ANALYSIS

BEFORE AND AFTER STANDARDIZATION:
Before Standardization, the range of children is less, and the range of age is high which might cause the model to be more biased towards age. Whereas, when we performed standardization, all the attributes have equal chance towards the output.

COMPARITION OF MSE VALUES:
Comparing MSE values of batch gradient descent without regularization and with regularization, we obtained lower MSE value without regularization.

Comparing the MSE values of stochastic gradient descent with and without regularization, it did not follow any particular trend. It fluctuated with a minute difference for each case.

Comparing the MSE values of mini-batch gradient descent with and without regularization, it followed something similar to that of stochastic where the values fluctuated for each case.

MSE GRAPHS:
If you look at the MSE graphs of batch and mini-batch, with the increase in number of iterations, the curve of batch starts decreasing at the start and comes to a optimum value by 5 iterations whereas the curve of mini-batch starts off with a high value and suddenly drops to a lower value and it fluctuates along the optimum value and does not settle.

If you observe the MSE graphs for all the three algorithms, we can see that only batch gradient descent followed a steady curve whereas those of stochastic and mini-batch followed an irregular pattern.

LEARNING RATE:
We have also observed that stochastic gradient descent was much more sensitive to learning rate than the other two. If you compare the learning rates of batch, mini-batch vs stochastic, it was much smaller.

EFFECT OF 'SEX' ATTRIBUTE:
We have observed that in majority of the cases, 'sex' had the least weight but the MSE value did not change much after dropping the 'sex' attribute. So, we can conclude that the presence of 'sex' attribute did not matter much.

THRESHOLD:
We have considered the threshold value for each case by displaying the MSE values first and recording the lowest value which could be considered as a threshold.