

Expected delivery of **lab_07.zip** must include:

- zipped project folder of the exercises 1 and 2
- this document compiled possibly in pdf format.



Exercise 1)

A tennis player is following a strict food diet, in which she must count the number of calories taken in from the food eaten and the sport performed. Write a program in **ARM assembly** language that counts the **number of total daily calories**, subtracting from those taken in through food, those consumed through sports.

```
Days                DCB 0x01, 0x02, 0x03, 0x04, 0x05, 0x06, 0x07

Calories_food       DCD 0x06, 1300, 0x03, 1700, 0x02, 1200, 0x04, 1900,
                    DCD 0x05, 1110, 0x01, 1670, 0x07, 1000

Calories_sport       DCD 0x02, 500, 0x05, 800, 0x06, 400

Num_days             DCB 7
Num_days_sport       DCB 3
```

Days is a table where each entry consists of a day of the week (e.g., 0x01 is Monday, 0x02 Tuesday, ..)

Calories_food is a table where each entry consists of two integer values: the ID of the day (4 bytes) and the quantity of calories assumed with food (4 bytes).

Calories_sport is a table where each entry consists of two integer values: the ID of the day (4 bytes) and the quantity of calories consumed with sport activities (4 bytes). Notice that not all days she plays sport.

Num_days is a 1-byte constant and indicates the number of days in a week.

Num_days_sport is a 1-byte constant and indicates the number of days she plays tennis.

Compute the **total number of days** she takes in less than 500 calories per day and store it in register R11.

Note: The constant data section must be defined in the code section, with 4096 boundary zero bytes.

Example:

```
...
// BOUNDARY (SPACE ....)
MY DATA
..
```

Exercise 2)

Save in two separate vectors `Calories_food_ordered` and `Calories_sport_ordered`, the ID of the days in descending order by calories assumed or consumed, respectively.

The output will be, for example:

```
Calories_food_ordered      DCD    0x04,0x03,0x01,0x06,0x02,0x05, 0x07
Calories_sport_ordered     DCD    0x05,0x02,0x06
```

Then, save in R11 the ID of the least “caloric” day.

Compute the needed bytes for the above vectors.

Vector	Size [bytes]
<code>Calories_food_ordered</code>	28
<code>Calories_sport_ordered</code>	12

Report the following program characteristics (Hint: See the build output window in Keil).

	Size [bytes]
Program Size	4264
Read Only data	84
Read Write data	40
Zero Initialized data	4096

And provide a brief explanation about which directives can influence the previous program characteristics.

Grazie alla direttiva `AREA` è possibile ritagliarsi un pezzo di memoria per poter leggere o leggere e scrivere