## IT3011 - Take home Assignment III Regression Analysis.

Q1) Take data in the following table give the heart rate at rest (Y) and body Weight (X) in kilograms

X	Y	X [independent] = body. weight
90	62	Y [dependent] = heart, rate
86	45	
67	40	
89	55	
18	64	
75	53	

a) Graph these data. Does it appear that there is a linear relationship between body weight and heart rate at rest ?

For R studio, first insert above data into the CSV files and Write below code to import the CSV file.

HRBW (- read, CSV ("C: | users | MSI | Desktop | HR\_BV, CSV", header=

attach (HRBW)

Plot (body, weight, heart. rate, pch = 21, col = "blue",
bg = "red")

below shows the scatter plot corrosponding to the data given

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	Body Weight
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7.	according to the graph x and y have a linear relationship
7.	and to check how strong their lelationship we can it
7.	below R code. I have more placed and all and all the can was
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7.	below R code.  Cor (body, weight, heart, rate)  = 0.568705 [Moderate positive linear
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3.	below R code.  Cor (body, weight, heart. rate)  = 0.568705 [Moderate positive linear Relationship]  Further we can perform cor correlation to the content of
42	below R code.  Cor (body, weight, heart, rate)  = 0.568705 [Moderate positive linear Relationship]
- 4 e	below R code.  Cor (body, weight, heart. rate)  = 0.568705 [Moderate positive linear Relationship]  Further we can perform Cor correlation test and get positive that we can use R code:-
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A	below R code.  Cor (body, weight, heart. rate)  = 0.568705 [Moderate positive linear Relationship]  Further we can perform Cor correlation test and get P value to Check Whether Ho is rejected or not. for that we can use R code:  Cor. test (body. weight, heart. rate)
*	below R code.  Cor (body, weight, heart. rate)  = 0.56870's [Moderate positive linear Relationship]  Further we can perform cor correlation test and get P value to Check Whether Ho is rejected or not. for that we can use R code:  Cor. test (body. weight, heart. rate)  From That we can get P-value as 0:2389.50 gt 5:4
A	below R code.  Cor (body, weight, heart. rate)  = 0.568705 [Moderate positive linear Relationship]  Further we can perform Cor correlation test and get P value to Check Whether Ho is rejected or not. for that we can use R code:  Cor. test (body. weight, heart. rate)  From That we can get p-value as 0:2389. So at 5%, Significance level we do not reject H. (H > R - 0)
*	below R code.  Cor Cbody, weight, heart. rate)  = 0.568705 [Moderate positive linear Relationship]  Further we can perform Cor correlation test and get P value to Check Whether Ho is rejected or not. for that we can use R code:  Cor. test Cbody. weight, heart. rate)  from That we can get p-value as 0:2389. So at 5%, Significance level we do not reject Ho CHo \$\$\beta\$ = 0) for the conclude the x and y have a relationship.
*	below R. code.  Cor (body, weight, heart. rate)  = 0.56870s [Moderate positive linear Relationship]  Further we can perform Cor correlation test and get P value to Check Whether Ho is rejected or not. for that we can use R code:  Cor. test (body. weight, heart. rate)  From That we can get P-value as 0:2389. So at 5%, Significance level we do not reject Ho (Ha) \$ = 0 }  : We can Conclude the x and y have a relationship (Moderate positive linear)
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*	From That we can get p-value as 0:2389. So at 5%, Significance level we do not reject the CHOP positive linear conclude the x and y have a relationship conclude

· HRBwmodel <- Im (heart, rate ~ body, weight)

To view the values corresponding to the B, and B, i-s

using above R code we can view Bo and B, -

 $\hat{\beta} = 4.7990$   $\hat{\beta} = 0.5947$ 

Regression equation  $\Rightarrow \hat{y} = \hat{\beta} + \hat{\beta} \times \hat{y} = 4.7990 + 0.5947 \times \%$ 

To plot the regression line on graph used below R code = abline (4,7990, 0,5947)

Interpret the estimated regression coefficients = ?

as linear slopes. The body weight coefficients in the regression equation is 0.5947. This coefficient represents the mean increase of heart rate in units for every additional one unit in Weight.

