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EE257 Homework 2

1. The three different ways that we can use python code to solve linear regression problems are using normal equations with the numpy package, fitting a line to the data using the sklearn package, and lastly, using the statistical library to fit a line to the data.
2. **Problem 3:**
3. Since gender is Female = 1 and Male = 0, the equation becomes:

This means that iii) is correct since if the GPA > 3.5 males will earn a higher starting salary than females.

1. False. We cannot base this off of just the last term. We would need to perform a null hypothesis test on the relationship between the two variables, setting the coefficient to 0.

**Problem 5:**

B) The data provided in the dataset is 9568 data points measuring the variables ambient temperature (AT), exhaust vacuum (V), ambient pressure (AP), relative humidity (RH), and the power output with these variable values (PE). These data points were measured at a Combined Cycle Power Plant over 6 years. There are 4 attributes with one output. None of the data points from any of the attributes or the output are missing. The measurements were taken from 2006-2011.

C) The three sheets seem to contain identical sets of data. The only discernable difference appears to be the order in which the data is presented.

D)

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F)

* Yes, there is a relationship between the predictor (AT) and the response (PE).
* From the data, the relationship appears to be very strong, the R-squared value is 0.899 which is very close to 1.
* The relationship is negative since the coefficient for AT is negative.
* When AT is 25 the output PE is 442.75112092982204.

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H)

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* Ambient temperature (AT) appears to have the most significant relationship with the output PE.
* The coefficient for AT suggests that AT is the most significant attribute in predicting the output PE. It also shows that the relationship between AT and PE is a negative relationship.

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1. The Turing test is a test to determine whether an AI has reached an intelligence that is equal to and indistinguishable from a human. The test giver must ask the machine, without the knowledge that the machine is a machine, a varying array of questions. If at the end of the test the test giver cannot confidently claim distinguish whether the test taker is human or not then the machine has passed the Turing test.