MAT: 3312 Homework assignment 6 (Regression Analysis)

Name:_____ Date:_____

Due: April 28th at 12:40. Upload to canvas.

The table below is from a sample of SBP of kids who are average height.

Age (x)	SBP^{ns} (y)	Age (x)	SBP^{ns} (y)
1	99	10	115
2	102	11	117
3	105	12	120
4	107	13	122
5	108	14	125
6	110	15	127
7	111	16	130
8	112	17	132
9	114		

Input the data above into SAS.

Question 1. Run a linear regression model to determine relating age to Systolic Blood Pressure. Paste output here (Analysis of Variance and Parameter estimate tables).

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The REG Procedure
Model: MODEL1
Dependent Variable: SBP

Number of Observations Read	17
Number of Observations Used	17

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	1502.66912	1502.66912	1012.03	<.0001
Error	15	22.27206	1.48480		
Corrected Total	16	1524.94118			

Root MSE	1.21853	R-Square	0.9854
Dependent Mean	115.05882	Adj R-Sq	0.9844
Coeff Var	1.05905		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	97.78676	0.61816	158.19	<.0001
age	1	1.91912	0.06033	31.81	<.0001

Question 2. Provide an interpretation of the parameter estimate for age. SBP increases 1.91912 units for every one-unit increase in age.

Question 3. Provide an interpretation of the parameter estimate for the intercept. SBP is 97.78676 when age is zero.

Question 2. Test for the statistical significance of this regression line using the F test. What is the F-test statistics? 1012.03

Question 3. What is the p-value from the F-test statistics? 0.001

Question 4. What is the conclusion for based on the p-value from the F test? We reject the null hypothesis because we can conclude that our model provides a better fit than the intercept only model.

Question 5. Test for the statistical significance of the regression line using the t-test. What is the t-test statistics? 31.81

Question 6. What is the p-value from the t-test statistics? 0.001

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Question 7. What is the conclusion for based on the p-value from the t test?

0.001< 0.05

We reject the null hypothesis because there is evidence that there is a significant relationship between SBP and kids of average height.

Paste code here.

```
/* import the data*/
data sample; /* creating a dataset*/
input age SBP; /* creating names for variables*/
cards;
1 99
2 102
3 105
4 107
5 108
6 110
7 111
8 112
9 114
10 115
11 117
12 120
13 122
14 125
15 127
16 130
17 132
;
run;

/* run regression model of age and SBP*/
proc reg data= sample;
model SBP= age;
run;
```