In our situation, we have a dependent variable which is log-transformed. Some of our predictors are log-transformed and some are not. So we need to look at slide 105 for the interpretation of the regression output:

*Dependent variable: LN(AGGRAVATED ASSAULTS)* ***Logged***

*Two Independent Variables (predictors):*

* *Log(median house value) (LNMEDHVALUE)* ***Logged***
* *Median house income, in $1000s (MEDHHINC)* ***Not Logged***

*DEPENDENT VARIABLE:* ***LN(AGGRAVATED ASSAULTS)***

*----------------------------------------------------------------------Variable Coefficient Std.Error t-Statistic Probability*

*----------------------------------------------------------------------*

*CONSTANT .. .. .. ..*

***LN****MEDHVALUE -5.03 0.47 -10.70213 0.0000*

*MEDHHINC -0.0056 0.00126 -4.44444 0.0000*

*----------------------------------------------------------------------*

*Interpretation:*

* ***Logged Predictor***
  + *A 1% increase in the median house value corresponds to a β = 5.03% decrease in the number of aggravated assaults*, *holding other predictors constant. Because the p-value is less than most frequently used levels of α (0.01, 0.05 or 0.1), LNMEDHVALUE is a significant predictor of LN(AGGRAVATED ASSAULTS)*. *That is, we can reject the null hypothesis that βMEDHVALUE = 0 (i.e., the estimated value of -5.03 is significantly different from 0).*
* ***Not Logged Predictor*** 
  + *A 1 unit (i.e., $1000) increase in the median household income corresponds to a β\*100% = .0056\*100%=0.56% decrease in the number of aggravated assaults*, *holding other predictors constant. Because the p-value is less than most frequently used levels of α (0.01, 0.05 or 0.1), MEDHHINC is a significant predictor of LN(AGGRAVATED ASSAULTS)*. *That is, we can reject the null hypothesis that βMEDHHINC = 0 (i.e., the estimated value of -0.0056 is significantly different from 0).*

***Homework Example***

*Dependent variable: LN(MEDIAN HOUSE VALUE, in $1000)* ***Logged***

*Two Independent Variables (predictors):*

* *Log(median household income, in $1000)(LNMEDHHINC)* ***Logged***
* *Percent vacant properties, in % (PCTVACANT)* ***Not Logged***
* *Percent single homes, in % (PCTSINGLES)* ***Not Logged***
* *Percent with higher education, in % (PCTBACHMOR)* ***Not Logged***

*DEPENDENT VARIABLE:* ***LN(MEDIAN HOUSE VALUE)***

*----------------------------------------------------------------------Variable Coefficient Std.Error t-Statistic Probability*

*----------------------------------------------------------------------*

*CONSTANT .. .. .. ..*

***LN****MEDHHINC 0.352 0.022 16.32 <0.0001*

*PCTVACANT -0.014 0.001 -14.58 <0.0001*

*PCTSINGLES 0.003 0.001 3.89 0.0001*

*PCTBACHMOR 0.019 0.001 34.20 <0.0001*

*----------------------------------------------------------------------*

*Interpretation:*

* ***Logged Predictor***
  + *A 1% increase in the median household income corresponds to a \_\_\_\_\_ increase in the median house value.*
* ***Not Logged Predictors*** 
  + *A 1 unit (i.e., a 1%) increase in vacancy rates corresponds to a \_\_\_\_\_\_\_\_\_\_ decrease in median house value.*
  + *A 1 unit (i.e., a 1%) increase in single homes corresponds to a \_\_\_\_\_\_\_\_\_\_ increase in median house value.*
  + *A 1 unit (i.e., a 1%) increase in % of individuals with at least a bachelor’s degree corresponds to a \_\_\_\_\_\_\_\_\_\_ increase in median house value.*

*For each variable above, also state whether it is significant, and whether the null hypothesis could be rejected.*