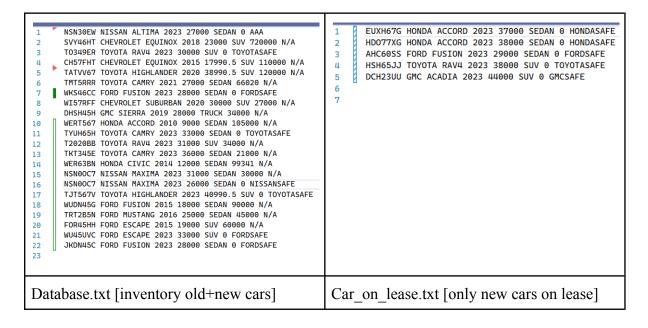CSC2110 Project

Programming Project

Mahdi Islam

CSC 2110

December 12, 2022

CSC2110 Project

A. All the file name that used to do this project:

    a. car.h

    b. car.cpp

    c. old_car.h

    d. old_car.cpp

    e. new_car.h

    f. new_car.cpp

    g. Final_project.cpp [source code]

    h. database.txt   [Inventory]

    i. car_on_lease.txt [leased car storage used when returning a car to the

       inventory]

Database.txt [inventory old+new cars]	Car_on_lease.txt [only new cars on lease]
| ```
1   NSN30EW NISSAN ALTIMA 2023 27000 SEDAN 0 AAA
2   SVY46HT CHEVROLET EQUINOX 2018 23000 SUV 720000 N/A
3   TO349ER TOYOTA RAV4 2023 30000 SUV 0 TOYOTASAFE
4   CH57FHT CHEVROLET EQUINOX 2015 17990.5 SUV 110000 N/A
5   TATVV67 TOYOTA HIGHLANDER 2020 38990.5 SUV 120000 N/A
6   TMT5RRR TOYOTA CAMRY 2021 27000 SEDAN 66020 N/A
7   WKS46CC FORD FUSION 2023 28000 SEDAN 0 FORDSAFE
8   WI57RFF CHEVROLET SUBURBAN 2020 30000 SUV 27000 N/A
9   DHSH45H GMC SIERRA 2019 28000 TRUCK 34000 N/A
10  WERT567 HONDA ACCORD 2010 9000 SEDAN 105000 N/A
11  TYUH65H TOYOTA CAMRY 2023 33000 SEDAN 0 TOYOTASAFE
12  T2020BB TOYOTA RAV4 2023 31000 SUV 34000 N/A
13  TKT345E TOYOTA CAMRY 2023 36000 SEDAN 21000 N/A
14  WER63BN HONDA CIVIC 2014 12000 SEDAN 99341 N/A
15  NSN0OC7 NISSAN MAXIMA 2023 31000 SEDAN 30000 N/A
16  NSN0OC7 NISSAN MAXIMA 2023 26000 SEDAN 0 NISSANSAFE
17  TJT567V TOYOTA HIGHLANDER 2023 40990.5 SUV 0 TOYOTASAFE
18  WUDN45G FORD FUSION 2015 18000 SEDAN 90000 N/A
19  TRT2B5N FORD MUSTANG 2016 25000 SEDAN 45000 N/A
20  FOR45HH FORD ESCAPE 2015 19000 SUV 60000 N/A
21  WU45UVC FORD ESCAPE 2023 33000 SUV 0 FORDSAFE
22  JKDN45C FORD FUSION 2023 28000 SEDAN 0 FORDSAFE
23
``` | ```
1   EUXH67G HONDA ACCORD 2023 37000 SEDAN 0 HONDASAFE
2   HDO77XG HONDA ACCORD 2023 38000 SEDAN 0 HONDASAFE
3   AHC60SS FORD FUSION 2023 29000 SEDAN 0 FORDSAFE
4   HSH65JJ TOYOTA RAV4 2023 38000 SUV 0 TOYOTASAFE
5   DCH23UU GMC ACADIA 2023 44000 SUV 0 GMCSAFE
6
7
``` |

Vin >>make>>model>>year>>price>>category>>mileage>>warranty_provider || N/A

CSC2110 Project

B. Test Plan:

I tested this project in five steps:

Step 1: Search inventory:

As I included all 8 options to search cars in the inventory database, I will show the search by vin, search by make, search by price, and search by mileage.

Search by vin:

```
CAR DEALERSHIP
1. Search Inventory:
2. Sell/Lease:
3. Return a leased car:
4. Add cars to inventory:
5. Exit:
Enter: 1
1. Vin:
2. Make:
3. Model:
4. Year:
5. Price:
6. Category:
7. Mileage:
8. Warranty Provider:
Enter: 1
Enter vin: tyuh65h

Car no: 1
Vin: TYUH65H
Make: TOYOTA
Model: CAMRY
Year: 2023
Price $: 33000
Category: SEDAN
Mileage: 0
Warranty Provider: TOYOTASAFE

CAR DEALERSHIP
1. Search Inventory:
2. Sell/Lease:
3. Return a leased car:
4. Add cars to inventory:
5. Exit:
Enter: |
```

```
1   NSN30EW NISSAN ALTIMA 2023 27000 SEDAN 0 AAA
2   SVY46HT CHEVROLET EQUINOX 2018 23000 SUV 720000 N/A
3   TO349ER TOYOTA RAV4 2023 30000 SUV 0 TOYOTASAFE
4   CH57FHT CHEVROLET EQUINOX 2015 17990.5 SUV 110000 N/A
5   TATVV67 TOYOTA HIGHLANDER 2020 38990.5 SUV 120000 N/A
6   TMT5RRR TOYOTA CAMRY 2021 27000 SEDAN 66020 N/A
7   WKS46CC FORD FUSION 2023 28000 SEDAN 0 FORDSAFE
8   WI57RFF CHEVROLET SUBURBAN 2020 30000 SUV 27000 N/A
9   DHSH45H GMC SIERRA 2019 28000 TRUCK 34000 N/A
10  WERT567 HONDA ACCORD 2010 9000 SEDAN 105000 N/A
11  TYUH65H TOYOTA CAMRY 2023 33000 SEDAN 0 TOYOTASAFE
12  T2020BB TOYOTA RAV4 2023 31000 SUV 34000 N/A
13  TKT345E TOYOTA CAMRY 2023 36000 SEDAN 21000 N/A
14  WER63BN HONDA CIVIC 2014 12000 SEDAN 99341 N/A
15  NSN0OC7 NISSAN MAXIMA 2023 31000 SEDAN 30000 N/A
16  NSN0OC7 NISSAN MAXIMA 2023 26000 SEDAN 0 NISSANSAFE
17  TJT567V TOYOTA HIGHLANDER 2023 40990.5 SUV 0 TOYOTASAFE
18  WUDN45G FORD FUSION 2015 18000 SEDAN 90000 N/A
19  TRT2B5N FORD MUSTANG 2016 25000 SEDAN 45000 N/A
20  FOR45HH FORD ESCAPE 2015 19000 SUV 60000 N/A
21  WU45UVC FORD ESCAPE 2023 33000 SUV 0 FORDSAFE
22  JKDN45C FORD FUSION 2023 28000 SEDAN 0 FORDSAFE
23
```

Note:
Car details showed and user input uppercase and lowercase both work.

