**PREPARED BY ;**

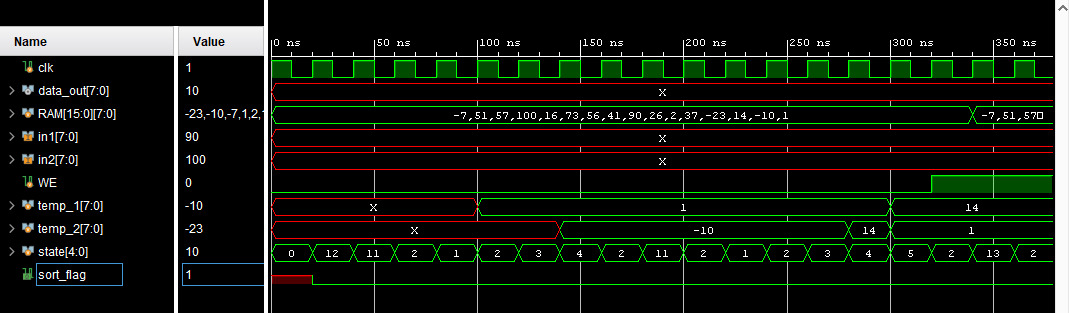
**Berkan KAYA-17050211026**

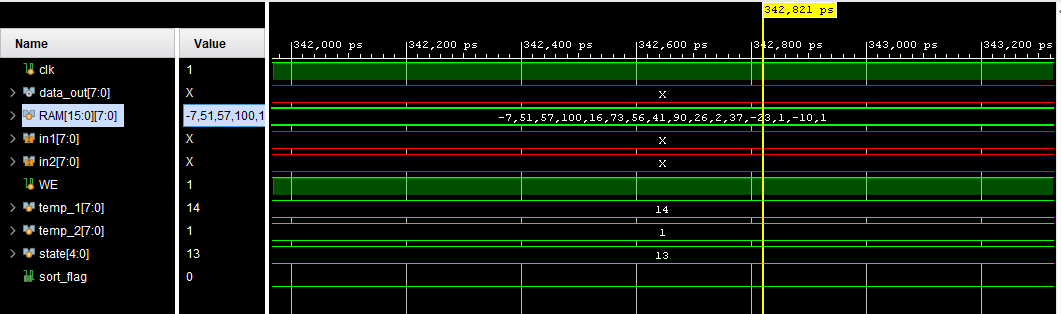
**\*** 3th Year Student at Ankara Yıldırım Beyazıt University Engineering and Natural Sciences,Department of Electrical Electronic Engineering,17050211026@ybu.edu.tr

**EE 424**

**DIGITAL SYSTEM DESIGN WITH VERILOG**

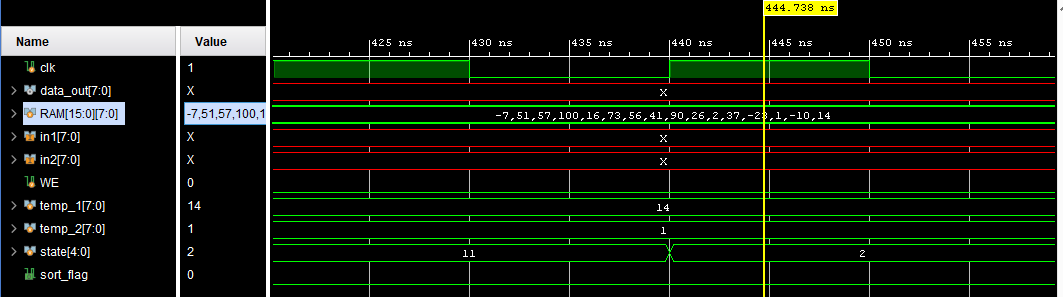
**FINAL PROJECT**

****

When the simulation is run for the first time, the values written to the RAM are as they were originally assigned, as seen in the figure.****

