Computer Sciences – 22/06/2018 –**Duration: 2h**

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TEACHER:				

Question 1	Result
Convert the following decimal numbers to sign and magnitude (SM) format on 4 bits when possible; on the contrary case, mention why it is not possible. a. 7 b. 15 c. -6	*a:* *b:* *c:*
Important steps:	

Question 2	Output

Write the output of following code:
```int vet[5]={3,12,5,17,8},i,max=-1;```
```for(i=0;i<5;i++){```
   ```if(vet[i]>max)```
      ```max=vet[i];```
```}```
```printf("Max: %d ",max);```	

Question 3
Write the true table of the following Boolean function: f=A(B+C)+A(BC+CA')

Question 4 (PROGRAMMING)

Two sensors are used to monitor the operation of a Burton potentiometer. Two files named **first.txt** and **second.txt** contain the data collected by the first and second sensor respectively. Each line of the files reports a measurement on the following format:

<hh:mm:ss> <value>

The first element represents the time in hours (*hh*), minutes (*mm*), and seconds (*ss*); while the second is the value recorded in floating point format. The two elements are separated by one space, and the files content is always correct. In addition, it should be assumed that **the number of lines in both of the files is NOT known, and could be different**. The lines are chronologically ordered (**ordered by time**) and cover a single day. The measurements performed by the two sensors are not synchronized.

Since the two files are not synchronized, it is necessary to write a program in C language to read the two initial files and produce one single file where all the measurements in the two initial files are stored in chronological order. The lines in the new file, named **burton.txt**, must have the same format as the two initial files. If two measurements have the same time, in the new file, the average value of the two values in the two initial files should be written.

Example:
first.txt
08:05:13 3.5
08:06:14 4.64

second.txt
08:05:12 4.5
08:05:15 6.55
08:06:14 6.64
08:09:14 3.4

>order_sensors.exe

burton.txt
08:05:12 4.5
08:05:13 3.5
08:05:15 6.55
08:06:14 5.64
08:09:14 3.4