If weight increases by 1 unite. the average heart rate increases by 10.5947! Units.

31. d)	construct the ANOVA table and test the significance of						
	the regression model at 5% level of significance						
naue	[clearly state the hpypothesis that you are going to test]						
	anova (HRBWmodel)						
	Df Sq Sq Value Pr (>f)						
	body. weight   141.93   141.93   1.9122 0.2389 Residuals 4 296.90 74.225						
	B = body.weight						
	Ho→B = 0 VS H → B = 0 Pyalue = 0.2389  Reject Ho if & 0.05 > Pvalue						
	: at 5% significance level p value is greater than occivalue						
	assumption of the linear relationship between x and x is false						
Q1. C)	Obtain the residuals and test the model assumption.  Residuals = e <sub>1</sub> = 3.679, e <sub>2</sub> = -10.942, e <sub>3</sub> = -4.643						
	10 10st pesidents 21 1281019511 = 1141032 2 9 26 = 3,600						
	To test residuals > Plot (HRBW model)						
	1st graph -> Residuals vs fitted Coots are allover the graph						
	and no pattern is visible so we can say  X & Y are linearly related						
	The state of the s						
	2nd graph > Normal Q-Q (ran't say exactly.: perform Shapiro test)						
	3rd graph - Scale Location (check the assumption of constant						
	there no constent varience in assumption is not violated						
	RI HORSE OF STREET STREET WITH THE THE TENERS OF THE TENER						
	A the graph - Residuals us Levelage (Check the out liers)						
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	Shapiro. test Cheart. rate ) non a botting and trabusto A (10
	Shapho. 199
	p-value = 0,7116 and only priess entribung o
	I - age is normally violated and an entrainment
	H = 08 is normally distributed and 2 = 0.05 mold
	reject to it TValue < a at 5 1. Sia: level
1.	at 5% Significance level we do not reject the So we can
	conclude x and y are normally distributed assumption is not
	violated. 18.000 + 1000 + 1000 Bengage Marsesman
, <b>e</b> )	What can you say about the fitted model?
(1)	HRBWmodel & Im Cheart rate w body. Weight ) from Summary Summary (BPBWmodel) , rapide
	summary C. DI Brimodell , x. gode
1	is oxioned y model is office away from the fitted model
2)	using plot (body, weight, heart, rate, pch=21, col="blue", bg="red
	and abline (4.7990, 0.5947) We can compare fitted model
	and our graph ! 1 (2 928 92M)
,	723-10101 = 328 in 1-9
3).	Summary (HRBWmodel) 922 - 21 8157 FF
	- 1200 = 02364   1 = 6651 4 F
	We can vsee the values of ->
-	coefficients: -
	Intercept = 4.7990 Body, Weight = 0.5947
81	9472
	: Model is fitted so the accuracy level of the fitted
	model is [R2] = 0.3234//
	the same of the sa
	The second secon
	and the second s
- 67	

for a particular brand of automobile tire an experiment Q2) was carried out to examine the relationship between temperature (x, in f) and tread wear of a tire (Y). The following data ware collected x [independent] = Temperature Y [dependent] = Wear a) plot the data and interpret the graph. autoM <- read. csv ("c: \users\\ MSI \Desktop\\ AutoMobile. csv"; header = TRUE) attach (autoM) autoM Plot (Temperature, Wear, pch = 21, col = "blue", bg = "red") cor (Temperature, Wear) = -0.2907 / WALLET FROM STORE 81 UNIX This graph interpret weakly negative linear relationship b) compute the pearson Product Moment correlation coefficient and test its significance at 5% level. Interpret the results To get correlation coefficient used a r code below, cor, test (Temperature, wear) from this it gives the p value as = 0,2575 . So at 51. Significence level & value = 0.050, SO Ha Copvalue We colo not reject to . We can Conclude that the temperature and wear idoes mot have a linear relationship. So our first assumption of the linear itelationship is false.

