Word Count: 719

Question 1

Column Name	Situation of Column	Cleaning actions/steps	Justification/Explanation
All Columns	Varied Capitalization	All Uppercase	Ensures that cells like ‘Dell’ and ‘dell’ are not two unique values
	Duplicates	Removed Duplicates	Takes up space
BRAND	Some Laptop Models have Brand names	Identified Brand name and assigned to Brand column if necessary	More information for Brand Column
MODEL	Includes NaN values	Deleted all rows with empty value	The row is futile without these values
PRICE			
COLOR, CPU, OS, GRAPHICS, SPECIAL_FEATURES, GRAPHICS_COPROCESSOR	Not generalized	Generalized columns, E.g. SHALE BLACK → BLACK CORE I7 8550U → INTEL CORE I7 MACOS 10.12 SIERRA → MAC OS IRIS XE GRAPHICS → INTEGRATED ANTI GLARE COATING → ANTI GLARE NVIDIA GEFORCE RTX 3050 TI 4GB GDDR6 → NVIDIA GEFORCE	More manageable and easier to visualize
SCREEN_SIZE	Values are Strings String	Removed measurements(E.g. Inches, GB, GHz, $) Converted the strings	
HARDDISK			
RAM			

CPU_SPEED Price		to floats Added the measurements to the column title	
CPU_SPEED	Some values have more than 1 values	Picked the highest one	Since price is constant, higher CPU speed would be best choice
BRAND	Includes Outliers	Removed brands that occur 3 times or less	Less recognized brands
SCREEN_SIZE, CPU_SPEED		Removed values below 1% and above 99%	Removed outliers
RAM, HARDDISK, RATING		Removed values below 1%	
HARDDISK	Values not in categories	Added bins	Harddisk values traditionally go up in powers of 2
RATING	Some missing values	If there are models with rating then find average and assign	Data is more useful
CPU_SPEED		If there are CPUs with CPU_SPEED then find average and assign	
COLOR, SPECIAL_FEATURES	Multiple values	Seperated and put into an array	More manageable

