit

```
Please Select

1) Lower-Price

2) Upper-Price

3)Lower-Upper-Price

4)Category

5)Buy Product

6)Sort Page

7)Back Page

2
Please Enter the Upper-Price

3000
[PLLEHQV78ZFHTE7X;IBS Plastic Portable Laptop Table;["rniture >> Study & Home Office Furniture >> Portable Laptop Tables >> IBS Plastic Portable L
, PLLEHQTTGJSKEGXQ;IBS ADJUSTABLE FOLDING KIDS MATE HOME OFFICE READING WRITING TABLEMATE WITH CUPHOLDER Plastic Portable Laptop Table;["rniture >
, PLLEHQW7BYQDVKAY;IBS Plastic Portable Laptop Table;["rniture >> Study & Home Office Furniture >> Portable Laptop Tables >> IBS Plastic Portable
, PLLEHQWA23AWQQJH;IBS Plastic Portable Laptop Table;["rniture >> Study & Home Office Furniture >> Portable Laptop Tables >> IBS Plastic Portable
, PLLEHQVCWUAFATP5;IBS Plastic Portable Laptop Table;["rniture >> Study & Home Office Furniture >> Portable Laptop Tables >> IBS Plastic Portable
, PLLEHQUGEB6D5FCX;IBS ADJUSTABLE FOLDING KIDS MATE HOME OFFICE READING WRITING STUDY TABLEMATE WITH CUPHOLDER Plastic Portable Laptop Table;["rni
, SHOEJ5YSJMX2HXRF;N Five Running Shoes;["otwear >> Kids' & Infant Footwear >> For Boys >> Sports Shoes >> N Five Running Shoes>>"];2398;959;Key F
, SHOEFFHZZGWGNZSE;Puma Adreno FG Jr Sports Shoes;["otwear >> Kids' & Infant Footwear >> For Boys >> Sports Shoes >> Puma Adreno FG Jr Sports Shoe
, SHOEHFB7WU5C4HBD;Taurus Black & white Lace Up;["urus Black & white Lace Up>>"];2499;1999;Key Features of Taurus Black & white Lace Up Very Light
]
```

Upper and lower price filtering process

```
Please Select

1) Lower-Price

2) Upper-Price

3)Lower-Upper-Price

4)Category

5)Buy Product

6)Sort Page

7)Back Page

3
Please Enter the Lower-Price

3000
Please Enter the Upper-Price

9000
[CRTEJQ9W3VZRQKCY;Kingsway Noodle Floor Mats Car Mat Chevrolet Enjoy;["tomotive >> Car & Bike Accessories >> Car Inte
, CRTEJQ9X2ZWJG2HW;Kingsway Noodle Floor Mats Car Mat Chevrolet Tavera;["tomotive >> Car & Bike Accessories >> Car In
, CRTEJQ9XTZWDFSTX;Kingsway Noodle Floor Mats Car Mat Ford Ecosport;["tomotive >> Car & Bike Accessories >> Car Inter
, SNDEHZEFZTFMTFRQ;Lavie Women Heels;["otwear >> Women's Footwear >> Heels >> Lavie Women Heels>>"];3295;2965;Key Fea
]
```

Searched for "foot" word filtered with "Ballerinas" category

```
Please Select

1) Lower-Price

2) Upper-Price

3)Lower-Upper-Price

4)Category

5)Buy Product

6)Sort Page

7)Back Page

4
Please Enter the Category

Ballerinas
[SHOEGHFQKGQVSGHH;DressBerry Bellies;["otwear >> Women's Footwear >> Ballerinas >> DressBerry Bellies>>"];1799;1259;
, SHOEGH57PWW9SBZU;Footrendz Casual Bellies;["otwear >> Women's Footwear >> Ballerinas >> Footrendz Casual Bellies>>
, SHOEHX7JCNXWHWHZ;GLAMWALK Festive Bellies;["otwear >> Women's Footwear >> Ballerinas >> GLAMWALK Festive Bellies>>
, SNDEJTNXZ6YGMZMZ;SHOPOJ Women Bellies;["otwear >> Women's Footwear >> Ballerinas >> SHOPOJ Women Bellies>>"];780;39
, SNDEJTZGSUR5GTZM;SHOPOJ Women Bellies;["otwear >> Women's Footwear >> Ballerinas >> SHOPOJ Women Bellies>>"];756;37
, SNDEJTZBDGZYVGG6;SHOPOJ Women Bellies;["otwear >> Women's Footwear >> Ballerinas >> SHOPOJ Women Bellies>>"];698;34
]
```