C	) fit a simple linear regression model -
	Les and the second of the seco
	Tival III P STUDIO
	below code.
	Automodel (- Im (Wear ~ Temperature)
	Summary (AutoModel) has and suff told
	sammary charotery
1000	After executing above code we can have a value for
	R and A
	β and β = 2.5678
	B = -0.00427
	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	equation for the simple linear regression model -
	$\hat{y} = \hat{\beta} + \hat{\beta} \times$
	ŷ = 2.5678 - 6.00427 x y
ď	perform the residual analysis and state your comments
	on the regression assumptions.
כיכתנ	The provider the provider Product Moment Correlation Con
	To test residuals -> Plot (Automodel)
- 1	1 St graph -> Residuals vs fitted Coots are allover the
	paranis visible so we can so
	A di are linearly related
	2 nd graph - Normal Q-Q (Check Data is normaty distributed
1 12	exactly come to a conclution
	per form snapiro test
7,34	3rd graph -> Scale Location Ccheck the occurrence
0914 4	The partern is visible so we
	varience : assumption is
	not violated.
	Atlas (7>N>p>)

graph 04 - Residuals vs Leverage (Check Whether there are

There are outliears in the graphs which we obtained

p-value = 0.2734

Ho = dea is normally distributed d = 0.05 M Rejecto Ho if P value & at 5% sig. level at 5% significance level we do not reject Ho. So we can conclude Temperature and wear are normally distributed assumption is not violated.

e) constraict the ANOVA table and test the Significance of the regression model at 5% level of Significance. [clearly State the hypothesis that you are going to test]

anova ( Automodel)

H -> Temperature (B) = 0 p value = 0.2575

Reject H of a = 0.05 > P value

Since pralue Goi 2575) Tever Goi De Die dos not srejectivités est Bilicon Significant level Me do donot reject Ho hence we have enough evidence to conclude that B=0

