PARTIAL 2: PROGRAMING FOR BUSINESS

RULES:

1. Duration: 1 hour 30 minutes.
2. Only 1 .R or .txt file will be delivered with the code of this partial.
3. The name of the file will be: SurnamesName.R
4. In your .R file, the student's identification data must appear in the first line, comment it.
   #Name and surname

Exercise 1 (2 points)

Define a function, called "Patients":

A) Define a data structure that allows to describe the Table 1. Insert the values that this table contains, names of the columns and rows, as it appears in Table1.

B) insert two columns: Gender and Age. The resulting table should look like table 2.

	Height	Weight
Ana	1.65	65
Pepe	1.74	80
Nacho	1.70	77
Bea	1.55	60
Gema	1.75	66
Alba	1.58	65

Table1. Height and Weight

	Height	Weight	Gender	Age
Ana	1.65	65	W	23
Pepe	1.74	80	M	43
Nacho	1.70	77	M	34
Bea	1.55	60	W	43
Gema	1.75	66	W	45
Alba	1.58	65	W	54

Table2. Height, Weight, Gender and Age

C) Insert two more columns:

*BMI: body mass index. It will be calculated: BMI = weight [kg] / (height)^2 [m2].

* "Weight Level": it will be calculated based in the BMI
  if the BMI is:
  Less than 18.5: write "Underweight";
  Between 18.5- less 25: write "Normal";
  Between 25.0 –30: write: "Overweight";
  More than 30: write "Obese"

	Height	**Weight**	**Gender**	**Age**	**BMI**	**Weight Level**
Ana	1.65	65	W	23	23.88	Normal
Pepe	1.74	80	M	43	26.42	Overweight
Nacho	1.70	77	M	34	26.64	Overweight
Bea	1.55	60	W	43	24.97	Normal
Gema	1.75	66	M	45	21.55	Normal
Alba	1.58	65	W	54	26.04	Overweight

Table3. Height, Weight, Gender, Age, BMI, Weight Level

D) Count: How many women are underweight/Normal/Overweight/Obese?

E) Add a new column, "Calculated Age", where it will be calculated:

a. If the weight level is underweight, calculated age will be: Age-2
b. If the weight level is normal, calculated age will be: Age
c. the weight level is overweight, calculated age will be: Age+4
d. the weight level is overweight, calculated age will be: Age+8

	Height	**Weight**	**Gender**	**Age**	**BMI**	**Weight Level**	**Calculated Age**
Ana	1.65	65	W	23	23.88	Normal	23
Pepe	1.74	80	M	43	26.42	Overweight	47
Nacho	1.70	77	M	34	26.64	Overweight	38
Bea	1.55	60	W	43	24.97	Normal	43
Gema	1.75	66	M	45	21.55	Normal	45
Alba	1.58	65	W	54	26.04	Overweight	58

Table4. Height, Weight, Gender, Age, BMI, Weight Level, CalulatedAge

F) Delete the rows which Weight Level is Normal and show the resulted table to the user (not use number of row, it can change)

G) Delete the columns Age and show the resulted table to the user

Exercise 2 (2 points)

In this exercise you will simulate the game “Bingo”.
To do this, define a function where you have a matrix of numbers, as you see in Figure 1. You can use this example to define in your function but remember that the number of rows and columns can change so **your function must work for any matrix.**

The function will have to:
1.- Ask a random number between 1 and 20 until making “bingo”.
2.- The function should check if the number is in the matrix. If it is in the matrix you have to change to 0
3.- You must check:
a) if you have made a "row", that is, if one or more of a whole row has 0. You must count and visualize the number of rows made
b) if you have made "column", that is, if one or more of a whole column has 0. You must count and visualize the number of columns made
c) if the player has made "bingo" (all the rows and columns are 0). In this case, you have to show a message “BINGO” and the function finishes.

Figure 1: Cardboard (example)

	Column1	Column2	Column3	Column4	Column5	Column6
Row 1	3	6	8	15	19	2
Row 2	1	5	2	4	6	7
Row 3	5	11	14	7	17	3
Row 4	7	17	18	11	6	14

NOTE: You mustn’t use the matrix as vectors. To go through the matrix, you have to use Name[row,column]

Example:

Number:6

	Column1	Column2	Column3	Column4	Column5	Column6
Row 1	3	0	8	15	19	2
Row 2	1	5	2	4	0	7
Row 3	5	11	14	7	17	3
Row 4	7	17	18	11	0	14

Number 17

	Column1	Column2	Column3	Column4	Column5	Column6
Row 1	3	0	8	15	19	2
Row 2	1	5	2	4	0	7
Row 3	5	11	14	7	0	3
Row 4	7	0	18	11	0	14

Number 19

	Column1	Column2	Column3	Column4	Column5	Column6
Row 1	3	0	8	15	0	2
Row 2	1	5	2	4	0	7
Row 3	5	11	14	7	0	3
Row 4	7	0	18	11	0	14

1 COLUMN: Number 5!!!!
…..etc