CSC2110 Project

```
CAR DEALERSHIP
1. Search Inventory:
2. Sell/Lease:
3. Return a leased car:
4. Add cars to inventory:
5. Exit:
Enter: 1
1. Vin:
2. Make:
3. Model:
4. Year:
5. Price:
6. Category:
7. Mileage:
8. Warranty Provider:
Enter: 1
Enter vin: for45hh

Car no: 1
Vin: FOR45HH
Make: FORD
Model: ESCAPE
Year: 2015
Price $: 19000
Category: SUV
Mileage: 60000
Warranty Provider: N/A

CAR DEALERSHIP
1. Search Inventory:
2. Sell/Lease:
3. Return a leased car:
4. Add cars to inventory:
5. Exit:
Enter: |
```

```
1    NSN30EW NISSAN ALTIMA 2023 27000 SEDAN 0 AAA
2    SVY46HT CHEVROLET EQUINOX 2018 23000 SUV 720000 N/A
3    TO349ER TOYOTA RAV4 2023 30000 SUV 0 TOYOTASAFE
4    CH57FHT CHEVROLET EQUINOX 2015 17990.5 SUV 110000 N/A
5    TATVV67 TOYOTA HIGHLANDER 2020 38990.5 SUV 120000 N/A
6    TMT5RRR TOYOTA CAMRY 2021 27000 SEDAN 66020 N/A
7    WKS46CC FORD FUSION 2023 28000 SEDAN 0 FORDSAFE
8    WI57RFF CHEVROLET SUBURBAN 2020 30000 SUV 27000 N/A
9    DHSH45H GMC SIERRA 2019 28000 TRUCK 34000 N/A
10   WERT567 HONDA ACCORD 2010 9000 SEDAN 105000 N/A
11   TYUH65H TOYOTA CAMRY 2023 33000 SEDAN 0 TOYOTASAFE
12   T2020BB TOYOTA RAV4 2023 31000 SUV 34000 N/A
13   TKT345E TOYOTA CAMRY 2023 36000 SEDAN 21000 N/A
14   WER63BN HONDA CIVIC 2014 12000 SEDAN 99341 N/A
15   NSN0OC7 NISSAN MAXIMA 2023 31000 SEDAN 30000 N/A
16   NSN0OC7 NISSAN MAXIMA 2023 26000 SEDAN 0 NISSANSAFE
17   TJT567V TOYOTA HIGHLANDER 2023 40990.5 SUV 0 TOYOTASAFE
18   WUDN45G FORD FUSION 2015 18000 SEDAN 90000 N/A
19   TRT2B5N FORD MUSTANG 2016 25000 SEDAN 45000 N/A
20   FOR45HH FORD ESCAPE 2015 19000 SUV 60000 N/A
21   WU45UVC FORD ESCAPE 2023 33000 SUV 0 FORDSAFE
22   JKDN45C FORD FUSION 2023 28000 SEDAN 0 FORDSAFE
23
```

Note:
Car details showed and user input
uppercase and lowercase both work.

```
CAR DEALERSHIP
1. Search Inventory:
2. Sell/Lease:
3. Return a leased car:
4. Add cars to inventory:
5. Exit:
Enter: 1
1. Vin:
2. Make:
3. Model:
4. Year:
5. Price:
6. Category:
7. Mileage:
8. Warranty Provider:
Enter: 1
Enter vin: shht56j

No Car Found

CAR DEALERSHIP
1. Search Inventory:
2. Sell/Lease:
3. Return a leased car:
4. Add cars to inventory:
5. Exit:
Enter: |
```

Wrong vin entered
No car found printed;

CSC2110 Project

Search by make:

```
CAR DEALERSHIP
1. Search Inventory:
2. Sell/Lease:
3. Return a leased car:
4. Add cars to inventory:
5. Exit:
Enter: 1
1. Vin:
2. Make:
3. Model:
4. Year:
5. Price:
6. Category:
7. Mileage:
8. Warranty Provider:
Enter: 2
Enter make: toyota

Car no: 1
Vin: TO349ER
Make: TOYOTA
Model: RAV4
Year: 2023
Price $: 30000
Category: SUV
Mileage: 0
Warranty Provider: TOYOTASAFE


Car no: 2
Vin: TATVV67
Make: TOYOTA
Model: HIGHLANDER
Year: 2020
Price $: 38990.5
Category: SUV
Mileage: 120000
Warranty Provider: N/A
```

```
1    NSN30EW NISSAN ALTIMA 2023 27000 SEDAN 0 AAA
2    SVY46HT CHEVROLET EQUINOX 2018 23000 SUV 720000 N/A
3    TO349ER TOYOTA RAV4 2023 30000 SUV 0 TOYOTASAFE
4    CH57FHT CHEVROLET EQUINOX 2015 17990.5 SUV 110000 N/A
5    TATVV67 TOYOTA HIGHLANDER 2020 38990.5 SUV 120000 N/A
6    TMT5RRR TOYOTA CAMRY 2021 27000 SEDAN 66020 N/A
7    WKS46CC FORD FUSION 2023 28000 SEDAN 0 FORDSAFE
8    WI57RFF CHEVROLET SUBURBAN 2020 30000 SUV 27000 N/A
9    DHSH45H GMC SIERRA 2019 28000 TRUCK 34000 N/A
10   WERT567 HONDA ACCORD 2010 9000 SEDAN 105000 N/A
11   TYUH65H TOYOTA CAMRY 2023 33000 SEDAN 0 TOYOTASAFE
12   T2020BB TOYOTA RAV4 2023 31000 SUV 34000 N/A
13   TKT345E TOYOTA CAMRY 2023 36000 SEDAN 21000 N/A
14   WER63BN HONDA CIVIC 2014 12000 SEDAN 99341 N/A
15   NSN0OC7 NISSAN MAXIMA 2023 31000 SEDAN 30000 N/A
16   NSN0OC7 NISSAN MAXIMA 2023 26000 SEDAN 0 NISSANSAFE
17   TJT567V TOYOTA HIGHLANDER 2023 40990.5 SUV 0 TOYOTASAFE
18   WUDN45G FORD FUSION 2015 18000 SEDAN 90000 N/A
19   TRT2B5N FORD MUSTANG 2016 25000 SEDAN 45000 N/A
20   FOR45HH FORD ESCAPE 2015 19000 SUV 60000 N/A
21   WU45UVC FORD ESCAPE 2023 33000 SUV 0 FORDSAFE
22   JKDN45C FORD FUSION 2023 28000 SEDAN 0 FORDSAFE
23
```

With make i searched for Toyota and found 7 cars in the inventory.