Perform a Lack of fit test and test Whether the Simple linear regression model is adequate or not  AutoModel — I'm (Wear ~ Temperature) [This is the reduced model]  Summory (AntoModel)  Fac. Temp = Las. factor (Temperature)  Model.aov = aov(Wear ~ fac. Temp) [This is the fail model]  Summory (Model.aov)  anova (Model.aov)  anova (AutoModel, Model.aov)  Need execute the above commands to get the anova table of AutoModel model and Model.aov. model And get the below out put  Model 1: Wear N fact. Temp  Res. DF Rss DF sumarsq F P(Cyr)  15 0.594915  9 0.09778 6 0.49716 7.6265 0.005955  Model 1 is the usual linear regression model; SSE(R) = 0.57495  Model 2: Stelling R to consider Temperature as a "factor" instead of a continuous variable.  SSE(F) = 0.09778 = SSE(PE) [f=full, PE = Pure error]  The Lack of fit SSE is SSE(Lf) = SSE(R) - SSE(F)  - 0.59495 - 0.09778  F. 0.49725/G = 0.082875  0.09778/q 0.010865  - 7.62770  Reject H, because the P-value = 0.003965, 0.01 = 0.0000376		
linear regression model is adequate of model  AutoModel — I'm (wear ~ Temperature) [This is the reduced  AutoModel — I'm (wear ~ Temperature) [This is the fail model]  anova (AutoModel)  fac. Temp	t,	Perform a lack of til test and test whether the simple
AutoModel - I'm ( Wear ~ Temperature) [This is the reduced model]  Summary (Awromodel)  fac. Temp		linear repression model is adequate or not
anova (AutoModel)  fac. Temp		reduced to the second of the s
anova (AutoModel)  fac. Temp		AutoModel - Im (Wear ~ Temperature) [This is the reduced
anova (Automodel)  fac. Temp  fac. Temp  Model.aov  aov (Wear afac. Temp)  CThis is the feat model  Summary CModel.aov)  anova (Model.aov)  anova (Automodel, Model.aov)  Need execute the above commands to get the anova table  Of Automodel model and Model.aov model, And get the  Delow out put.  Model 1: Wear on fact. Temp  Res. DF Sum of sq. F P(C)  15 0.59495  9 0.09178 6 0.49716 7.6265 0.003965  Model 1 is the usual linear regression model; SSE(R) = 0.57495  Model 2 is telling R to consider Temperature as a factor instead of a continuous variable.  SSE(F) = 0.09778 = SSE(PE) [f=full, PE=pure error]  The Lack of fit SSE is SSE(LEf) = SSE(R) - SSE(F)  = 0.59495 - 0.09778  F* 0.49725/6 = 0.082875  O.09778/q 0.010865  = 7.62770  Reject H, because the P-value = 0.003965, 0.01 = 0.0003965		Summary (AutoModel) [This is the fall model]
Model 1: Wear a Temperature  Model 1: Wear a fact Temp  Res. DF Sumo(sq. F PIC)  15 0.59495  Model 1: the usual linear regression model; SSE(R) = 0.57495  Model 2: stelling R to consider Temperature as a "factor" instead of a continuous variable.  SSE(F) = 0.09778 = SSECPE) [f=full, PE = Pure error]  The Lack of fit SSE Is SSE(LLf) = SSE(R) - SSEC(f)  = 0.49725 / 6 = 0.082875  0.09778 / 9.010865  = 7.62770  Reject H, because the P-value = 0.003965, 0.01 = 0.000365		
Model 1: Wear a Temperature  Model 1: Wear a fact Temp  Res. DF Sumo(sq. F PIC)  15 0.59495  Model 1: the usual linear regression model; SSE(R) = 0.57495  Model 2: stelling R to consider Temperature as a "factor" instead of a continuous variable.  SSE(F) = 0.09778 = SSECPE) [f=full, PE = Pure error]  The Lack of fit SSE Is SSE(LLf) = SSE(R) - SSEC(f)  = 0.49725 / 6 = 0.082875  0.09778 / 9.010865  = 7.62770  Reject H, because the P-value = 0.003965, 0.01 = 0.000365		fac. Temp de as. factor (Temperature)
