FIN 3080 Assignment 1

Problem 1:

(a)

As the code shows.

(b)

For main board:

Summary statistics for main board

	stock_code	total_asset	total_liability	RD_expense	raw_establishment_date	ROA	ROE	R&D/asset	firm_age
count	193903.0	193903.0	193903.0	74038.0	193903	177869.0	176710.0	74038.0	193903.0
mean	326073.97	90889821445.82	78081231649.66	180136901.82	2000-01-16 18:42:38.87531	0.04	0.06	0.02	64.41
min	70.0	0.0	0.0	-16028759.31	1958-01-01 00:00:00	-2.04	-174.89	-0.0	-2.4
25%	2356.0	1390193134.82	415413424.66	11774023.56	1997-04-07 00:00:00	0.01	0.03	0.0	45.29
50%	600229.0	3077561548.16	1204849174.87	34857880.62	1999-12-30 00:00:00	0.04	0.08	0.01	64.05
75%	600990.0	8091701363.87	3941549588.99	99506141.97	2002-11-18 00:00:00	0.08	0.13	0.02	82.18
max	873833.0	44482823000000.0	40806945000000.0	49753236000.0	2017-12-20 00:00:00	5.84	228.7	0.87	263.16
std	308447.78	1066525857625.1	980784092035.8	949603353.64	nan	0.1	0.96	0.02	26.62

For GEM:

Summary statistics for GEM

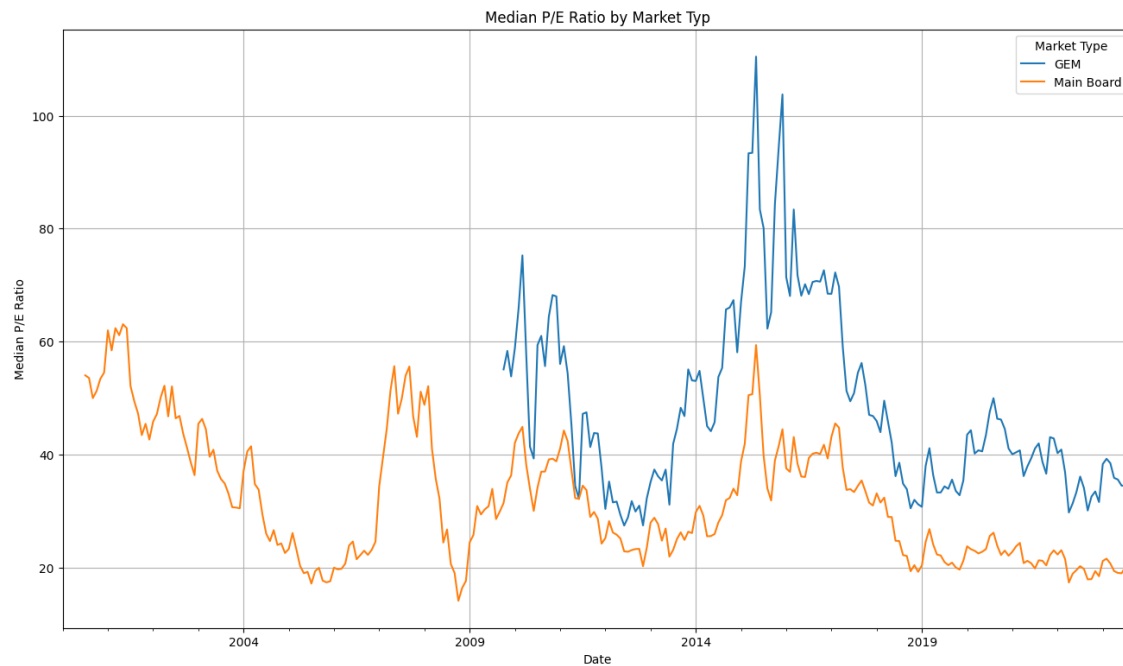|	stock_code	total_asset	total_liability	RD_expense	raw_establishment_date	ROA	ROE	R&D/asset	firm_age
count	66252.0	66252.0	66252.0	41555.0	66252	57986.0	57851.0	41555.0	66252.0
mean	349827.7	3404314825.47	1403175200.07	79858002.562	2002-09-28 00:46:17.75765	0.04	0.03	0.02	65.56
min	300001.0	14849489.82	258578.84	-1130705.96	1981-03-16 00:00:00	-1.91	-315.15	-0.0	1.82
25%	300183.0	1004309113.55	182037652.07	15330347.4	2000-01-27 00:00:00	0.02	0.03	0.01	50.14
50%	300397.0	1710526472.74	446530761.53	33478719.93	2002-10-24 00:00:00	0.05	0.08	0.02	64.71
75%	300753.0	3171887868.43	1130446623.0	72393296.95	2005-10-28 00:00:00	0.09	0.12	0.03	79.4
max	689009.0	671832207300.0	469775300700.0	15510453500.0	2018-03-09 00:00:00	1.09	7.32	2.7	170.28
std	129343.06	10815111682.94	6581201238.11	260633014.26	nan	0.1	1.6	0.03	21.74

Problem 2:

(i)

<mark>Yes.</mark> Because as the figure shows, in Sep. 2023, the PE ratio of companies in both markets are very low, almost the lowest in the historical data. Therefore, the companies were probably undervalued.

(ii)

Trading Strategy:

By technical analysis perspective, the prices of stocks would show momentum and reversion trending in turn. Therefore, we can buy the index ETF at a low price which shows a low PE ratio, and sell it at a high price which shows a high PE ratio.

Problem 3