Question 2

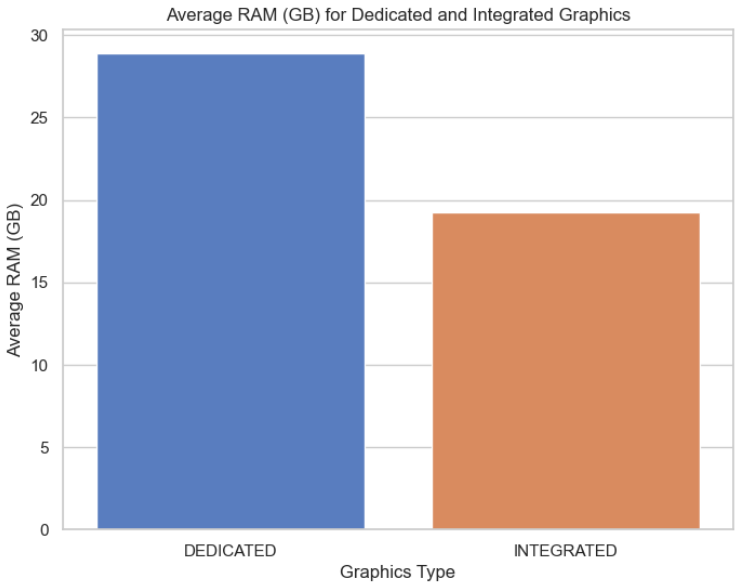
Client 1: The Gamer

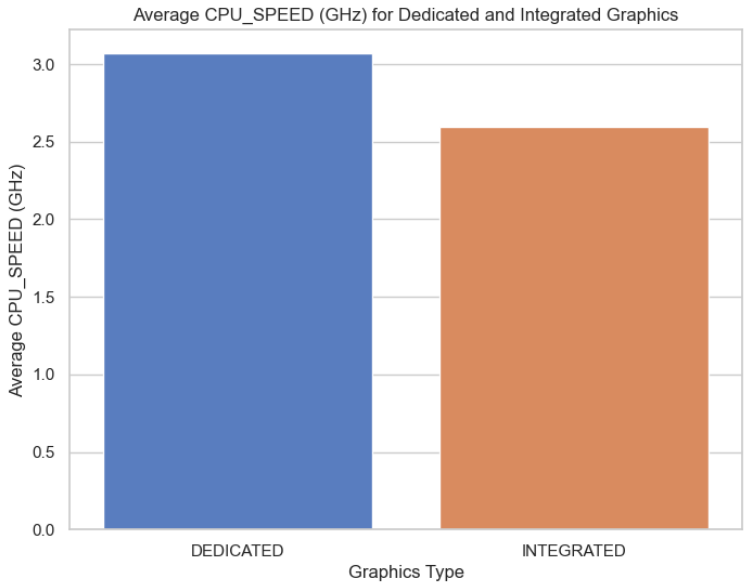
Requirements:

- Price (Maximum $1500)
- High Storage (Minimum 512 GB)
- Rating (Minimum 4)
- Powerful GPU
- High RAM
- High CPU Speed

Step 1:

- Filtered based on Graphics type
- Analysis of average RAM and CPU speeds for both Graphics types shown in graph:
    - Laptops with dedicated graphics have 26.3% higher RAM and 19.2% faster CPU speed than those with integrated graphics
- Decision: Only include laptops with integrated graphics





Step 2:

- Filtered out laptops that did not meet the essential requirements (Price, Storage, Rating)

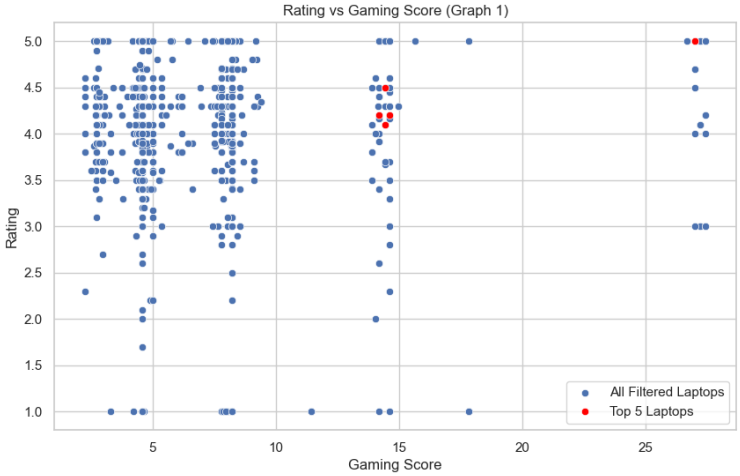
Step 3

- Used a weighted equation to prioritize CPU Speed, important for gaming. Identified top 5 Laptops based on equation
- Gaming Score Formula:
- Gaming Score=0.6×CPU Speed+0.4×RAM