Search by make car 1,2;

Search by make car 3,4,5;

```
Car no: 3
Vin: TMT5RRR
Make: TOYOTA
Model: CAMRY
Year: 2021
Price $: 27000
Category: SEDAN
Mileage: 66020
Warranty Provider: N/A


Car no: 4
Vin: TYUH65H
Make: TOYOTA
Model: CAMRY
Year: 2023
Price $: 33000
Category: SEDAN
Mileage: 0
Warranty Provider: TOYOTASAFE


Car no: 5
Vin: T2020BB
Make: TOYOTA
Model: RAV4
Year: 2023
Price $: 31000
Category: SUV
Mileage: 34000
Warranty Provider: N/A
```

CSC2110 Project

```
Car no: 6
Vin: TKT345E
Make: TOYOTA
Model: CAMRY
Year: 2023
Price $: 36000
Category: SEDAN
Mileage: 21000
Warranty Provider: N/A


Car no: 7
Vin: TJT567V
Make: TOYOTA
Model: HIGHLANDER
Year: 2023
Price $: 40990.5
Category: SUV
Mileage: 0
Warranty Provider: TOYOTASAFE

CAR DEALERSHIP
1. Search Inventory:
2. Sell/Lease:
3. Return a leased car:
4. Add cars to inventory:
5. Exit:
Enter: |
```

Search by make car 6,7;

```
CAR DEALERSHIP
1. Search Inventory:
2. Sell/Lease:
3. Return a leased car:
4. Add cars to inventory:
5. Exit:
Enter: 1
1. Vin:
2. Make:
3. Model:
4. Year:
5. Price:
6. Category:
7. Mileage:
8. Warranty Provider:
Enter: 2
Enter make: bmw

No Car Found

CAR DEALERSHIP
1. Search Inventory:
2. Sell/Lease:
3. Return a leased car:
4. Add cars to inventory:
5. Exit:
Enter: |
```

No car found when searched for bmw because there is no bmw car exist in the inventory database.txt;

CSC2110 Project

Search by price:

```
CAR DEALERSHIP
1. Search Inventory:
2. Sell/Lease:
3. Return a leased car:
4. Add cars to inventory:
5. Exit:
Enter: 1
1. Vin:
2. Make:
3. Model:
4. Year:
5. Price:
6. Category:
7. Mileage:
8. Warranty Provider:
Enter: 5
Enter lower price: 10000
Enter higher price: 22000.50

Car no: 1
Vin: CH57FHT
Make: CHEVROLET
Model: EQUINOX
Year: 2015
Price $: 17990.5
Category: SUV
Mileage: 110000
Warranty Provider: N/A

Car no: 2
Vin: WER63BN
Make: HONDA
Model: CIVIC
Year: 2014
Price $: 12000
Category: SEDAN
Mileage: 99341
Warranty Provider: N/A
```

```
Car no: 3
Vin: WUDN45G
Make: FORD
Model: FUSION
Year: 2015
Price $: 18000
Category: SEDAN
Mileage: 90000
Warranty Provider: N/A


Car no: 4
Vin: FOR45HH
Make: FORD
Model: ESCAPE
Year: 2015
Price $: 19000
Category: SUV
Mileage: 60000
Warranty Provider: N/A

CAR DEALERSHIP
1. Search Inventory:
2. Sell/Lease:
3. Return a leased car:
4. Add cars to inventory:
5. Exit:
Enter:
```

```
CAR DEALERSHIP
1. Search Inventory:
2. Sell/Lease:
3. Return a leased car:
4. Add cars to inventory:
5. Exit:
Enter: 1
1. Vin:
2. Make:
3. Model:
4. Year:
5. Price:
6. Category:
7. Mileage:
8. Warranty Provider:
Enter: 5
Enter lower price: 60000
Enter higher price: 100000

No Car Found

CAR DEALERSHIP
1. Search Inventory:
2. Sell/Lease:
3. Return a leased car:
4. Add cars to inventory:
5. Exit:
Enter:
```

```
1   NSN30EW NISSAN ALTIMA 2023 27000 SEDAN 0 AAA
2   SVY46HT CHEVROLET EQUINOX 2018 23000 SUV 720000 N/A
3   TO349ER TOYOTA RAV4 2023 30000 SUV 0 TOYOTASAFE
4   CH57FHT CHEVROLET EQUINOX 2015 17990.5 SUV 110000 N/A
5   TATVV67 TOYOTA HIGHLANDER 2020 38990.5 SUV 120000 N/A
6   TMT5RRR TOYOTA CAMRY 2021 27000 SEDAN 66020 N/A
7   WKS46CC FORD FUSION 2023 28000 SEDAN 0 FORDSAFE
8   WI57RFF CHEVROLET SUBURBAN 2020 30000 SUV 27000 N/A
9   DHSH45H GMC SIERRA 2019 28000 TRUCK 34000 N/A
10  WERT567 HONDA ACCORD 2010 9000 SEDAN 105000 N/A
11  TYUH65H TOYOTA CAMRY 2023 33000 SEDAN 0 TOYOTASAFE
12  T2020BB TOYOTA RAV4 2023 31000 SUV 34000 N/A
13  TKT345E TOYOTA CAMRY 2023 36000 SEDAN 21000 N/A
14  WER63BN HONDA CIVIC 2014 12000 SEDAN 99341 N/A
15  NSN00C7 NISSAN MAXIMA 2023 31000 SEDAN 30000 N/A
16  NSN00C7 NISSAN MAXIMA 2023 26000 SEDAN 0 NISSANSAFE
17  TJT567V TOYOTA HIGHLANDER 2023 40990.5 SUV 0 TOYOTASAFE
18  WUDN45G FORD FUSION 2015 18000 SEDAN 90000 N/A
19  TRT2B5N FORD MUSTANG 2016 25000 SEDAN 45000 N/A
20  FOR45HH FORD ESCAPE 2015 19000 SUV 60000 N/A
21  WU45UVC FORD ESCAPE 2023 33000 SUV 0 FORDSAFE
22  JKDN45C FORD FUSION 2023 28000 SEDAN 0 FORDSAFE
23
```

When searching the price ranged from 10000 to 22000.50, i found four cars in the inventory but when searching higher than 50000 found no cars because there is no car that has the price 60000 or higher in the inventory.

