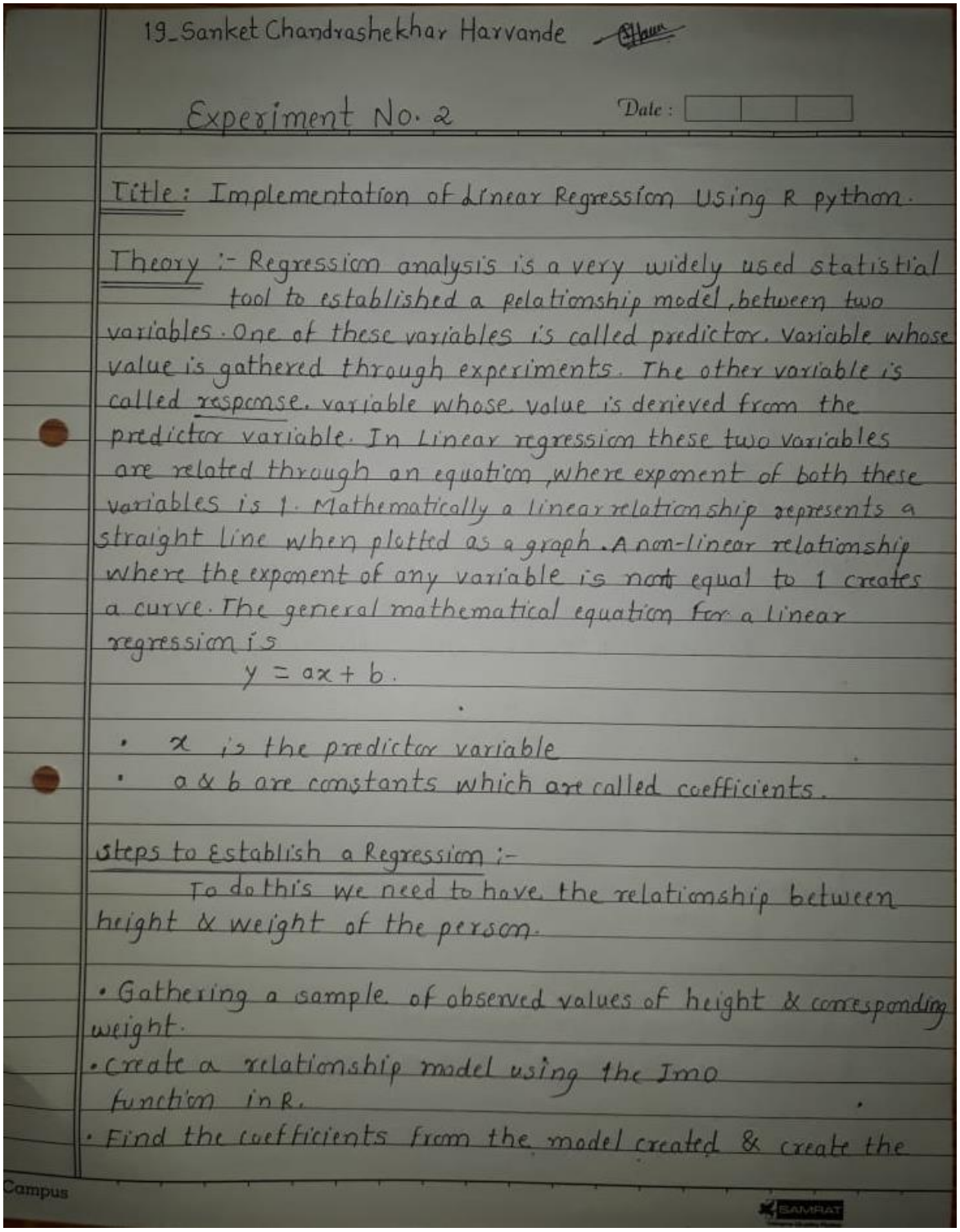
Experiment No :- 02



19_Sanket Chandrashekhar Harvande

Experiment No. 2 Date :

Title : Implementation of Linear Regression Using R python.

Theory :- Regression analysis is a very widely used statistial tool to established a relationship model, between two variables. One of these variables is called predictor. Variable whose value is gathered through experiments. The other variable is called response. variable whose value is derieved from the predictor variable. In Linear regression these two variables are related through an equation, where exponent of both these variables is 1. Mathematically a linear relationship represents a straight line when plotted as a graph. A non-linear relationship where the exponent of any variable is not equal to 1 creates a curve. The general mathematical equation for a linear regression is

$$y = ax + b.$$

- x is the predictor variable
- a & b are constants which are called coefficients.

steps to Establish a Regression :-

To do this we need to have the relationship between height & weight of the person.

- Gathering a sample of observed values of height & corresponding weight.
- Create a relationship model using the lm() function in R.
- Find the coefficients from the model created & create the

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- To predict the weight of new persons, use the predict() function in R.