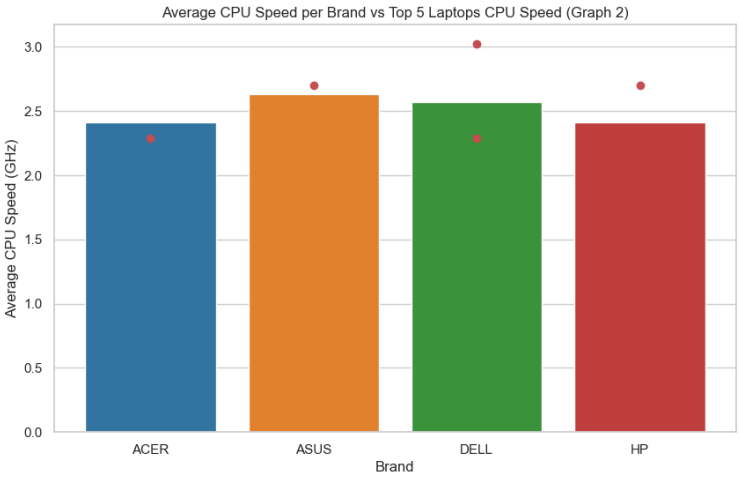
Recommendations

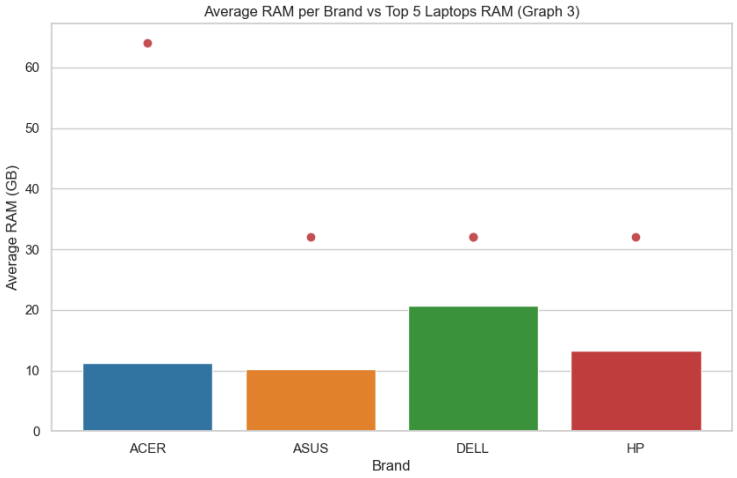
Brand	Model	RAM(GB)	CPU Speed(GHz)	Harddisk (GB)	Graphics	Rating	Price($)
ACER	NITRO 5	64	2.29	>1024	Dedicated	5.0	1086.16
DELL	G15 5520	32	3.02	>512	Dedicated	4.2	1389.84
ASUS	ROG STRIX G15	32	2.70	>512	Dedicated	4.5	1279.00
HP	HP PAVILION	32	2.70	>512	Dedicated	4.1	732.00
DELL	LATITUDE 5520	32	2.29	>1024	Dedicated	4.2	1037.99

Review



- Graph 1: Recommended laptops outperform over 70% of competitors in Gaming Score and average 50% higher in ratings
- Graph 2: The selected laptops' average CPU speed is 5% higher than the brand average.
- Graph 3: The selected laptops' average RAM is 113% higher than the brand average showing that the recommended laptops are high-end





Conclusion

The selected laptops excel in Gaming Score and ratings, outperforming the majority of other brands in CPU speed and RAM, affirming their suitability for high-end gaming needs.

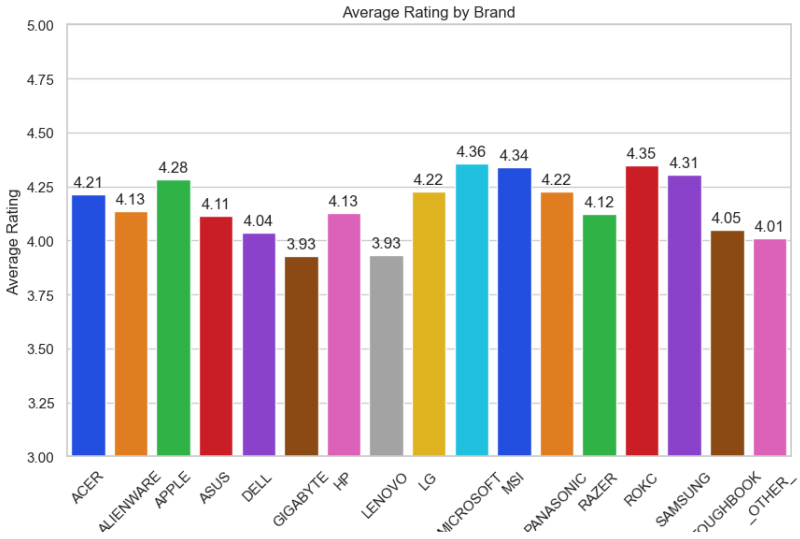
Client 1: CEO of a Company

Requirements:

- Price (Maximum $1500)
- Screen Size (Maximum 15 Inches, for portability)
- Brand (Highly Rated and Reputable)
- OS (Highly Rated)
- RAM (Minimum 16)