CSC2110 Project

Search by mileage:

```
CAR DEALERSHIP
1. Search Inventory:
2. Sell/Lease:
3. Return a leased car:
4. Add cars to inventory:
5. Exit:
Enter: 1
1. Vin:
2. Make:
3. Model:
4. Year:
5. Price:
6. Category:
7. Mileage:
8. Warranty Provider:
Enter: 7
Enter lower mileage: 80000
Enter higher mileage: 120000

Car no: 1
Vin: CH57FHT
Make: CHEVROLET
Model: EQUINOX
Year: 2015
Price $: 17990.5
Category: SUV
Mileage: 110000
Warranty Provider: N/A


Car no: 2
Vin: TATVV67
Make: TOYOTA
Model: HIGHLANDER
Year: 2020
Price $: 38990.5
Category: SUV
Mileage: 120000
Warranty Provider: N/A
```

```
Car no: 3
Vin: WERT567
Make: HONDA
Model: ACCORD
Year: 2010
Price $: 9000
Category: SEDAN
Mileage: 105000
Warranty Provider: N/A


Car no: 4
Vin: WER63BN
Make: HONDA
Model: CIVIC
Year: 2014
Price $: 12000
Category: SEDAN
Mileage: 99341
Warranty Provider: N/A


Car no: 5
Vin: WUDN45G
Make: FORD
Model: FUSION
Year: 2015
Price $: 18000
Category: SEDAN
Mileage: 90000
Warranty Provider: N/A

CAR DEALERSHIP
1. Search Inventory:
2. Sell/Lease:
3. Return a leased car:
4. Add cars to inventory:
5. Exit:
```

```
1   NSN30EW NISSAN ALTIMA 2023 27000 SEDAN 0 AAA
2   SVY46HT CHEVROLET EQUINOX 2018 23000 SUV 720000 N/A
3   TO349ER TOYOTA RAV4 2023 30000 SUV 0 TOYOTASAFE
4   CH57FHT CHEVROLET EQUINOX 2015 17990.5 SUV 110000 N/A
5   TATVV67 TOYOTA HIGHLANDER 2020 38990.5 SUV 120000 N/A
6   TMT5RRR TOYOTA CAMRY 2021 27000 SEDAN 66020 N/A
7   WKS46CC FORD FUSION 2023 28000 SEDAN 0 FORDSAFE
8   WI57RFF CHEVROLET SUBURBAN 2020 30000 SUV 27000 N/A
9   DHSH45H GMC SIERRA 2019 28000 TRUCK 34000 N/A
10  WERT567 HONDA ACCORD 2010 9000 SEDAN 105000 N/A
11  TYUH65H TOYOTA CAMRY 2023 33000 SEDAN 0 TOYOTASAFE
12  T2020BB TOYOTA RAV4 2023 31000 SUV 34000 N/A
13  TKT345E TOYOTA CAMRY 2023 36000 SEDAN 21000 N/A
14  WER63BN HONDA CIVIC 2014 12000 SEDAN 99341 N/A
15  NSN00C7 NISSAN MAXIMA 2023 31000 SEDAN 30000 N/A
16  NSN00C7 NISSAN MAXIMA 2023 26000 SEDAN 0 NISSANSAFE
17  TJT567V TOYOTA HIGHLANDER 2023 40990.5 SUV 0 TOYOTASAFE
18  WUDN45G FORD FUSION 2015 18000 SEDAN 90000 N/A
19  TRT2B5N FORD MUSTANG 2016 25000 SEDAN 45000 N/A
20  FOR45HH FORD ESCAPE 2015 19000 SUV 60000 N/A
21  WU45UVC FORD ESCAPE 2023 33000 SUV 0 FORDSAFE
22  JKDN45C FORD FUSION 2023 28000 SEDAN 0 FORDSAFE
23
```

While searching the mileage ranged from 80000 to 120000 I found five cars in the inventory.

I searched every search option and everything worked fine. I am not including those options as it will make the document larger.

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Step 2: Sell/Lease:

```
1    NSN30EW NISSAN ALTIMA 2023 27000 SEDAN 0 AAA
2    SVY46HT CHEVROLET EQUINOX 2018 23000 SUV 720000 N/A
3    TO349ER TOYOTA RAV4 2023 30000 SUV 0 TOYOTASAFE
4    CH57FHT CHEVROLET EQUINOX 2015 17990.5 SUV 110000 N/A
5    TATVV67 TOYOTA HIGHLANDER 2020 38990.5 SUV 120000 N/A
6    TMT5RRR TOYOTA CAMRY 2021 27000 SEDAN 66020 N/A
7    WKS46CC FORD FUSION 2023 28000 SEDAN 0 FORDSAFE
8    WI57RFF CHEVROLET SUBURBAN 2020 30000 SUV 27000 N/A
9    DHSH45H GMC SIERRA 2019 28000 TRUCK 34000 N/A
10   WERT567 HONDA ACCORD 2010 9000 SEDAN 105000 N/A
11   TYUH65H TOYOTA CAMRY 2023 33000 SEDAN 0 TOYOTASAFE
12   T2020BB TOYOTA RAV4 2023 31000 SUV 34000 N/A
13   TKT345E TOYOTA CAMRY 2023 36000 SEDAN 21000 N/A
14   WER63BN HONDA CIVIC 2014 12000 SEDAN 99341 N/A
15   NSN00C7 NISSAN MAXIMA 2023 31000 SEDAN 30000 N/A
16   NSN0OC7 NISSAN MAXIMA 2023 26000 SEDAN 0 NISSANSAFE
17   TJT567V TOYOTA HIGHLANDER 2023 40990.5 SUV 0 TOYOTASAFE
18   WUDN45G FORD FUSION 2015 18000 SEDAN 90000 N/A
19   TRT2B5N FORD MUSTANG 2016 25000 SEDAN 45000 N/A
20   FOR45HH FORD ESCAPE 2015 19000 SUV 60000 N/A
21   WU45UVC FORD ESCAPE 2023 33000 SUV 0 FORDSAFE
22   JKDN45C FORD FUSION 2023 28000 SEDAN 0 FORDSAFE
23
```

Before selling a car. Inventory with 23 cars.

```
CAR DEALERSHIP
1. Search Inventory:
2. Sell/Lease:
3. Return a leased car:
4. Add cars to inventory:
5. Exit:
Enter: 2
1. Sell Car
2. Lease a car
Enter choice: 1
Enter vin: wi57rfff

Car not found

CAR DEALERSHIP
1. Search Inventory:
2. Sell/Lease:
3. Return a leased car:
4. Add cars to inventory:
5. Exit:
Enter: 
```

When entered the wrong vin.

```
CAR DEALERSHIP
1. Search Inventory:
2. Sell/Lease:
3. Return a leased car:
4. Add cars to inventory:
5. Exit:
Enter: 2
1. Sell Car
2. Lease a car
Enter choice: 1
Enter vin: wi57rff
Car details:
Vin: WI57RFF
Make: CHEVROLET
Model: SUBURBAN
Year: 2020
Price $: 30000
Category: SUV
Mileage: 27000
Warranty Provider: N/A
CAR SOLD

CAR DEALERSHIP
1. Search Inventory:
2. Sell/Lease:
3. Return a leased car:
4. Add cars to inventory:
5. Exit:
Enter: 
```

```
1    NSN30EW NISSAN ALTIMA 2023 27000 SEDAN 0 AAA
2    SVY46HT CHEVROLET EQUINOX 2018 23000 SUV 720000 N/A
3    TO349ER TOYOTA RAV4 2023 30000 SUV 0 TOYOTASAFE
4    CH57FHT CHEVROLET EQUINOX 2015 17990.5 SUV 110000 N/A
5    TATVV67 TOYOTA HIGHLANDER 2020 38990.5 SUV 120000 N/A
6    TMT5RRR TOYOTA CAMRY 2021 27000 SEDAN 66020 N/A
7    WKS46CC FORD FUSION 2023 28000 SEDAN 0 FORDSAFE
8    DHSH45H GMC SIERRA 2019 28000 TRUCK 34000 N/A
9    WERT567 HONDA ACCORD 2010 9000 SEDAN 105000 N/A
10   TYUH65H TOYOTA CAMRY 2023 33000 SEDAN 0 TOYOTASAFE
11   T2020BB TOYOTA RAV4 2023 31000 SUV 34000 N/A
12   TKT345E TOYOTA CAMRY 2023 36000 SEDAN 21000 N/A
13   WER63BN HONDA CIVIC 2014 12000 SEDAN 99341 N/A
14   NSN00C7 NISSAN MAXIMA 2023 31000 SEDAN 30000 N/A
15   NSN0OC7 NISSAN MAXIMA 2023 26000 SEDAN 0 NISSANSAFE
16   TJT567V TOYOTA HIGHLANDER 2023 40990.5 SUV 0 TOYOTASAFE
17   WUDN45G FORD FUSION 2015 18000 SEDAN 90000 N/A
18   TRT2B5N FORD MUSTANG 2016 25000 SEDAN 45000 N/A
19   FOR45HH FORD ESCAPE 2015 19000 SUV 60000 N/A
20   WU45UVC FORD ESCAPE 2023 33000 SUV 0 FORDSAFE
21   JKDN45C FORD FUSION 2023 28000 SEDAN 0 FORDSAFE
22
```

