**Problem 1**: Linear Regression

You are hired by a company Gem Stones co ltd, which is a cubic zirconia manufacturer. You are provided with the dataset containing the prices and other attributes of almost 27,000 cubic zirconia (which is an inexpensive diamond alternative with many of the same qualities as a diamond). The company is earning different profits on different prize slots. You have to help the company in predicting the price for the stone on the bases of the details given in the dataset so it can distinguish between higher profitable stones and lower profitable stones so as to have better profit share. Also, provide them with the best 5 attributes that are most important.

**Data Dictionary:**

|  |  |
| --- | --- |
| **Variable Name** | **Description** |
| Carat | Carat weight of the cubic zirconia. |
| Cut | Describe the cut quality of the cubic zirconia. Quality is increasing order Fair, Good, Very Good, Premium, Ideal. |
| Color | Colour of the cubic zirconia.With D being the best and J the worst. |
| Clarity | Clarity refers to the absence of the Inclusions and Blemishes. (In order from Best to Worst in terms of avg price) IF, VVS1, VVS2, VS1, VS2, Sl1, Sl2, l1 |
| Depth | The Height of cubic zirconia, measured from the Culet to the table, divided by its average Girdle Diameter. |
| Table | The Width of the cubic zirconia's Table expressed as a Percentage of its Average Diameter. |
| Price | the Price of the cubic zirconia. |
| X | Length of the cubic zirconia in mm. |
| Y | Width of the cubic zirconia in mm. |
| Z | Height of the cubic zirconia in mm. |

Dataset for Problem 1: [cubic\_zirconia.csv](https://olympus.mygreatlearning.com/courses/78182/files/6689408/download?verifier=LdxYDuUuOXYcQY1zucTtbnktg6sJx4FasrmiGrmp&wrap=1)

**Problem 2:** Logistic Regression and LDA

You are hired by a tour and travel agency which deals in selling holiday packages. You are provided details of 872 employees of a company. Among these employees, some opted for the package and some didn't. You have to help the company in predicting whether an employee will opt for the package or not on the basis of the information given in the data set. Also, find out the important factors on the basis of which the company will focus on particular employees to sell their packages.

**Dataset for Problem 2:** [Holiday\_Package.csv](https://olympus.mygreatlearning.com/courses/78182/files/6689409/download?verifier=HKFo9MOQn4j80q8hGX1OXljdOXmpDyw3nJFGR6eF&wrap=1)

**Data Dictionary:**

|  |  |
| --- | --- |
| **Variable Name** | **Description** |
| Holiday\_Package | Opted for Holiday Package yes/no? |
| Salary | Employee salary |
| age | Age in years |
| edu | Years of formal education |
| no\_young\_children | The number of young children (younger than 7 years) |
| no\_older\_children | Number of older children |
| foreign | foreigner Yes/No |