

Ques 1

a) Implemented the code.

b)

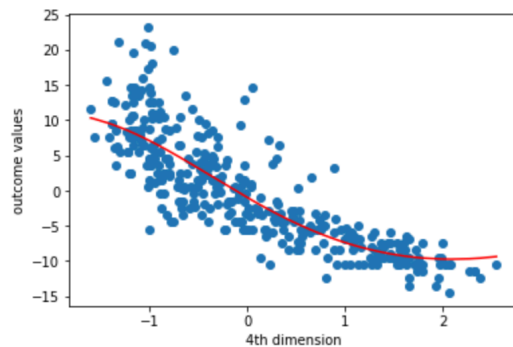
	sigma_square									
b	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
5	1.966276096	1.933135343	1.923420204	1.922197596	1.924769115	1.929212547	1.934634068	1.9405831	1.94681994	1.9532125
7	1.920163258	1.904876517	1.908080328	1.915901676	1.924804076	1.933701399	1.942253767	1.95038004	1.95809307	1.96543804
9	1.897648752	1.90251913	1.917647689	1.93251433	1.945699473	1.957234791	1.967403257	1.97649175	1.98474077	1.99234121
11	1.890507115	1.914981009	1.938848779	1.957936245	1.973215825	1.985764208	1.996375139	2.00560322	2.01383544	2.0213448
13	1.895848501	1.935585901	1.964597321	1.985501994	2.001314273	2.013878451	2.024310379	2.03330678	2.04131749	2.04864155
15	1.909603216	1.959548832	1.990803585	2.011915453	2.027370285	2.039465166	2.049463379	2.05810489	2.06584527	2.07297606

c)

The lowest value of rmse is 1.890507 at $b=11$ and $\sigma^2=0.1$. The value is better than the 2.2 which has obtained in the first homework. The model is performing better than the approach in first homework.

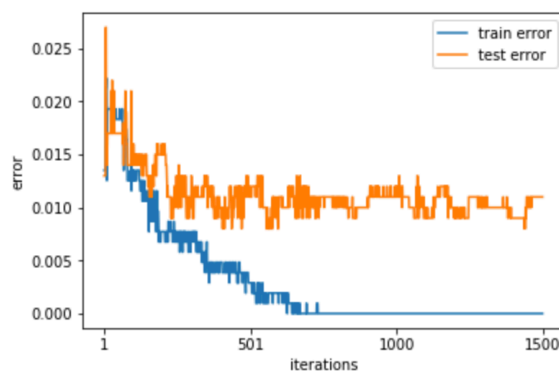
A potential drawback of the approach is that we need to do a grid search on the parameters of b and σ^2 to obtain the best possible value. This is computationally expensive and we may not get the true optimal values after the grid search.

d)

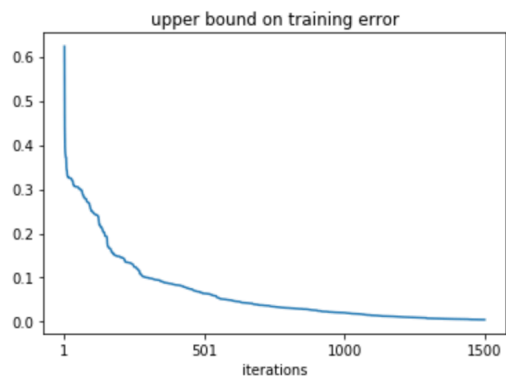


QUES 2

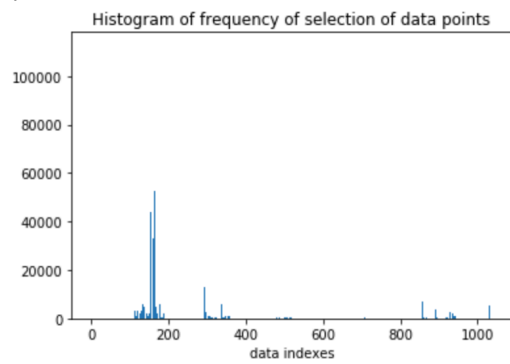
a)



b)



c)



d)