After selling a car the inventory now has 22 cars on it. Sold car is deleted from the inventory.

CSC2110 Project

Lease a car:

| ```
1   NSN30EW NISSAN ALTIMA 2023 27000 SEDAN 0 AAA
2   SVY46HT CHEVROLET EQUINOX 2018 23000 SUV 720000 N/A
3   TO349ER TOYOTA RAV4 2023 30000 SUV 0 TOYOTASAFE
4   CH57FHT CHEVROLET EQUINOX 2015 17990.5 SUV 110000 N/A
5   TATVV67 TOYOTA HIGHLANDER 2020 38990.5 SUV 120000 N/A
6   TMT5RRR TOYOTA CAMRY 2021 27000 SEDAN 66020 N/A
7   WKS46CC FORD FUSION 2023 28000 SEDAN 0 FORDSAFE
8   WI57RFF CHEVROLET SUBURBAN 2020 30000 SUV 27000 N/A
9   DHSH45H GMC SIERRA 2019 28000 TRUCK 34000 N/A
10  WERT567 HONDA ACCORD 2010 9000 SEDAN 105000 N/A
11  TYUH65H TOYOTA CAMRY 2023 33000 SEDAN 0 TOYOTASAFE
12  T2020BB TOYOTA RAV4 2023 31000 SUV 34000 N/A
13  TKT345E TOYOTA CAMRY 2023 36000 SEDAN 21000 N/A
14  WER63BN HONDA CIVIC 2014 12000 SEDAN 99341 N/A
15  NSN0OC7 NISSAN MAXIMA 2023 31000 SEDAN 30000 N/A
16  NSN0OC7 NISSAN MAXIMA 2023 26000 SEDAN 0 NISSANSAFE
17  TJT567V TOYOTA HIGHLANDER 2023 40990.5 SUV 0 TOYOTASAFE
18  WUDN45G FORD FUSION 2015 18000 SEDAN 90000 N/A
19  TRT2B5N FORD MUSTANG 2016 25000 SEDAN 45000 N/A
20  FOR45HH FORD ESCAPE 2015 19000 SUV 60000 N/A
21  WU45UVC FORD ESCAPE 2023 33000 SUV 0 FORDSAFE
22  JKDN45C FORD FUSION 2023 28000 SEDAN 0 FORDSAFE
23
``` | ```
1   EUXH67G HONDA ACCORD 2023 37000 SEDAN 0 HONDASAFE
2   HDO77XG HONDA ACCORD 2023 38000 SEDAN 0 HONDASAFE
3   AHC60SS FORD FUSION 2023 29000 SEDAN 0 FORDSAFE
4   HSH65JJ TOYOTA RAV4 2023 38000 SUV 0 TOYOTASAFE
5   DCH23UU GMC ACADIA 2023 44000 SUV 0 GMCSAFE
6
7
``` |
| Before lease car is in the inventory | Car_on_lease txt file has only five cars on it |
| ```
CAR DEALERSHIP
1. Search Inventory:
2. Sell/Lease:
3. Return a leased car:
4. Add cars to inventory:
5. Exit:
Enter: 2
1. Sell Car
2. Lease a car
Enter choice: 2
Enter vin: WKS46CC
Car details for lease with 0 mileage:
Vin: WKS46CC
Make: FORD
Model: FUSION
Year: 2023
Price $: 28000
Category: SEDAN
Mileage: 0
Warranty Provider: FORDSAFE
To lease press 1: 1
Lease Done