Sorted by price(Quicksort method is used here)

```
Please select%n
1) Sort Price%n
2) Sort Discounted%n
3) Sort Name%n
4) Buy Product%n
5) Back Page
1
Product Id=SNDEJTZBDGZYVGG6Product Name=SHOPOJ Women BelliesProduct Price=698
Product Id=SHOEGH57PWW9SBZUProduct Name=Footrendz Casual BelliesProduct Price=699
Product Id=SNDEJTZGSUR5GTZMProduct Name=SHOPOJ Women BelliesProduct Price=756
Product Id=SNDEJTNXZ6YGMZMZProduct Name=SHOPOJ Women BelliesProduct Price=780
Product Id=SHOEHX7JCNXWHWHZProduct Name=GLAMWALK Festive BelliesProduct Price=1200
Product Id=SHOEGHFQKGQVSGHHProduct Name=DressBerry BelliesProduct Price=1799
Please select%n
1) Sort Price%n
2) Sort Discounted%n
3) Sort Name%n
4) Buy Product%n
5) Back Page
```

Sorted by Discounted (ShellSort method is used here)

```
Please select%n
1) Sort Price%n
2) Sort Discounted%n
3) Sort Name%n
4) Buy Product%n
5) Back Page
2
Product Id=SHOEGH57PWW9SBZUProduct Name=Footrendz Casual BelliesProduct Price=699Product Discounted=324
Product Id=SNDEJTZBDGZYVGG6Product Name=SHOPOJ Women BelliesProduct Price=698Product Discounted=349
Product Id=SNDEJTZGSUR5GTZMProduct Name=SHOPOJ Women BelliesProduct Price=756Product Discounted=378
Product Id=SNDEJTNXZ6YGMZMZProduct Name=SHOPOJ Women BelliesProduct Price=780Product Discounted=390
Product Id=SHOEHX7JCNXWHWHZProduct Name=GLAMWALK Festive BelliesProduct Price=1200Product Discounted=599
Product Id=SHOEGHFQKGQVSGHHProduct Name=DressBerry BelliesProduct Price=1799Product Discounted=1259
Please select%n
1) Sort Price%n
2) Sort Discounted%n
3) Sort Name%n
4) Buy Product%n
5) Back Page
```

Sorted by Name (HeapSort method is used here)

```
Please select%n
1) Sort Price%n
2) Sort Discounted%n
3) Sort Name%n
4) Buy Product%n
5) Back Page
3
Product Id=SHOEGHFQKGQVSGHHProduct Name=DressBerry BelliesProduct Price=1799
Product Id=SHOEGH57PWW9SBZUProduct Name=Footrendz Casual BelliesProduct Price=699
Product Id=SHOEHX7JCNXWHWHZProduct Name=GLAMWALK Festive BelliesProduct Price=1200
Product Id=SNDEJTZGSUR5GTZMProduct Name=SHOPOJ Women BelliesProduct Price=756
Product Id=SNDEJTNXZ6YGMZMZProduct Name=SHOPOJ Women BelliesProduct Price=780
Product Id=SNDEJTZBDGZYVGG6Product Name=SHOPOJ Women BelliesProduct Price=698
Please select%n
1) Sort Price%n
2) Sort Discounted%n
3) Sort Name%n
4) Buy Product%n
5) Back Page
|
```

purchase process

```
Product Id=SHOEGHFQKGQVSGHHProduct Name=DressBerry BelliesProduct Price=1799
Product Id=SHOEGH57PWW9SBZUProduct Name=Footrendz Casual BelliesProduct Price=699
Product Id=SHOEHX7JCNXWHWHZProduct Name=GLAMWALK Festive BelliesProduct Price=1200
Product Id=SNDEJTZGSUR5GTZMProduct Name=SHOPOJ Women BelliesProduct Price=756
Product Id=SNDEJTNXZ6YGMZMZProduct Name=SHOPOJ Women BelliesProduct Price=780
Product Id=SNDEJTZBDGZYVGG6Product Name=SHOPOJ Women BelliesProduct Price=698
Please select%n
1) Sort Price%n
2) Sort Discounted%n
3) Sort Name%n
4) Buy Product%n
5) Back Page
4
1)Select Product
2)Back Page
1
Please Enter The product Id
SHOEGHFQVSGHHP
```