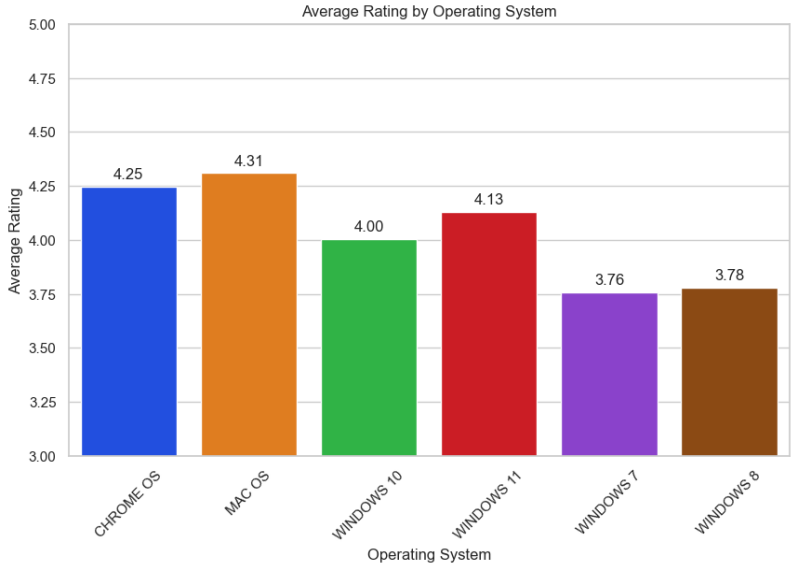
Step 1

- Filtered brands based on average ratings
- The average of all the brands is 4.16
- Decision: Removed any brands with an average rating of under 4.2



Step 2

- Filtered OS based on average rating
- The average of all the brands is 4.04
- Decision: Removed any OS with an average rating of under 4.1



Step 3

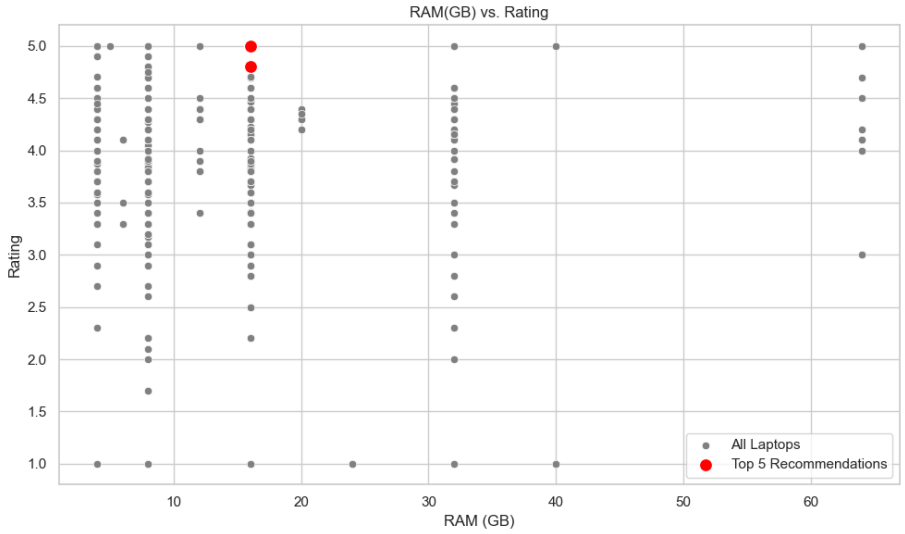
- Filtered out laptops that did not meet the essential requirements (Price, Screen Size, RAM)
- Identified top 5 laptops based on rating

Recommendations:

Brand	Model	RAM(GB)	Screen Size(Inches)	OS Rating	Brand Rating	Rating	Price($)
APPLE	2022 APPLE MACBOOK AIR M2, 16GB RAM, 256GB STORAGE - SPACE GRAY (Z15S000CT)	16	13.60	4.31	4.28	5.0	1255.94
MSI	MODERN 14 C13M-621US	16	14	4.13	4.34	5.0	839.99
ACER	CHROMEBOOK ENTERPRISE SPIN 514 CP514-3WH	16	14	4.25	4.21	5.0	999.99
APPLE	2022 APPLE MACBOOK AIR M2, 16GB RAM, 512GB STORAGE - MIDNIGHT (Z160000B1)	16	13.60	4.31	4.28	4.8	1459.94
ACER	AV14-51-58XZ	16	14	4.13	4.21	4.8	532.49

Review

- The graph shows that the recommended laptops outperform over 90% of competitors in ratings and 50% in RAM



Conclusion:

The selected laptops excel in ratings, RAM and meet the conditions of a smaller screen size for portability, affirming their suitability for CEO needs.