CAR DEALERSHIP
1. Search Inventory:
2. Sell/Lease:
3. Return a leased car:
4. Add cars to inventory:
5. Exit:
Enter:
``` | ```
1   EUXH67G HONDA ACCORD 2023 37000 SEDAN 0 HONDASAFE
2   HDO77XG HONDA ACCORD 2023 38000 SEDAN 0 HONDASAFE
3   AHC60SS FORD FUSION 2023 29000 SEDAN 0 FORDSAFE
4   HSH65JJ TOYOTA RAV4 2023 38000 SUV 0 TOYOTASAFE
5   DCH23UU GMC ACADIA 2023 44000 SUV 0 GMCSAFE
6   WKS46CC FORD FUSION 2023 28000 SEDAN 0 FORDSAFE
7
``` ```
4   CH57FHT CHEVROLET EQUINOX 2015 17990.5 SUV 110000 N/A
5   TATVV67 TOYOTA HIGHLANDER 2020 38990.5 SUV 120000 N/A
6   TMT5RRR TOYOTA CAMRY 2021 27000 SEDAN 66020 N/A
7   DHSH45H GMC SIERRA 2019 28000 TRUCK 34000 N/A
8   WERT567 HONDA ACCORD 2010 9000 SEDAN 105000 N/A
9   TYUH65H TOYOTA CAMRY 2023 33000 SEDAN 0 TOYOTASAFE
10 T2020BB TOYOTA RAV4 2023 31000 SUV 34000 N/A
11 TKT345E TOYOTA CAMRY 2023 36000 SEDAN 21000 N/A
12 WER63BN HONDA CIVIC 2014 12000 SEDAN 99341 N/A
13 NSN0OC7 NISSAN MAXIMA 2023 31000 SEDAN 30000 N/A
14 NSN0OC7 NISSAN MAXIMA 2023 26000 SEDAN 0 NISSANSAFE
15 TJT567V TOYOTA HIGHLANDER 2023 40990.5 SUV 0 TOYOTASAFE
16 WUDN45G FORD FUSION 2015 18000 SEDAN 90000 N/A
17 TRT2B5N FORD MUSTANG 2016 25000 SEDAN 45000 N/A
18 FOR45HH FORD ESCAPE 2015 19000 SUV 60000 N/A
19 WU45UVC FORD ESCAPE 2023 33000 SUV 0 FORDSAFE
20 JKDN45C FORD FUSION 2023 28000 SEDAN 0 FORDSAFE
21
``` |
| Only car with 0 mileage can be leased | After leasing, the 6th car was added in the car on lease txt file. And the leased car was deleted from the database.txt inventory. |

Leasing a car must have to have 0 mileage, if the car has more than 0 mileage then it will show no car found.

CSC2110 Project

Step 3: Return a leased car:

| ```
1   EUXH67G HONDA ACCORD 2023 37000 SEDAN 0 HONDASAFE
2   HDO77XG HONDA ACCORD 2023 38000 SEDAN 0 HONDASAFE
3   AHC60SS FORD FUSION 2023 29000 SEDAN 0 FORDSAFE
4   HSH65JJ TOYOTA RAV4 2023 38000 SUV 0 TOYOTASAFE
5   DCH23UU GMC ACADIA 2023 44000 SUV 0 GMCSAFE
6   WKS46CC FORD FUSION 2023 28000 SEDAN 0 FORDSAFE
7
``` | Car_on_lease txt database.  Vin: AHC60SS Car will be returned to the main inventory. |
| ```
1   NSN30EW NISSAN ALTIMA 2023 27000 SEDAN 0 AAA
2   SVY46HT CHEVROLET EQUINOX 2018 23000 SUV 720000 N/A
3   TO349ER TOYOTA RAV4 2023 30000 SUV 0 TOYOTASAFE
4   CH57FHT CHEVROLET EQUINOX 2015 17990.5 SUV 110000 N/A
5   TATVV67 TOYOTA HIGHLANDER 2020 38990.5 SUV 120000 N/A
6   TMT5RRR TOYOTA CAMRY 2021 27000 SEDAN 66020 N/A
7   DHSH45H GMC SIERRA 2019 28000 TRUCK 34000 N/A
8   WERT567 HONDA ACCORD 2010 9000 SEDAN 105000 N/A
9   TYUH65H TOYOTA CAMRY 2023 33000 SEDAN 0 TOYOTASAFE
10  T2020BB TOYOTA RAV4 2023 31000 SUV 34000 N/A
11  TKT345E TOYOTA CAMRY 2023 36000 SEDAN 21000 N/A
12  WER63BN HONDA CIVIC 2014 12000 SEDAN 99341 N/A
13  NSN00C7 NISSAN MAXIMA 2023 31000 SEDAN 30000 N/A
14  NSN00C7 NISSAN MAXIMA 2023 26000 SEDAN 0 NISSANSAFE
15  TJT567V TOYOTA HIGHLANDER 2023 40990.5 SUV 0 TOYOTASAFE
16  WUDN45G FORD FUSION 2015 18000 SEDAN 90000 N/A
17  TRT2B5N FORD MUSTANG 2016 25000 SEDAN 45000 N/A
18  FOR45HH FORD ESCAPE 2015 19000 SUV 60000 N/A
19  WU45UVC FORD ESCAPE 2023 33000 SUV 0 FORDSAFE
20  JKDN45C FORD FUSION 2023 28000 SEDAN 0 FORDSAFE
21
``` | Main inventory before doing the return leased car. |
| ```
CAR DEALERSHIP
1. Search Inventory:
2. Sell/Lease:
3. Return a leased car:
4. Add cars to inventory:
5. Exit:
Enter: 3
Check for the car on lease in database
Enter vin of the leased car: wsjfjc
No car found

CAR DEALERSHIP
1. Search Inventory:
2. Sell/Lease:
3. Return a leased car:
4. Add cars to inventory:
5. Exit:
Enter:
``` | When entered the wrong vin. Output: no car found. |

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| ```
CAR DEALERSHIP
1. Search Inventory:
2. Sell/Lease:
3. Return a leased car:
4. Add cars to inventory:
5. Exit:
Enter: 3
Check for the car on lease in database
Enter vin of the leased car: AHC60SS

Vin: AHC60SS
Make: FORD
Model: FUSION
Year: 2023
Price $: 29000
Category: SEDAN
Mileage: 0
Warranty Provider: FORDSAFE
Car Found
Enter the current mileage: |
``` | When entered the right vin. Shows the car details and asks the user to enter current mileage, the current mileage will be more than 0. |
| ```
CAR DEALERSHIP
1. Search Inventory:
2. Sell/Lease:
3. Return a leased car:
4. Add cars to inventory:
5. Exit:
Enter: 3
Check for the car on lease in database
Enter vin of the leased car: AHC60SS

Vin: AHC60SS
Make: FORD
Model: FUSION
Year: 2023
Price $: 29000
Category: SEDAN
Mileage: 0
Warranty Provider: FORDSAFE
Car Found
Enter the current mileage: 0
Current mileage can't be zero or less than zero. Enter again: |
``` | Current mileage must have to be more than zero. |
| ```
CAR DEALERSHIP
1. Search Inventory:
2. Sell/Lease:
3. Return a leased car:
4. Add cars to inventory:
5. Exit:
Enter: 3
Check for the car on lease in database
Enter vin of the leased car: AHC60SS

Vin: AHC60SS
Make: FORD
Model: FUSION
Year: 2023
Price $: 29000
Category: SEDAN
Mileage: 0
Warranty Provider: FORDSAFE
Car Found
Enter the current mileage: 0
Current mileage can't be zero or less than zero. Enter again: 30000
Car returned with new mileage and $5000 reduced price on it.

CAR DEALERSHIP
1. Search Inventory:
2. Sell/Lease:
3. Return a leased car:
4. Add cars to inventory:
5. Exit:
Enter: |
``` | After entering the correct current mileage the car details retired to the main inventory with the current mileage and also the price reduced by 5000. |
| ```
1    EUXH67G HONDA ACCORD 2023 37000 SEDAN 0 HONDASAFE
2    HDO77XG HONDA ACCORD 2023 38000 SEDAN 0 HONDASAFE
3    HSH65JJ TOYOTA RAV4 2023 38000 SUV 0 TOYOTASAFE
4    DCH23UU GMC ACADIA 2023 44000 SUV 0 GMCSAFE
5    WKS46CC FORD FUSION 2023 28000 SEDAN 0 FORDSAFE
6
``` | After lease successful the car details were deleted from the car on lease txt document. |

