Case-Study: Power BI

In the following graded assignment, you are expected to:

- Use the excel worksheet/data to work on along with the data dictionary containing the description of each feature/column, and showcase the solutions and modus operandi

Note: There's no strict method for conducting analysis via Power BI, only the output matters.

Case Study Number & Title	1. Analyzing Home Equity dataset for drawing inferences on loan defaults
Introduction	A vehicle that has had one or more retail owners in the past is referred to as a used automobile, pre-owned car, or secondhand car. Franchise and independent vehicle dealers, rental car agencies, buy here pay here dealerships, leasing offices, auctions, and private party sales are just a few of the places where used cars can be purchased.
Learning Outcomes	• Analyze Used Automobiles data using Power BI to draw meaningful insights on realized prices • Use Power BI efficiently whilst dealing with various business problems to facilitate effective decision making
Background Information	The sources for this dataset are: • 1985 Model Import Car and Truck Specifications, 1985 Ward's Automotive Yearbook. • Personal Auto Manuals, Insurance Services Office, 160 Water Street, New York, NY 10038 • Insurance Collision Report, Insurance Institute for Highway Safety, Watergate 600, Washington, DC 20037
Scenario	The three categories of entities in this data set are (a) the description of an automobile in terms of various attributes, (b) the insurance risk assessment given to it, and (c) the normalized losses in usage as compared to other cars. The second rating reflects how much riskier the car is than its asking price suggests. Cars are first given a risk factor symbol corresponding to their cost. The symbol is then modified by moving it up (or down) the scale if it is more (or less) dangerous. Actuaries refer to this procedure as "symboling." An auto is hazardous if its value is +3, and presumably rather safe The relative average loss payment per insured vehicle year makes up the third factor. This figure indicates the typical loss per vehicle each year for all vehicles

	falling into a given size category (two-door small, station wagons, sports/specialty, etc.).
Problem Statement/ Business objectives	The problem at hand is to model the selling price of used cars based on the features given in the datasets. It will be used by the client to predict the price of a car of their choice.
Data, Information for case analysis	Data is provided as an xlsx file. Below is the source and attribute information. Source Link: https://archive.ics.uci.edu/ml/datasets/automobile Data Description: **symboling**: -3, -2, -1, 0, 1, 2, 3. **normalized-losses**: continuous from 65 to 256. **make**: alfa-romero, audi, bmw, chevrolet, dodge, honda, isuzu, jaguar, mazda, mercedes-benz, mercury, mitsubishi, nissan, peugot, plymouth, porsche, renault, saab, subaru, toyota, volkswagen, volvo **fuel-type**: diesel, gas. **aspiration**: std, turbo. **num-of-doors**: four, two. **body-style**: hardtop, wagon, sedan, hatchback, convertible. **drive-wheels**: 4wd, fwd, rwd. **engine-location**: front, rear. **wheel-base**: continuous from 86.6 120.9. **length**: continuous from 141.1 to 208.1. **width**: continuous from 60.3 to 72.3. **height**: continuous from 47.8 to 59.8. **curb-weight**: continuous from 1488 to 4066. **engine-type**: dohc, dohcv, l, ohc, ohcf, ohcv, rotor. **num-of-cylinders**: eight, five, four, six, three, twelve, two. **engine-size**: continuous from 61 to 326. **fuel-system**: 1bbl, 2bbl, 4bbl, idi, mfi, mpfi, spdi, spfi. **bore**: continuous from 2.54 to 3.94. **stroke**: continuous from 2.07 to 4.17. **compression-ratio**: continuous from 7 to 23. **horsepower**: continuous from 48 to 288. **peak-rpm**: continuous from 4150 to 6600. **city-mpg**: continuous from 13 to 49. **highway-mpg**: continuous from 16 to 54. **price**: continuous from 5118 to 45400.

Questions	1. What is the distribution of fuel-type in the dataset? 2. What is the distribution of drive-wheels in the dataset? 3. Is there a relationship between curb-weight and highway-mpg? Any differences by make? 4. What are some broad observations you can make on average price realized by make? 5. What is the most prevalent body-style being sold? 6. Amongst the most prevalent body-styles, which are the major makes? 7. Is there a relationship between price and average horsepower? Does this change by body-style? 8. Check to see whether a linear relationship exists between: a. Engine size and price b. City-mpg and price c. Height and price
Deliverables for Solution and Rubric	Graded assessment: ● Required deliverables – a pbix file with each sheet dedicated for the solution of each question; the inferences, if applicable, are to be included in the respective sheets ● Submission templates – N/A ● Student facing and faculty rubrics – Total of 20 points where: - Questions 1 to 7 carry 2 points each – 14 points cumulative - Question 8, each part carries 2 points each – 6 points cumulative
Key Takeaways/Results	Analyzing data using Power BI and deriving meaningful insights which aids in decision making.