Title: Estimate rating of Restaurants and fetch the Best in the town.

Objective: Today, Zomato is one of the successful startups which provide an online platform for the for the restaurants. Sometime it's become hard to get the knowledge of which connected restaurants is more profitable. Zamoto is always interested to know. In this study, we are implementing machine learning models to fetch best restaurants in the town.

Tools and Dataset: The basic idea of analyzing the Zomato dataset is to get a fair idea about the factors affecting the aggregate rating of each restaurant, establishment of different types of restaurant at different places, Bengaluru being one such city has more than 12,000 restaurants with restaurants serving dishes from all over the world. With each day new restaurants opening the industry has'nt been saturated yet and the demand is increasing day by day. Inspite of increasing demand it however has become difficult for new restaurants to compete with established restaurants. Most of them serving the same food. Bengaluru being an IT capital of India. Most of the people here are dependent mainly on the restaurant food as they don't have time to cook for themselves. With such an overwhelming demand of restaurants it has therefore become important to study the demography of a location. What kind of a food is more popular in a locality. Do the entire locality loves vegetarian food. If yes then is that locality populated by a particular sect of people for eg. Jain, Marwaris, Gujaratis who are mostly vegetarian. These kind of analysis can be done using the data, by studying different factors.

Columns:

Column Name	Description
url	contains the url of the restaurant in the zomato website
address	contains the address of the restaurant in Bengaluru
name	contains the name of the restaurant
online_order	whether online ordering is available in the restaurant or not
book_table	table book option available or not
rate	contains the overall rating of the restaurant out of 5
votes	contains total number of rating for the restaurant as of the above mentioned date
phone	contains the phone number of the restaurant
location	contains the neighborhood in which the restaurant is located
rest_type	restaurant type
dish_liked	dishes people liked in the restaurant
cuisines	food styles, separated by comma
approx_cost(for two people)	contains the approximate cost for meal for two people
reviews_list	list of tuples containing reviews for the restaurant,

	each tuple consists of two values, rating and review by the customer
menu_item	contains list of menus available in the restaurant
listed_in(type)	type of meal
listed_in(city)	contains the neighborhood in which the restaurant is listed

Furthermore, Jupyter Notebook (5.4.0) used for the Python code execution and sklearn libraries used to implement regression.

Description of the procedure:

In this method, three machine learning models are implement which are following-

- **Linear Regression:** Linear regression is a linear approach to modeling the relationship between a scalar response (or dependent variable) and one or more explanatory variables (or independent variables). The case of one explanatory variable is called simple linear regression.
- **Decision Tree Regression:** Decision tree regression observes features of an object and trains a model in the structure of a tree to predict data in the future to produce meaningful continuous output. Continuous output means that the output/result is not discrete, i.e., it is not represented just by a discrete, known set of numbers or values.
- **Random Forest:** The fundamental concept behind random forest is a simple but powerful one — the wisdom of crowds. In data science speak, the reason that the random forest model works so well is: A large number of relatively uncorrelated models (trees) operating as a committee will outperform any of the individual constituent models.

The R^2-Score method is used in order to check the accuracy of the model.

(**Note:** Coding and Figures are represented in Notebook file.)

Result and discussion:

We have successfully implemented the proposed models with following accuracy.

Models	Accuracy
Linear Regression	0.2736233722103867
Decision Tree	0.8534364353683124
Random Forest	0.877381398846147

And also we get **'Café Coffee Day'** as the best restaurant of Bengaluru.