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```
1    NSN30EW NISSAN ALTIMA 2023 27000 SEDAN 0 AAA
2    SVY46HT CHEVROLET EQUINOX 2018 23000 SUV 720000 N/A
3    TO349ER TOYOTA RAV4 2023 30000 SUV 0 TOYOTASAFE
4    CH57FHT CHEVROLET EQUINOX 2015 17990.5 SUV 110000 N/A
5    TATVV67 TOYOTA HIGHLANDER 2020 38990.5 SUV 120000 N/A
6    TMT5RRR TOYOTA CAMRY 2021 27000 SEDAN 66020 N/A
7    DHSH45H GMC SIERRA 2019 28000 TRUCK 34000 N/A
8    WERT567 HONDA ACCORD 2010 9000 SEDAN 105000 N/A
9    TYUH65H TOYOTA CAMRY 2023 33000 SEDAN 0 TOYOTASAFE
10   T2020BB TOYOTA RAV4 2023 31000 SUV 34000 N/A
11   TKT345E TOYOTA CAMRY 2023 36000 SEDAN 21000 N/A
12   WER63BN HONDA CIVIC 2014 12000 SEDAN 99341 N/A
13   NSN0OC7 NISSAN MAXIMA 2023 31000 SEDAN 30000 N/A
14   NSN0OC7 NISSAN MAXIMA 2023 26000 SEDAN 0 NISSANSAFE
15   TJT567V TOYOTA HIGHLANDER 2023 40990.5 SUV 0 TOYOTASAFE
16   WUDN45G FORD FUSION 2015 18000 SEDAN 90000 N/A
17   TRT2B5N FORD MUSTANG 2016 25000 SEDAN 45000 N/A
18   FOR45HH FORD ESCAPE 2015 19000 SUV 60000 N/A
19   WU45UVC FORD ESCAPE 2023 33000 SUV 0 FORDSAFE
20   JKDN45C FORD FUSION 2023 28000 SEDAN 0 FORDSAFE
21   AHC60SS FORD FUSION 2023 24000 SEDAN 30000 N/A
22
```

Car details added at the end 21th position of this text file with new 30000 mileage on it and also the price decreased by 5000.
Old price was 29000
Current price 24000.

Also the warranty provider changed to N/A as the returned car is no longer a new car.

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Step 4: add a new car:

| ```
CAR DEALERSHIP
1. Search Inventory:
2. Sell/Lease:
3. Return a leased car:
4. Add cars to inventory:
5. Exit:
Enter: 4
1. Old Car:
2. New Car:
Enter: 1
Enter vin: TKT345E
Car Exist
CAR DEALERSHIP
1. Search Inventory:
2. Sell/Lease:
3. Return a leased car:
4. Add cars to inventory:
5. Exit:
Enter: |
``` | Error handling: While adding car if the vin exists in the inventory then the program outputs Car exist. |
| ```
CAR DEALERSHIP
1. Search Inventory:
2. Sell/Lease:
3. Return a leased car:
4. Add cars to inventory:
5. Exit:
Enter: 4
1. Old Car:
2. New Car:
Enter: 2
Enter vin: 2
wrong vin size, enter 7 digit vin again: sggs
wrong vin size, enter 7 digit vin again: ahahahaaa
wrong vin size, enter 7 digit vin again: jiqhahahaha
wrong vin size, enter 7 digit vin again: a
wrong vin size, enter 7 digit vin again: qwertd
wrong vin size, enter 7 digit vin again: |
``` | For this program the vins size (length) is set to seven.<br><br>So if the length exceeds or less than seven then the program will ask to enter again. |

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| ```
1    NSN30EW NISSAN ALTIMA 2023 27000 SEDAN 0 AAA
2    SVY46HT CHEVROLET EQUINOX 2018 23000 SUV 720000 N/A
3    TO349ER TOYOTA RAV4 2023 30000 SUV 0 TOYOTASAFE
4    CH57FHT CHEVROLET EQUINOX 2015 17990.5 SUV 110000 N/A
5    TATVV67 TOYOTA HIGHLANDER 2020 38990.5 SUV 120000 N/A
6    TMT5RRR TOYOTA CAMRY 2021 27000 SEDAN 66020 N/A
7    DHSH45H GMC SIERRA 2019 28000 TRUCK 34000 N/A
8    WERT567 HONDA ACCORD 2010 9000 SEDAN 105000 N/A
9    TYUH65H TOYOTA CAMRY 2023 33000 SEDAN 0 TOYOTASAFE
10   T2020BB TOYOTA RAV4 2023 31000 SUV 34000 N/A
11   TKT345E TOYOTA CAMRY 2023 36000 SEDAN 21000 N/A
12   WER63BN HONDA CIVIC 2014 12000 SEDAN 99341 N/A
13   NSN0OC7 NISSAN MAXIMA 2023 31000 SEDAN 30000 N/A
14   NSN0OC7 NISSAN MAXIMA 2023 26000 SEDAN 0 NISSANSAFE
15   TJT567V TOYOTA HIGHLANDER 2023 40990.5 SUV 0 TOYOTASAFE
16   WUDN45G FORD FUSION 2015 18000 SEDAN 90000 N/A
17   TRT2B5N FORD MUSTANG 2016 25000 SEDAN 45000 N/A
18   FOR45HH FORD ESCAPE 2015 19000 SUV 60000 N/A
19   WU45UVC FORD ESCAPE 2023 33000 SUV 0 FORDSAFE
20   JKDN45C FORD FUSION 2023 28000 SEDAN 0 FORDSAFE
21   AHC60SS FORD FUSION 2023 24000 SEDAN 30000 N/A
22
23
24
``` | Before adding a car in the inventory. |
| ```
CAR DEALERSHIP
1. Search Inventory:
2. Sell/Lease:
3. Return a leased car:
4. Add cars to inventory:
5. Exit:
Enter: 4
1. Old Car:
2. New Car:
Enter: 1
Enter vin: asd45fw
Enter make: ford
Enter model: fusion
Enter year: 2016
Enter price: 18000
Enter category: sedan
Enter mileage: 100000

Car added to inventory

CAR DEALERSHIP
1. Search Inventory:
2. Sell/Lease:
3. Return a leased car:
4. Add cars to inventory:
5. Exit:
Enter: |
``` | Adding an old car, it first takes the proper vin and then invokes the addcar1 function in the old_car.cpp.

Ask the user to enter make, model, year, price, category, mileage.

Never asks for the warranty provider as the old car has no warranty provider and it sets N/A by default. |
| ```
1    NSN30EW NISSAN ALTIMA 2023 27000 SEDAN 0 AAA
2    SVY46HT CHEVROLET EQUINOX 2018 23000 SUV 720000 N/A
3    TO349ER TOYOTA RAV4 2023 30000 SUV 0 TOYOTASAFE
4    CH57FHT CHEVROLET EQUINOX 2015 17990.5 SUV 110000 N/A
5    TATVV67 TOYOTA HIGHLANDER 2020 38990.5 SUV 120000 N/A
6    TMT5RRR TOYOTA CAMRY 2021 27000 SEDAN 66020 N/A
7    DHSH45H GMC SIERRA 2019 28000 TRUCK 34000 N/A
8    WERT567 HONDA ACCORD 2010 9000 SEDAN 105000 N/A
9    TYUH65H TOYOTA CAMRY 2023 33000 SEDAN 0 TOYOTASAFE
10   T2020BB TOYOTA RAV4 2023 31000 SUV 34000 N/A
11   TKT345E TOYOTA CAMRY 2023 36000 SEDAN 21000 N/A
12   WER63BN HONDA CIVIC 2014 12000 SEDAN 99341 N/A
13   NSN0OC7 NISSAN MAXIMA 2023 31000 SEDAN 30000 N/A
14   NSN0OC7 NISSAN MAXIMA 2023 26000 SEDAN 0 NISSANSAFE
15   TJT567V TOYOTA HIGHLANDER 2023 40990.5 SUV 0 TOYOTASAFE
16   WUDN45G FORD FUSION 2015 18000 SEDAN 90000 N/A
17   TRT2B5N FORD MUSTANG 2016 25000 SEDAN 45000 N/A
18   FOR45HH FORD ESCAPE 2015 19000 SUV 60000 N/A
19   WU45UVC FORD ESCAPE 2023 33000 SUV 0 FORDSAFE
20   JKDN45C FORD FUSION 2023 28000 SEDAN 0 FORDSAFE
21   AHC60SS FORD FUSION 2023 24000 SEDAN 30000 N/A
22   ASD45FW FORD FUSION 2016 18000 SEDAN 100000 N/A
23
``` | After adding an old car in the inventory |