Summary CModel, aov)  anova (Model, aov)  anova (AutoModel, Model, aov)  Need execute the above commands to get the anova table  Of "AutoModel" model and "Model, aov", model, And get the  below out put  Model 1: Wear of Temperature  Model 2: Wear of fact, Temp  Res. DF Rss DF sum of sq. F PICTE  15 0.59495  9 0.09778 6 0.49716 7.6265 0.005985  Model 1 is the usual linear regression model; SSE(R) = 0.57495  Model 2: stelling R to consider Temperature as a "factor" instead of a continuous variable.  SSE(F) = 0.09778 = SSE(PE) [f=full, PE=Pure error]  The Lack of fit SSE is SSE(LF) = SSE(R) - SSE(F)  = 0.59495 - 0.09778  F* 0.49725/6 = 0.082875  0.09778/9 0.010865  = 7.62770  Reject H, becouse the P-value = 0.003965, 0.01 = 0.0003965		Model, aov ( wear ofac . Temp) [This is the fall model
Anova ChutoModel, Model, aov)  Need execute the above commands to get the anova table  Of "AutoModel" model and "Model, aov" model, And get the Co  below out put.  Model 1: Wear N Temperature  Model 2: Wear N fact. Temp  Res. DF Rss DF sum of sq F PICTA  15 0.5949s  9 0.09778 6 0.49716 7.6265 0.003965  • Model 1 is the usual linear regression model; SSE(R) = 0.59495  • Model 2 is telling R to consider Temperature as a "factor" instead of a continuous variable.  • SSE(F) = 0.09778 = SSE(PE) [ F=full PE = Pure error]  • The Lack of fit SSE is SSE(LLF) = SSE(R) - SSE(F)  = 0.49725/6 = 0.082875  0.09778/9 0.010865  = 7.62770  Reject H, because the P-value = 0.003965, 0.01 = 0.0003865		Summary (Model, aov)
Need execute the above commands to get the anova table  Of "AutoModel" model and "Model, aov". model, And get the  below out put  Model 1: Wear N Temperature  Model 2: Wear N fact. Temp  Res. DF Rss DF Sum of Sq. F PICYF)  15 0.59495  9 0.09778 6 0.49716 7.6265 0.005965.  Model 1 is the usual linear regression model; SSE(R) = 0.59495  Model 2 is telling R to consider Temperature as a "factor" instead of a continuous variable.  SSE(F) = 0.09778 = SSE(PE) [f=full, PE = Pure error]  The Lack of fit SSE is SSE(Lf) = SSE(R) - SSE(F)  = 0.49725/6 = 0.082875  0.09778/9 0.010865  = 7.62770  Reject H, because the P-value = 0.003965, 0.01 = 0.0003865		anova (Model, aov)
Model 1: Wear ~ Temperature  Model 1: Wear ~ Temperature  Model 2: Wear ~ Sact. Temp  Res. DF Rss DF Sumo(sq F Pr(7f))  15 0.5949s  9 0.09778 6 0.49716 7.6265 0.003965  Model 1 is the usual linear regression model; SSE(R) = 0.5949s  Model 2 is telling R to consider Temperature as a "factor" instead of a continuous variable.  SSE(F) = 0.09778 = SSE(PE) [f=full, PE = Pure error]  The Lack of fit SSE is SSE(LLF) = SSE(R) - SSE(F)  = 0.59495 - 0.09778  F* 0.49725/6 = 0.082875  0.09778/9 0.010865  = 7.62770  Reject H, because the P-value = 0.003965, 0.01 = 0.0003965	1-0.7	anova (Automodel, Model, aov)
Model 1: Wear ~ Temperature  Model 1: Wear ~ Temperature  Model 2: Wear ~ Sact. Temp  Res. DF Rss DF Sumo(sq F Pr(7f))  15 0.5949s  9 0.09778 6 0.49716 7.6265 0.003965  Model 1 is the usual linear regression model; SSE(R) = 0.5949s  Model 2 is telling R to consider Temperature as a "factor" instead of a continuous variable.  SSE(F) = 0.09778 = SSE(PE) [f=full, PE = Pure error]  The Lack of fit SSE is SSE(LLF) = SSE(R) - SSE(F)  = 0.59495 - 0.09778  F* 0.49725/6 = 0.082875  0.09778/9 0.010865  = 7.62770  Reject H, because the P-value = 0.003965, 0.01 = 0.0003965		