Input Data :-

Below is the sample data representing the observations.

values of height

151, 174, 138, 186, 128, 136, 179, 163, 152, 131

values of weight

63, 81, 56, 91, 47, 57, 76, 72, 62, 48

Im() function :

This function creates the relationship model between the predicator & the response variable.

Syntax : The basic syntax for Im() function in linear regression is - Im(formula, data)

Create Relationship model & get coefficients.

```
x
<- c(161, 174, 138, 186, 128, 136, 179, 163, 152, 131)
y
<- c(63, 81, 56, 91, 47, 57, 76, 72, 62, 48)
```

Apply the Im() function

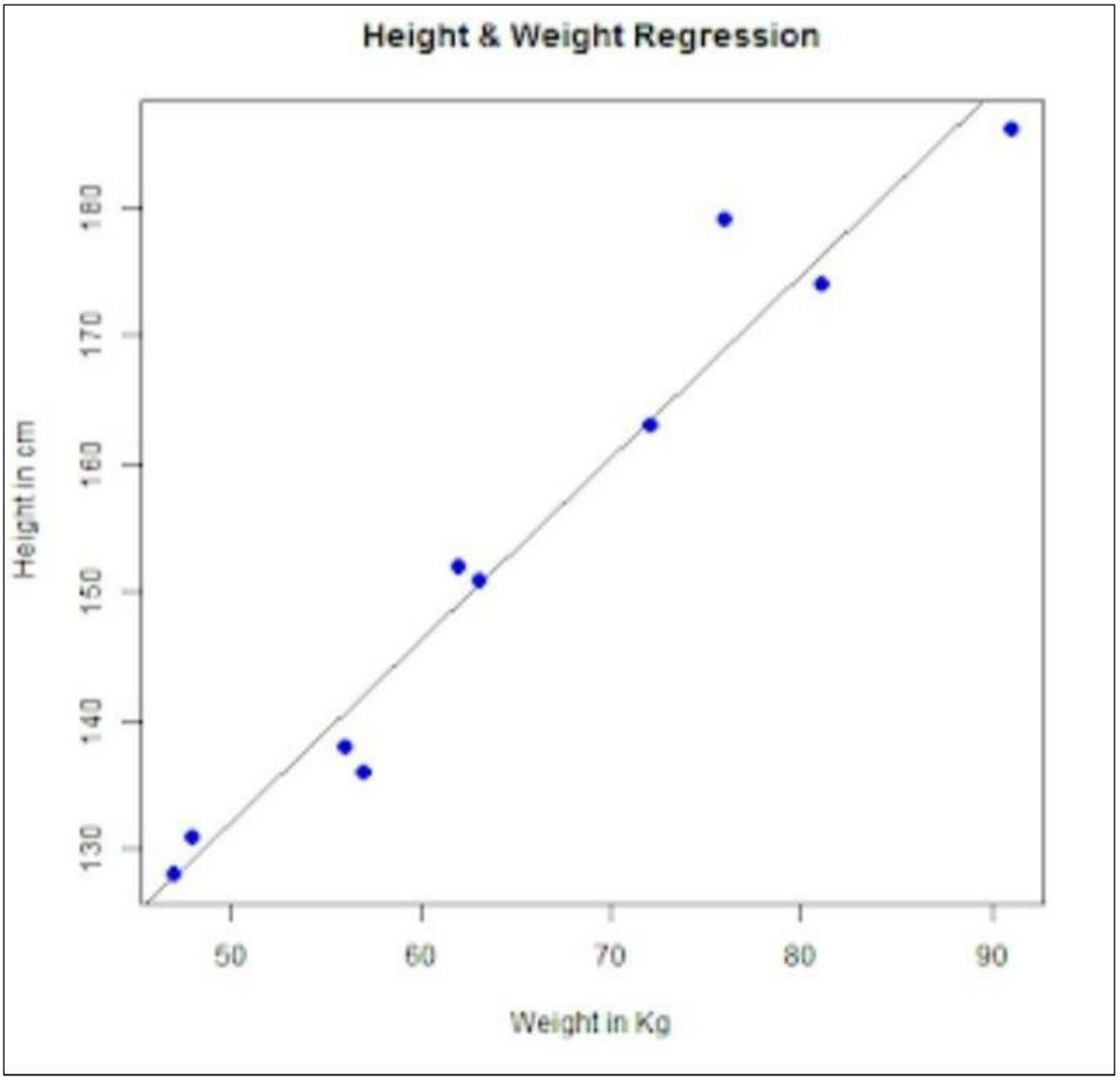
```
Relation
   <- Im(y~x)
print(relation)
```

Get the summary of the relationship

```
x <- c(151, 174, 138, 186, 128, 136, 179, 163, 152, 131)
y <- c(63, 81, 56, 91, 47, 57, 76, 72, 62, 48)
# Apply the lm() function
   <- lm(y~x)
print(summary(relation))
```

19_Sanket Chandrashekhar Harvande

OUTPUT :



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