Bayesian Curve Fitting: Performance Evaluation

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- The metrics for performance evaluation of the Bayesian Curve problem are **Absolute Mean Error** and **Average Relative Error**.

Absolute Mean Error:

- Absolute Mean Error is the difference between the actual and predicted prices divided by total no of prices.

$$\textbf{AME} = \sum \textbf{(Actual Price-Predicted Price)/ N}$$

- For each dataset, the absolute mean error is calculated by the above formula and all the ten values are summed and the result is divided by ten (as in the input file there are ten stock prices).
- Absolute error where the error decides how much the measured value deviates from the true value. Here, it indicates deviation of stock price from the true stock price.

Average Relative Error:

- Average relative error is defined as the difference of actual output value (stock price) and predicted output value (price) to its actual price.

$$\textbf{ARR} = \sum \textbf{(Actual Price-Predicted Price)} / \sum \textbf{Actual price}$$

- Average relative error is calculated by summing up all differences between actual value and predicted value and dividing this sum by total of actual price values.
- Relative error decides how incorrect a quantity is from a number considered to be true.
- Thus, average relative error gives the measure of incorrectness of predicted stock price relative to actual stock price.

In conclusion, minimizing both **Absolute Mean Error** and **Average Relative Error** will improve prediction accuracy of this program and will be helpful to predict correct and accurate stock value.

	Data 1	Data 2	Data 3	Data 4	Data 5
Data	25.67	28.32	325.67	1325.67	125.67
	26.87	28.5	331.87	1321.87	126.87
	28.55	27.91	331.55	1331.55	128.55
	29.32	27.37	330.42	1334.42	132.44
	28.26	28.26	333.55	1333.15	123.55
	28.55	28.55	332.88	1328.88	128.88
	30.18	28.65	330.12	1324.12	130.12
	32.11	29.05	334.5	1330.35	134.5
	29.14	28.64	335.21	1335.21	139.21
	28.11	28.11	334.45	1334.45	137.45
Predicted Value	29.13536944	28.4974206	335.26550565	1337.00765855	137.13950261
Absolute Mean Error	0.56536944	0.0725794	1.57550565	1.30765855	1.43950261
Average Relative Error	0.01978892	0.00254041	0.00472146	0.00097901	0.01060798

	Data 1	Data 2	Data 3	Data 4	Data 5
Data	177.7	706.5	19.61	33.82	951.3
	177.2	695.9	19.59	33.3	950.4
	179	699.6	19.87	33.57	946.3
	187.4	705.8	19.99	34.31	973.7
	190.3	705.1	19	34.77	978.1
	191.9	697.8	19.01	34.9	966.2
	186.4	718.8	19.3	35.77	977.3
	188.3	718.9	19.71	36.16	969.5
	195.7	712.4	19.85	36.67	962.5
	201	710.9	19.96	36.88	957.4
Predicted Value	197.21849098	714.41870805	19.88202256	36.69139865	964.60928895
Absolute Mean Error	1.52150902	1.33129195	0.13202256	0.65860135	0.69928895
Average Relative Error	0.00765578	0.00186	0.00668469	0.01763324	0.00072547

	Data 1	Data 2	Data 3	Data 4	Data 5
Data	2	7.39	43.35	2	395.8
	4	7.47	42.81	4	386.8
	9	7.75	42.92	6	393.6
	16	7.74	43.26	8	394
	25	7.75	43.16	10	394.2
	36	7.71	42.81	12	384
	49	8.21	43.93	14	410.2
	64	8.17	44.24	16	407.8
	81	8.2	44.51	18	401.9
	100	7.35	45.21	20	403.8
Predicted Value	84.96805376	7.77253719	44.8610378	18.32227997	404.73814402
Absolute Mean Error	33.94194624	0.48253719	1.0989622	3.67772003	0.55185598
Average Relative Error	0.28544232	0.06619166	0.02391127	0.16716909	0.00136163