**File Redirection & Piping**

Model Brand Color Spd Year Type Price

S Tesla Red 250 2022 Electric 79999

Civic Honda Blue 220 2021 Petrol 23000

Camry Toyota White 210 2020 Hybrid 27000

Mustang Ford Black 260 2023 Petrol 55000

A4 Audi Grey 240 2022 Diesel 48000

CX-5 Mazda Silver 200 2021 Petrol 31000

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Impreza Subaru Blue 230 2020 Petrol 26000

Corolla Toyota Black 190 2021 Petrol 20000

M3 Tesla White 225 2023 Electric 39999

Accord Honda Green 215 2022 Hybrid 29000

Q7 Audi Black 250 2021 Diesel 68000

Explorer Ford Blue 230 2022 Petrol 50000

X5 BMW Silver 245 2023 Diesel 60000

Cherokee Jeep White 220 2020 Petrol 45000

Swift Suzuki Red 180 2021 Petrol 18000

Elantra Hyundai Black 210 2022 Petrol 22000

Leaf Nissan Blue 150 2023 Electric 30000

V60 Volvo Grey 240 2021 Hybrid 55000

Kona Hyundai White 200 2022 Electric 26000

Tiguan VW Silver 230 2020 Petrol 34000

Altima Nissan Blue 200 2023 Petrol 24000

RAV4 Toyota Black 210 2022 Hybrid 32000

F-150 Ford White 250 2023 Petrol 35000

F-150 Ford White 250 2023 Petrol 35000

A6 Audi Grey 240 2022 Diesel 55000

CX-3 Mazda Red 200 2021 Petrol 28000

Legacy Subaru Blue 230 2022 Petrol 29000

Yaris Toyota Grey 180 2021 Petrol 17000

Model Y Tesla White 220 2023 Electric 48000

Civic Honda Black 210 2022 Petrol 23000

A8 Audi Black 250 2023 Diesel 75000

Fiesta Ford Blue 190 2021 Petrol 19000

X3 BMW Silver 230 2023 Diesel 52000

Compass Jeep Green 210 2021 Petrol 33000

Baleno Suzuki White 180 2020 Petrol 16000

Sonata Hyundai Blue 220 2022 Petrol 25000

Juke Nissan Red 215 2023 Petrol 23000

XC40 Volvo Grey 240 2022 Hybrid 40000

Tucson Hyundai Black 200 2021 Petrol 25000

Passat VW White 230 2020 Diesel 35000

Cayenne Porsche Silver 250 2023 Petrol 68000

Forte Kia Blue 210 2023 Petrol 22000

Sorento Kia White 230 2022 Petrol 35000

Fiesta Ford Blue 190 2021 Petrol 19000

Escape Ford Black 220 2021 Hybrid 32000

Q5 Audi Red 240 2023 Diesel 50000

CX-9 Mazda Silver 210 2021 Petrol 38000

Outback Subaru Black 230 2023 Hybrid 36000

Avalon Toyota Grey 200 2022 Petrol 35000

Model 3 Tesla Red 225 2023 Electric 42000

Civic Honda Silver 200 2021 Petrol 23000

Macan Porsche Blue 250 2023 Petrol 70000

1. **Create the dataset file named *car.txt* by adding the provided data to it.**

**touch car.txt**

**cat > car.txt**

**nano car.txt**

1. **Redirect the content of car.txt to a new file named backup\_cars.txt.**

**mv car.txt backup\_cars.txt**

**cp car.txt backup\_cars.txt**

**cat car.txt > backup\_car.txt**

1. **Append a new car entry without text editor, and Redirect error messages to a separate file named errors.log**

*New Entry:* Polo Volkswagen Red 195 2023 Petrol 23000

**echo “**Polo Volkswagen Red 195 2023 Petrol 23000**” >> car.txt**

**echo -e “**Polo\tVolkswagen\tRed\t195\t2023\tPetrol\t23000**” >> car.txt 2>errors.log**

**You can use the man command to look up the functions of each command.**

**head, tail, more, less**

1. **Display the first 5 entries in car.txt.**

**head -n 5 car.txt**

1. **Display the last 3 entries in car.txt.**

**tail -n 3 car.txt**

1. **View the entire file car.txt with more.**

**more car.txt**

1. **View the file interactively with less.**

**less car.txt**

**uniq, sort, and cut**

1. **Extract only the Car Model and Price columns from car.txt using cut.**

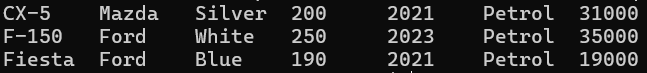
**cut car.txt**

**cut -f1,7 car.txt**

1. **Sort the dataset based on the car's Brand column and save the sorted data to sorted\_cars.txt.**

**sort -k2 car.txt**

1. **Put duplicate lines (if any) from car\_data.txt and create duplicated\_cars.txt.**

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**sort car.txt | uniq -d > duplicated\_cars.txt**

1. **Remove the duplicated lines in car.txt and put it to car2.txt, and append any error message to error.log**

**tail -n +2 car.txt | sort | uniq > car2.txt**

**(intro) grep and tr**

1. **find all cars manufactured by "Ford" in car2.txt and save to a file named Ford\_car.txt.**

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Description automatically generated**

**grep ‘Ford’ car2.txt**

1. **Convert all the TAB in duplicated\_cars.txt to comma ‘,’ as delimeter.**

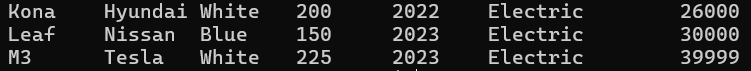
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**cat duplicated\_cars.txt | tr ‘\t’ ‘,’**

**Questions**

1. **Display the first 3 cars with fuel type "Electric" in car2.txt.**

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1. **Append a sorted list of all car brands from car2.txt to a file named car\_brands.txt.**
2. **Count how many cars are Red in car2.txt.**
3. **Extract the Year column and count how many cars were made in each year in car2.txt.**
4. **List cars by Price in descending order for car2.txt.**
5. **Find the most expensive Toyota**
6. **Find unique Color values**

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1. **Count the most popular color in the car.txt (hints: avoid duplicated data)**

**Opening**

1. **<, >, >>, 2>, 2>>**
2. **date -t > output 2>&1 (ask student to look it up)**
   * **If stdout is redirected with >, then stderr should be redirected with 2>&1.**
   * **If stdout is redirected with >>, then stderr should be redirected with 2>>&1.**

**Summary**

* **Redirection <, >, >>, 2>, 2>>**
* **Pipe line | to process the output**
  + **nano, echo,**
  + **head, tail, more, less**
  + **uniq, sort, cut**
  + **grep, tr**