Practical Intro-3

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Exercise 1:

a) consider the following data - similar to the example used for `practical Intro-1` - to generate a data frame named `DT`:

id	ht	wt	gender
1	155	80	m
2	152	85	m
3	164	45	f
4	175	69	m
5	193	86	f
6	203	110	f
7	190	106	f
8	183	96	m
9	155	90	f
10	169	89	m

b) Add a new categorical variable `bmi.grp` to the data frame which is defined as follows:

- bmi $\leq 18.5 \rightarrow$ underweight
- $18.5 <$ bmi $\leq 25 \rightarrow$ normal
- $25 <$ bmi $\leq 30 \rightarrow$ overweight
- $30 <$ bmi $\rightarrow$ obesity

c) Generate a vector `z` consisting of the first 30 elements of the Fibonacci series. By definition, the first two elements of this series are 0 and 1. All further elements are calculated as sum of the preceding two elements, so $z = 0, 1, 1, 2, 3, 5, \ldots$

Exercise 2:

a) load the internal R data set `mtcars` and view its help page to find out abouts its varaible description.

b) Fit a regression model of "Number of car cylinders"" on "Miles per gallon" using the function `lm(mpg ~ cyl, data=mtcars)` and assign the `Model` for that object. Then show `summary` of that object.

c) Write a function to extract the effect estimate, standard error and the p-value from a linear regression model. Call the function `beta_se`. Hint: use the regression model object as the input and extract summary(model)$coefficient.

d) Use the `beta_se` function to extract the effect estimates, standard errors and p-values of the regression models of (1)"Displacement" on "Miles per gallon" and (2) "Rear axle ratio" on "Miles per gallon".