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Assignment 1: Systolic Blood Pressure Prediction **Report**

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1. **Basic Implementation:**
- The regression equation is: SBP = w1*DBP + w0

2. **Advanced Implementation:**
- The variables I used in the advanced implementation are: temperature, heart rate, respiratory rate, and oxygen saturation
- The multiple regression equation is: SBP = w0 + w1 * temperature + w2 * heart rate + w3 * respiratory rate + w4 * oxygen saturation
- The main difference between basic and advanced implementation is the number of variables used, therefore in basic implementation I build a simple linear regression, while I used multiple linear regression to build the model in advanced part

3. **Difficulties and solutions:**
- One of the difficulties for me is to preprocess the data, because it requires some prior knowledge of statistics in order to detect and remove the outlier. Therefore, I have to search online to learn more about outliers
- Another difficulty I encountered is choosing the learning rate and the initial weights so that the gradient descent does not diverge. In order to do so, I have to run a lot of experiments to find the most optimal rate

4. **Reflections:**
- After finishing assignment 1, I have learned the basics of building a regression model, specifically to predict systolic blood pressure. This task involves a series of crucial steps, from data preparation and feature selection to model evaluation and interpretation. Though my model yielded promising results, it also revealed the complexities of predicting SBP accurately. Looking forward, I recognize the need for further refinements. This assignment has not only expanded my practical knowledge but also reinforced my enthusiasm for the field of data analysis and predictive modeling.