Model 1: Wear N Temperature  Model 2: Wear N fact. Temp  Res. DF Rss DF Sum of Sq. F PICTED  15 0.59495  9 0.09778 6 0.49716 7.6265 0.005965  Model 1 is the usual linear regression model; SSE(R) = 0.59495  Model 2:s telling R to consider Temperature as a "factor" instead of a continuous variable.  SSE(F) = 0.09778 = SSE(PE) [f=full, PE = Pure error]  The Lack of fit SSE is SSE(Lf) = SSE(R) - SSE(F)  = 0.59495 - 0.09778  F* 0.49725/6 = 0.082875  0.09778/9 0.010865  = 7.62770  Reject H, because the P-Value = 0.003965, 0.01 = 0.0003965		
Model 1: Wear ~ Temperature  Model 2: Wear ~ fact. Temp  Res. DF Rss DF sum of sq. F PICY()  15 0.59495  9 0.09778 6 0.49716 7.6265 0.005965  • Model 1 is the usual linear regression model; SSE(R) = 0.59495  • Model 2 is telling R to consider Temperature as a "factor" instead of a continuous variable.  • SSE(F) = 0.09778 = SSE(PE) [ f=full, PE = pure error]  • The Lack of fit SSE is SSE(Lf) = SSE(R) - SSE(F)  = 0.49725 / 6 = 0.082875  0.09778 / 9 0.010865  = 7.62770  Reject Ha becouse the P-Value = 0.003965, 0.01 = 0.0003166		
Model 1: Wear ~ Temperature  Model 2: Wear ~ fact. Temp  Res. DF Rss DF Sum O(sq F P1C76)  15 0.59495  9 0.09778 6 0.49716 7.6265 0.005965  Model 1 is the usual linear regression model; SSE(R) = 0.59495  Model 2 is telling R to consider Temperature as a "factor" instead of a continuous variable.  SSE(F) = 0.09778 = SSE(PE) [ f=full, PE = Pure error]  The Lack Of fit SSE is SSE(Lf) = SSE(R) - SSE(F)  = 0.49725  F* 0.49725/6 = 0.082875  0.09778/9 0.010865  = 7.62770  Reject H, because the P-value = 0.003965.001 = 0.0003965	1 100	
Res. DF Rss DF Sum of sq. F PICTO 15 0.59495  9 0.09778 6 0.49716 7.6265 0.005965  • Model I is the usual linear regression model; SSE(R) = 0.59495  • Model 2 is telling R to consider Temperature as a "factor" instead of a continuous variable.  • SSE(F) = 0.09778 = SSE(PE) [f=full, PE = Purc error]  • The Lack of fit SSE is SSE(LF) = SSE(R) - SSE(F)  = 0.59495 - 0.09778  = 0.49725  F* 0.49725/6 = 0.082875  0.09778/9 0.010865  = 7.62770  Reject H, because the P-value = 0.003965, 0.01 = 0.0003965	7	State the hypothesis that you are going to test !
Res. DF Rss DF Sum of sq. F PICTY)  15 0.59495  9 0.09778 6 0.49716 7.6265 0.003965  • Model I is the usual linear regression model; SSE(R) = 0.59495  • Model 2 is telling R to consider Temperature as a "factor" instead of a continuous variable.  • SSE(F) = 0.09778 = SSE(PE) [f=full, PE = Pure error]  • The Lack of fit SSE is SSE(LLF) = SSE(R) - SSE(F)  = 0.59495 - 0.09778  = 0.49725  F* 0.49725/6 = 0.082875  0.09778/9 0.010865  = 7.62770  Reject H, because the P-value = 0.003965.000 = 0.0003985		Model 2: Wear N Jemperature
9 0.09778 6 0.49716 7.6265 0.003965  • Model I is the usual linear regression model; SSE(R) = 0.59495  • Model 2 is telling R to consider Temperature as a "factor" instead of a continuous variable.  • SSE(f) = 0.09778 = SSE(PE) [f=full, PE=Pure error]  • The Lack of fit SSE is SSE(LLf) = SSE(R) - SSE(f)  = 0.59495 - 0.09778  = 0.49725  F* 0.49725/6 = 0.082875  0.09778/9 0.010865  = 7.62770  Reject H, because the P-value = 0.003965, 0.01 = 0.000398		
9 0.09778 6 0.49716 7.6265 0.003965  • Model I is the usual linear regression model; SSE(R) = 0.59495  • Model 2; s telling R to consider Temperature as a "factor" instead of a continuous variable.  • SSE(f) = 0.09778 = SSE(PE) [f=full, PE=Pure error]  • The Lack of fit SSE is SSE(Lf) = SSE(R) - SSE(f)  = 0.59495 - 0.09778  = 0.49725  F* 0.49725/6 = 0.082875  0.09778/9 0.010865  = 7.62770  Reject H, because the P-value = 0.003965, 0.0] = 0.0003965		
