This assignment is a programming assignment wherein we have to build a multiple linear regression model for the prediction of demand for shared bikes.

**Business explanation**:

A bike-sharing system is a service in which bikes are made available for shared use to individuals on a short term basis for a price or free. Many bike share systems allow people to borrow a bike from a "dock" which is usually computer-controlled wherein the user enters the payment information, and the system unlocks it. This bike can then be returned to another dock belonging to the same system.

A US bike-sharing provider BoomBikes has recently suffered considerable dips in their revenues due to the ongoing Corona pandemic. The company is finding it very difficult to sustain in the current market scenario. So, it has decided to come up with a mindful business plan to be able to accelerate its revenue as soon as the ongoing lockdown comes to an end, and the economy restores to a healthy state.

In such an attempt, BoomBikes aspires to understand the demand for shared bikes among the people after this ongoing quarantine situation ends across the nation due to Covid-19. They have planned this to prepare themselves to cater to the people's needs once the situation gets better all around and stand out from other service providers and make huge profits.

**Data Explanation**:

The data give in a report by the business for processing contains the following fields for the year between 2018 and 2019:

* instant: record index
* dteday : date
* season : season (1:spring, 2:summer, 3:fall, 4:winter)
* yr : year (0: 2018, 1:2019)
* mnth : month ( 1 to 12)
* holiday : weather day is a holiday or not (extracted from http://dchr.dc.gov/page/holiday-schedule)
* weekday : day of the week
* workingday : if day is neither weekend nor holiday is 1, otherwise is 0.
* + weathersit :
* 1: Clear, Few clouds, Partly cloudy, Partly cloudy
* 2: Mist + Cloudy, Mist + Broken clouds, Mist + Few clouds, Mist
* 3: Light Snow, Light Rain + Thunderstorm + Scattered clouds, Light Rain + Scattered clouds
* 4: Heavy Rain + Ice Pallets + Thunderstorm + Mist, Snow + Fog
* temp : temperature in Celsius
* atemp: feeling temperature in Celsius
* hum: humidity
* windspeed: wind speed
* casual: count of casual users
* registered: count of registered users
* cnt: count of total rental bikes including both casual and registered

Using the given data we have to process the data, do some **exploratory analysis**, finding the relation among the data and do data cleaning and the proceed with machine leaning to get a predict. After performing Descriptive and Diagnostic Analysis with the given data, we have to prepare a prediction that can help business to increase their business once COVID situation is ended.