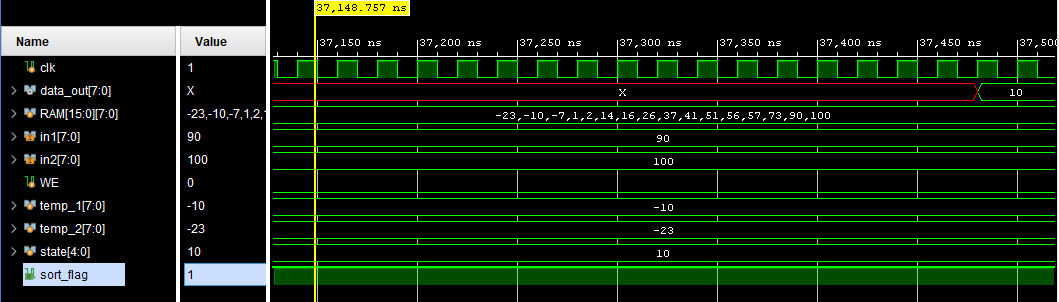
The state machine compared RAM[0] and RAM[1] and it didn't make any changes as RAM[0] was large in the first case.

Then RAM[0] and RAM[2] are compared and since RAM[2] is large, the smaller value is written to the larger address at first.

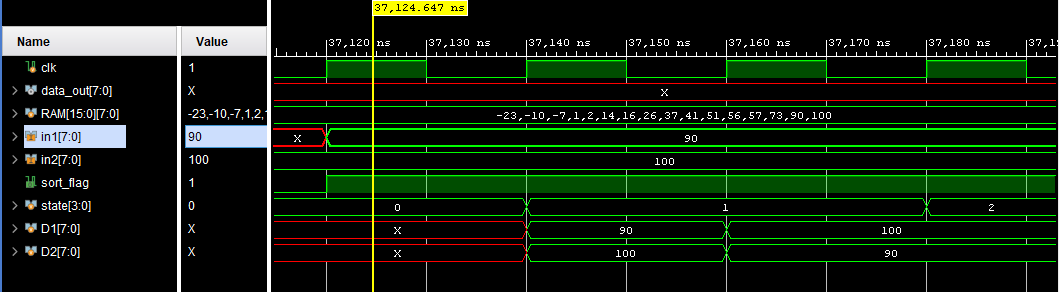


At the next clock, addr took its new value and the larger number was written to the lower address.

**Likewise other 0-1 0-2 0-3 0-4 ....0-15.Then 1-2 1-3 .... 1-15…**

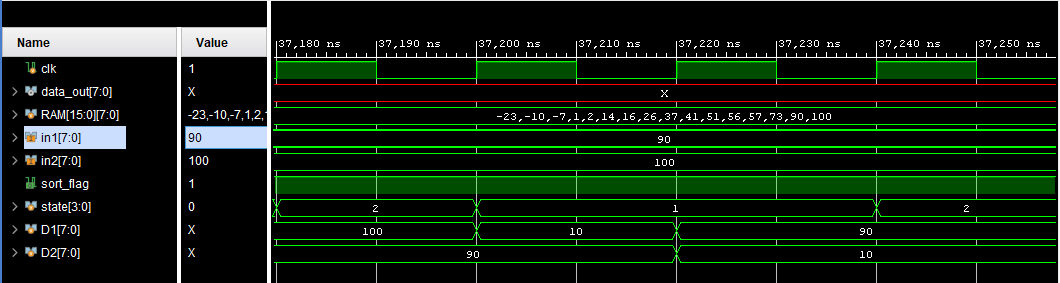
****

Sort\_flag is 1 and sorting is finished.

****

After sort\_flag 1 arrives, the state machine in the GCD module starts to work. The largest 2 numbers written at the 2 smallest addresses of the RAM are sent to the GCD module.

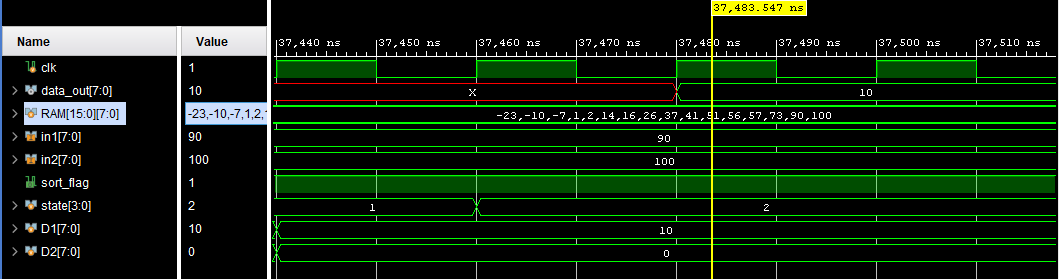
It swaps two numbers when D2>D1 at values 90 and 100.

