A4: Laptop Data Query and Summarization

The dataset used in this exercise was downloaded from Kaggle at the following URL: https://www.kaggle.com/datasets/jacksondivakarr/laptop-price-prediction-dataset?resource=download. A brief description of each included column is provided below. Perform the tasks listed below and answer the provided questions. Deliver the results as an HTML webpage generated from an R Markdown or Quarto file. Use headers or text to differentiate each component of the assignment. Make sure to include both the code and the results in your submission. Hint: the forcats, stringr, and dplyr packages will be needed. When reading in the data, make sure all character columns are treated as factors.

brand: laptop brand name
name: name of laptop
price: price in US Dollars×100 (divide by 100 to get price)
spec_rating: specification score (0 to 100)
processor: processor name
CPU: central processing unit (CPU) specs
Ram: amount of installed RAM
Ram_type: type of RAM
ROM: size of hard disk
ROM_type: type of hard disk (SSD or Hard-Disk)
GPU: installed graphics processing unit (GPU)
display_size: size of display in inches
resolution_width: resolution in width dimension in pixels
resolution_height: resolution in height dimension in pixels
OS: operating system
warranty: length of warranty in years

*The following tasks from A3 are required to complete this exercise.
T1: Write code to recode the Ram factor levels as follows and convert to a numeric type (Original → New): "12GB" = "12", "16GB" = "16", "2GB" = "2", "32GB" = "32", "4GB" = "4", "64GB" = "64", "8GB" = "8".
T2: Write code to recode the ROM factor levels as follows and convert to a numeric type (Original → New): "128GB" = "128", "1TB" = "1000", "256GB" = "256", "2TB" = "2000", "32GB" = "32", "512GB" = "512", "64GB" = "64".
T3: Write code to create a field that indicates whether the machine has a NVIDIA GPU.
T4: Write code to create a single column that differentiates between Intel and AMD processors. Any other manufacturer should be coded as "Other".
T5: Write code to create a single column that differentiates between i3, i5, i7, and i9 Intel processors. All other processors should be coded as "Other".

Q1: Which company has a higher mean average price for all laptops in the dataset, Asus or Lenovo? (4 Points)
Q2: Which company has a higher mean average price for just laptops with an i7 processor, Asus or Lenovo? (4 Points)
Q3: What is the most commonly occurring amount of RAM for all computers in the dataset? (4 Points)
Q4: What is the average hard drive size (ROM) of all computers with an i5 processor? (4 Points)
Q5: Of the following brands, which has the highest standard deviation in price for all included computers: Acer, Asus, Dell, Lenovo, or MSI? (4 Points)
Q6: Of the following brands, which has the highest standard deviation in price for only computers with an i5 processor: Acer, Asus, Dell, Lenovo, or MSI? (4 Points)
Q7: Of the following brands, which has the largest count of computers in the dataset: Acer, Asus, Dell, Lenovo, or MSI? (4 Points)
Q8: Of the following brands, which has the highest percentage of computers with AMD processors as opposed to Intel processors: Acer, Asus, Dell, Lenovo, or MSI? (4 Points)
Q9: Of the following brands, which has the highest median spec_rating for all included computers that have an i7 processor, at least 16GB of RAM, and at least 512GB of ROM: Acer, Asus, Dell, Lenovo, or MSI? (4 Points)

Q10: Of the following brands, which has the highest median spec_rating to price ratio for all included computers that have an i7 processor, at least 16GB of RAM, and at least 512GB of ROM: Acer, Asus, Dell, Lenovo, or MSI? (4 Points)