CS5100 - Final Project

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Learning Objective

- Predict S&P500 Closing Price Compares To Previous Day's Closing Price

Problem & Dataset

- Analyze S&P500 trends
- Wall Street Journal
- 2013-2023
- 2576 data

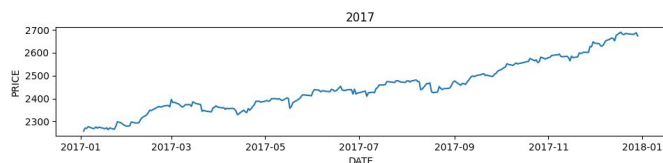| DATE	OPEN	HIGH	LOW	CLOSE
04/21/23	4132.14	4138.02	4113.86	4133.52
04/20/23	4130.48	4148.57	4114.57	4129.79
04/19/23	4139.33	4162.57	4134.49	4154.52
04/18/23	4164.26	4169.48	4140.36	4154.87
04/17/23	4137.17	4151.72	4123.18	4151.32
04/14/23	4140.11	4163.19	4113.20	4137.64
04/13/23	4100.04	4150.26	4099.40	4146.22
04/12/23	4121.72	4134.37	4086.94	4091.95
04/11/23	4110.29	4124.26	4102.61	4108.94
04/10/23	4085.20	4109.50	4072.55	4109.11
04/06/23	4081.58	4107.32	4069.84	4105.02
04/05/23	4094.50	4099.69	4072.56	4090.38
04/04/23	4128.03	4133.13	4086.87	4100.60
04/03/23	4102.20	4127.66	4098.79	4124.51
03/31/23	4056.18	4110.75	4056.18	4109.31
03/30/23	4046.74	4057.85	4032.10	4050.83
03/29/23	3999.53	4030.59	3999.53	4027.81
03/28/23	3974.13	3979.20	3951.53	3971.27
03/27/23	3982.93	4003.83	3970.49	3977.53
03/24/23	3939.21	3972.74	3909.16	3970.99