• Model 1 is the usual linear regression model; SSE(R) = 0.59495  • Model 2 is telling R to consider Temperature as a "factor" instead of a continuous Variable.  • SSE(f) = 0.09778 = SSE(PE) [f=full, PE = Pure error]  • The Lack of fit SSE is SSE(Lf) = SSE(R) - SSE(f)  = 0.59495 - 0.09778  = 0.49725  F* 0.49725/6 = 0.082875  0.09778/9 0.010865  = 7.62770  Reject H, because the P-value = 0.003965, 0.01 = 0.0003965	1798	
• Model 2 is telling R to consider Temperature as a "factor" instead  of a continuous Variable.  • SSE (f) = 0.09778 = SSE(PE) [f=full, PE = Pure error]  • The Lack of fit SSE is SSE (Lf) = SSE(R) - SSE(f)  = 0.59495 - 0.09778  = 0.49725  F* 0.49725/6 = 0.082875  0.09778/9 0.010865  = 7.62770  Reject H, because the P-Value = 0.003965, 0.01 = 0.0003965		1.6265 6.003965
• Model 2 is telling R to consider Temperature as a "factor" instead  of a continuous Variable.  • SSE (f) = 0.09778 = SSE(PE) [f=full, PE = Pure error]  • The Lack of fit SSE is SSE (Lf) = SSE(R) - SSE(f)  = 0.59495 - 0.09778  = 0.49725  F* 0.49725/6 = 0.082875  0.09778/9 0.010865  = 7.62770  Reject H, because the P-Value = 0.003965, 0.01 = 0.0003965	0	Model 1 is the usual linear regression model: SSF(P) = 0.59195
of a continuous variable.  • SSE (f) = 0.09778 = SSE(PE) [f=full, PE = Pure error]  • The Lack of fit SSE is SSE (Lf) = SSE(R) - SSE(f)  = 0.59495 - 0.09778  = 0.49725  F* 0.49725/6 = 0.082875  0.09778/9 0.010865  = 7.62770  Reject H, because the p-value = 0.003965, 0.01 = 0.0003965	0	Model 2 is telling R to consider Temperature as a "factor" includ
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2 May 2 L May 2		Reject Ho because the p-value = 0.003965. 0.01 = 0.00003965
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Mmodel (-Im(Y~ XI + X2 + X3)  Summary (Mmodel)  Adjusted R-Squared: 0.9856//  Multiple R² value = 0.9821 and Adjusted R² value = 09856  So Adjusted R² value decreases because of the predictor improves the model by less than expected.  d) Construct the Anova table and test the significance the parameters.  —anova (Mmodel)  Analysis of variance Table  Source of 1 ss df mean sum of squres F-value variation  Règlession 9011 1714 P-17361 901.7/3 144 F 7 3003.9	C. Compur	e the	adjust	red R2	value and int	respect the	
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P3 10 = 18 value = 0.68224 :. Reject H	11010		0		- 4	rependent	
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In the above ANOVA table We can find that f value vel is 389.0356 P-1=3 -> degree of freedom 1 n-p=14 -> df2 at 5% level of significance, F-table Value = 3.344 f = 3,344 Reject H if f cal > f 3.14 Since 389.0356 > 3.344 : . We can reject H

04)	A student has fitted a multiple linear regression with						
	6 Diedictors using los observations The nie						
	Constructed	in the a	nalysis is	given below.	fill in the		
	blanks of	the table.	In antiken	mann el est	11		
	and the second	1000 14 2	CONTRACT CAR	19. 4391 24 .	1		
1 1	Source of Variation	Degrees of freedom	Sum of Squares	Mean Squares (MS)	f		
	Regression	P-1 = 5	22364	4472.8	63.21130		
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1)	MSR - S	SR	2)	Total = SSR + SSE			
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