Aim:	To implement & understand the concepts of
	Linear regression and Regression Analysis in
	python by predicting house prices using the number
	of rooms as the feature and concept of k-means
	clustering. in python.
Theme	Linear Regression:
may.	
	Linear Regression is a fundamental statistical
	method used to model the relationship between
	two variables by fitting a linear equation to the
	observed data. It assumes a linear telationship
	between the independent variable (x) & the dependent
	voriable (Y)
	The equation for simple linear regression is:
	Y= B0 + B1X + E
	where X = dependent variable
an alian de la company	Y = Independent birable
the second second	Bo = is the intercept, the value of Y when X=0
	B1 = is the slope of regression line, representing
	the change in Y for a unit change in x
	E = is the error term representing the difference
	between observed & predicted values.
1	Thus the and of the lines consider in t
7	thus the goal of the linear regression is to
	minimize the sum of squared emons differences
	between Observed & predicted values) to find the
aren en la rece	best fitting line through the data. ENT PALLOTTI COLLEGE OF ENGINEERING & TECHNOLOGY, NAGPUR - 441 108
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Regression Analysis:
Regression Analysis is a statistical technique used
to investigate & model the ordistionships between a
dependent variable and one or more independent
Variables. The analysis helps us understand how
the typical value of the dependent writable theories
when they and one of the independent upcobles
is yaried.
These are mainly two types of Regutssion:
1) Simple Lineau Peoplessian: Teachers one independent
Variable & one dependent variable
ii) Malfiple Linea Regression: Invites multiple indepe
ndert veriables production the depotent writtle
Repression Analysis envided insights into:
i) How much variation in the dependent variable
ron be explained by the inditament variable.
11) The strugth & type of relationship between the
variables.
mi) The significance of such-pardictor in the motel.
Applications of linear Regression:
1) Predicting the sales or mices band on historical
dela
ii) Estimating the impact of thanges in one wax. on
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	K-means clustering is an unsupervised learning method for clustering data points. This algorithm literatively divides data points into k clusters by minimizing the variance in each cluster.
Code:	# Implementation of Linear Regression:
	import mathplotlib. pyplot as ptt.
	$x = [\pm , 2, 3, \mp , 8, 9, 0, 4, 6]$
	A STATE OF THE PROPERTY OF THE
	y = [99, 69, 77, 81, 92, 100, 40, 62, 85]
	pit-scatter (x,y)
	plt. Show ()
Ĭ	#R for Relationship
	from scipy import stats
	x = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10]
	y = [11, 92, 33, 44, 55, 66, 77, 88, 99]
	The state of the s
	Slope interest r.p. std error = Stats. linngress
,	(x,y)
	print(r)
	# Implementation of K-means
	from sklearn cluster import kMeans
	data = list(Zip(x,y))
	Inertias = []

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for	i in range (1,11):
	KMeans = KMeans (n_clusters = 1)
	KMeans. fit (data)
	inertias. en append (KMeans, inertias)
	The state of the s
410	- plot (range (1,11), inertias, marker = '0')
	. title ('Elbow Method')
	· xtitle ('Number of Clusters')
	ytitle ('Inertia')
	4800,000
DIF	· Show ()
C .	
	have Successfully implemented Linear Regress
	n & K- Means in Musting methods in
pyt	thon.
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