S&P500 Historical Prices
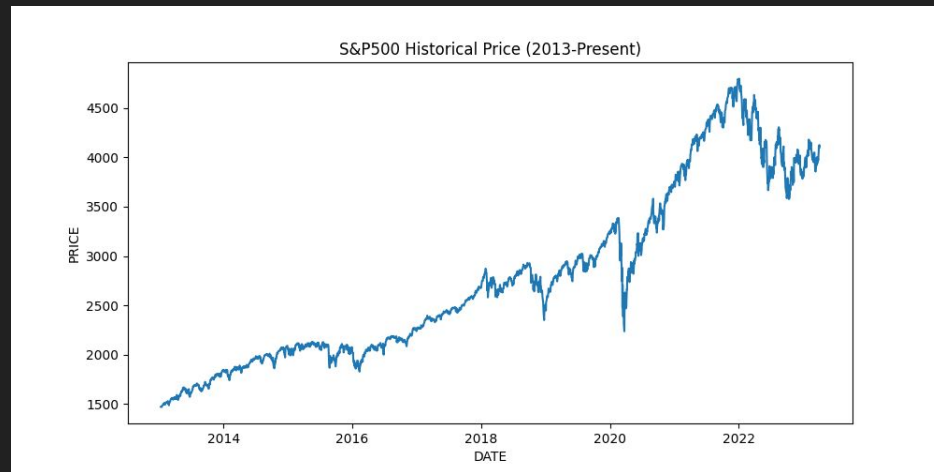
Yearly Data
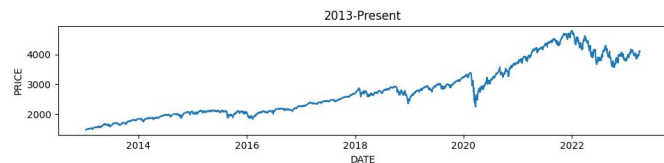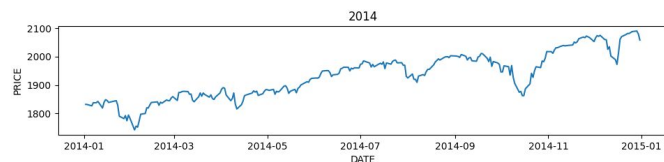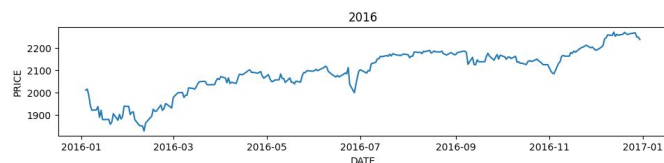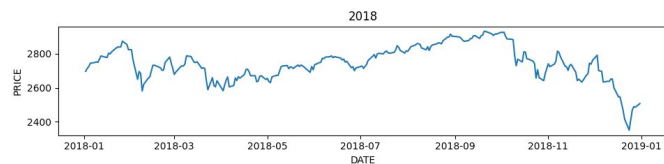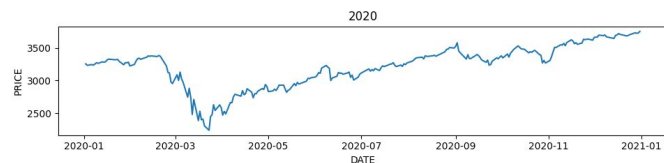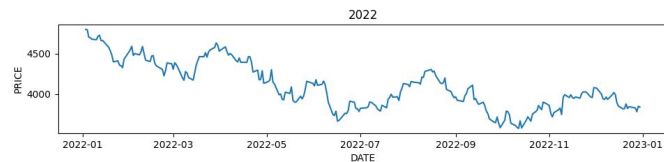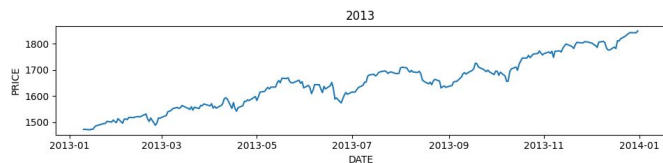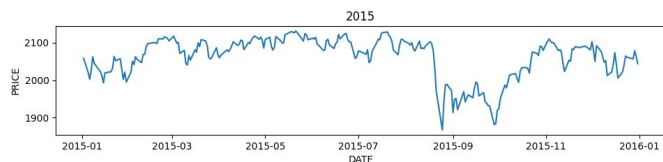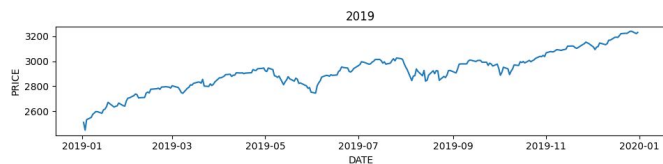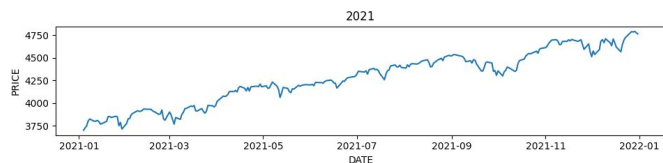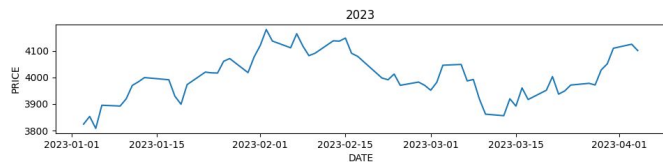
Model

- Linear Regression
- Bayesian Ridge

Features

- Trend of today's closing price from yesterday's (5days)
- Trend of today's opening price from yesterday's closing price

Example Data

Date	Open	High	Low	Close	Month	O-C	C-C	D-1	D-2	D-3	D-4	D-5
`datetime.datetime(2023, 4, 4, 0, 0)`	`4128.03,`	`4133.13`	`4086.87`	`4100.6`	`4`	`1`	`1`	`1`	`1`	`-1`	`-1`	`1`

Result

Bayesian Ridge: 0.4763646781577653

Linear Regression: 0.4778933553213748

Result

Linear Regression: 0.4830481411088109

"In the short run, the market is a voting machine but in the long run, it is a weighing machine"

Benjamin Graham