**Ans:**

**B0=-25.83718 and B1=1.12085**

**The outlier at (205.1,43.76) is removed we get**

**B1=** **1.603106**

i)When all observation (Including outlier)

**The estimated linear regression equation is**

**HeartRate^ =-25.83718+1.12085\*Weight**

> data=read.csv("C:/Users/POOJA/Desktop/data.csv",header=T)

> model=lm(HeartRate~Weight,data=data)

> model

Call:

lm(formula = HeartRate ~ Weight, data = data)

Coefficients:

(Intercept) Weight

-25.837 1.121

> summary(model)

Call:

lm(formula = HeartRate ~ Weight, data = data)

Residuals:

Min 1Q Median 3Q Max

-160.288 -4.369 1.325 8.445 23.993

Coefficients:

Estimate Std. Error t value Pr(>|t|)

(Intercept) -25.83718 6.04464 -4.274 4.26e-05 \*\*\*

Weight 1.12085 0.07595 14.757 < 2e-16 \*\*\*

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Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 18.63 on 104 degrees of freedom

Multiple R-squared: 0.6768, Adjusted R-squared: 0.6737

F-statistic: 217.8 on 1 and 104 DF, p-value: < 2.2e-16

> anova(model)

Analysis of Variance Table

Response: HeartRate

Df Sum Sq Mean Sq F value Pr(>F)

Weight 1 75609 75609 217.76 < 2.2e-16 \*\*\*

Residuals 104 36110 347

**ii)** excluding outlier

**The estimated linear regression equation is**

**HeartRate^ =-60.336 +1.603\*Weight**

> data1=read.csv("C:/Users/POOJA/Desktop/data1.csv",header=T)

> model2=lm(HeartRate~Weight,data=data1);model2

Call:

lm(formula = HeartRate ~ Weight, data = data1)

Coefficients:

(Intercept) Weight

-60.336 1.603

> summary(model2)

Call:

lm(formula = HeartRate ~ Weight, data = data1)

Residuals:

Min 1Q Median 3Q Max

-2.12549 -0.57916 0.04399 0.44793 2.50287

Coefficients:

Estimate Std. Error t value Pr(>|t|)

(Intercept) -60.335955 0.352557 -171.1 <2e-16 \*\*\*

Weight 1.603106 0.004554 352.0 <2e-16 \*\*\*

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Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.9481 on 103 degrees of freedom

Multiple R-squared: 0.9992, Adjusted R-squared: 0.9992

F-statistic: 1.239e+05 on 1 and 103 DF, p-value: < 2.2e-16

> anova(model2)

Analysis of Variance Table

Response: HeartRate

Df Sum Sq Mean Sq F value Pr(>F)

Weight 1 111383 111383 123912 < 2.2e-16 \*\*\*

Residuals 103 93 1