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| ```
CAR DEALERSHIP
1. Search Inventory:
2. Sell/Lease:
3. Return a leased car:
4. Add cars to inventory:
5. Exit:
Enter: 4
1. Old Car:
2. New Car:
Enter: 2
Enter vin: whs7h6g
Enter make: toyota
Enter model: corolla
Enter year: 2023
Enter price: 29000
Enter category: sedan
Enter warranty provider or N/A: toyotasafe

Car added to inventory

CAR DEALERSHIP
1. Search Inventory:
2. Sell/Lease:
3. Return a leased car:
4. Add cars to inventory:
5. Exit:
Enter: |
``` | New car adding, Overrides the addcar1 function and calls the addcar1 function that is defined in the new_car.cpp.<br><br>Asks for every information except mileage because the new car has by default zero mileage on it. |
| ```
 1    NSN30EW NISSAN ALTIMA 2023 27000 SEDAN 0 AAA
 2    SVY46HT CHEVROLET EQUINOX 2018 23000 SUV 720000 N/A
 3    TO349ER TOYOTA RAV4 2023 30000 SUV 0 TOYOTASAFE
 4    CH57FHT CHEVROLET EQUINOX 2015 17990.5 SUV 110000 N/A
 5    TATVV67 TOYOTA HIGHLANDER 2020 38990.5 SUV 120000 N/A
 6    TMT5RRR TOYOTA CAMRY 2021 27000 SEDAN 66020 N/A
 7    DHSH45H GMC SIERRA 2019 28000 TRUCK 34000 N/A
 8    WERT567 HONDA ACCORD 2010 9000 SEDAN 105000 N/A
 9    TYUH65H TOYOTA CAMRY 2023 33000 SEDAN 0 TOYOTASAFE
10    T2020BB TOYOTA RAV4 2023 31000 SUV 34000 N/A
11    TKT345E TOYOTA CAMRY 2023 36000 SEDAN 21000 N/A
12    WER63BN HONDA CIVIC 2014 12000 SEDAN 99341 N/A
13    NSN0OC7 NISSAN MAXIMA 2023 31000 SEDAN 30000 N/A
14    NSN0OC7 NISSAN MAXIMA 2023 26000 SEDAN 0 NISSANSAFE
15    TJT567V TOYOTA HIGHLANDER 2023 40990.5 SUV 0 TOYOTASAFE
16    WUDN45G FORD FUSION 2015 18000 SEDAN 90000 N/A
17    TRT2B5N FORD MUSTANG 2016 25000 SEDAN 45000 N/A
18    FOR45HH FORD ESCAPE 2015 19000 SUV 60000 N/A
19    WU45UVC FORD ESCAPE 2023 33000 SUV 0 FORDSAFE
20    JKDN45C FORD FUSION 2023 28000 SEDAN 0 FORDSAFE
21    AHC60SS FORD FUSION 2023 24000 SEDAN 30000 N/A
22    ASD45FW FORD FUSION 2016 18000 SEDAN 100000 N/A
23    WHS7H6G TOYOTA COROLLA 2023 29000 SEDAN 0 TOYOTASAFE
24
``` | After adding a new car in the inventory. |

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Step 5: menu displays until press 5.

```
1. Search Inventory:
2. Sell/Lease:
3. Return a leased car:
4. Add cars to inventory:
5. Exit:
Enter: 1
1. Vin:
2. Make:
3. Model:
4. Year:
5. Price:
6. Category:
7. Mileage:
8. Warranty Provider:
Enter: 1
Enter vin: 11111wq

No Car Found

CAR DEALERSHIP
1. Search Inventory:
2. Sell/Lease:
3. Return a leased car:
4. Add cars to inventory:
5. Exit:
Enter: 5

C:\Users\mahdi\OneDrive\Desktop\c++ visual studio all files\Final_project\x64\Debug\Final_project.exe (process 22968) ex
ited with code 0.
Press any key to close this window . . .
```

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Description on the design plan:

1. At first i created a printmenu() function that displays the menu;

2. Inside the int main() function i used the switch conditional statement to execute search, sell/lease, return, add car and exit;

3. Also set a statement for default switch value;

4. I created three classes: one base class named car, and two derived classes named old_car and new_car.

5. All the classes have their own properties as described in the build specification;

6. While coding i used overloading, so each option (search,sell/lease, return, add) build with overloaded functions; [polymorphism]

```
void search() { ... }
void search(int x) { ... }

void sell_lease(int x) { ... }

void sell_lease(string v, int c) { ... }

void sell_lease() { ... }

void return_car() { ... }
void return_car(string v, int m) { ... }

void add_car() { ... }
void add_car(int x) { ... }
```

7. For the search I used the fstream and did linear search on the file by reading the file.

8. To print and write in the txt file I used the class constructor and all the get functions.

9. I used one file for the inventory which is database.txt and another file to store details of the leased cars. [extra 10 point]

10. As the writing on a file and reading a file is not familiar to me, I did some research on those topics and used that knowledge for my project.

CSC2110 Project

Buckys C++ Programming Tutorials - 68 - Cool Program Working with Files https://youtu.be/Xb-ae2NEGRs [For file handling and menu]
C++ Tutorials - Lowercase or Uppercase Strings https://youtu.be/tQWYTU81uAs [lowercase and uppercase]
Stack overflow: Unable to write into text file using ios:ate in c++ https://stackoverflow.com/questions/55144181/unable-to-write-into-text-file-using-iosate-in-c [stops losing the old data while writing]

11. I did follow the build specification and my inventory has more than 20 cars on it also the car_on_lease.txt has 3 cars.

12. Each and every option in my program is working.

13. For the **error handling** the user can not insert a car information if the car already exists in the inventory. Also if the length of the vin is less than or more than 7 then the user will not be able to enter the car details in the inventory.

```
CAR DEALERSHIP
1. Search Inventory:
2. Sell/Lease:
3. Return a leased car:
4. Add cars to inventory:
5. Exit:
Enter: 4
1. Old Car:
2. New Car:
Enter: 1
Enter vin: WU45UVC
Car Exist
CAR DEALERSHIP
```

14. I also used overriding while adding car in the inventory;

15. I created three addcar1 functions inside car, old_car and new_car class and each function has different properties inside them. [polymorphism]

16. My menu always appears until the user clicks the exit option 5.

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17. My price option and mileage option in searching has the **range feature** which allows the user to put lower and higher ranges while searching by price or mileage. [extra 10 points];

18. END