****

If D2 is not greater than D1, then D1=D1-D2. So,D1=10,D2=90

Then,

Again the two numbers were compared and swapped again because D2>D1.So,D1=90 and D2=10

****

It continues in this way until D2=0 and when D2=0 the value of D1 is equal to the value of GCD.

**metin, ekran, siyah, ekran görüntüsü içeren bir resim

Açıklama otomatik olarak oluşturuldu**

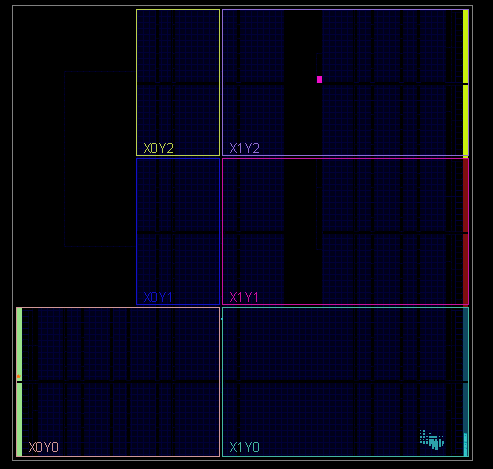
Looking at the simulation results in general like this.

**XDX FILE FOR ZYNQ7000**

**metin içeren bir resim

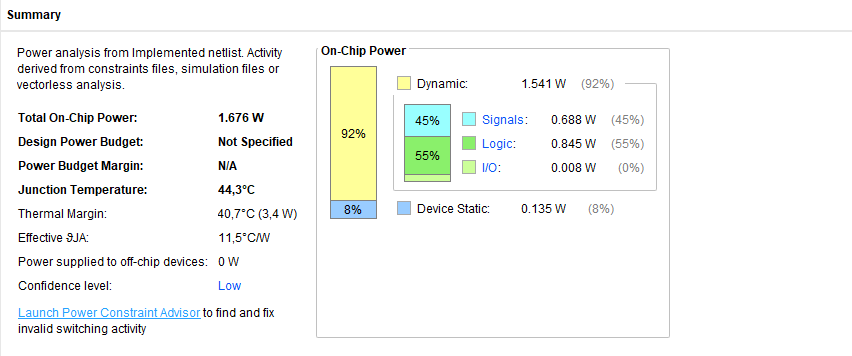
Açıklama otomatik olarak oluşturuldu**

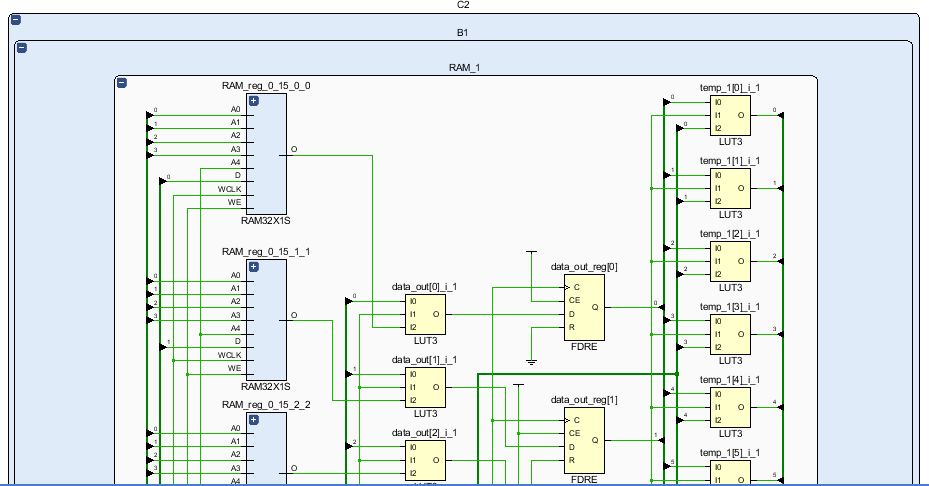
**IMPLEMENTATION ON ZYNQ700**

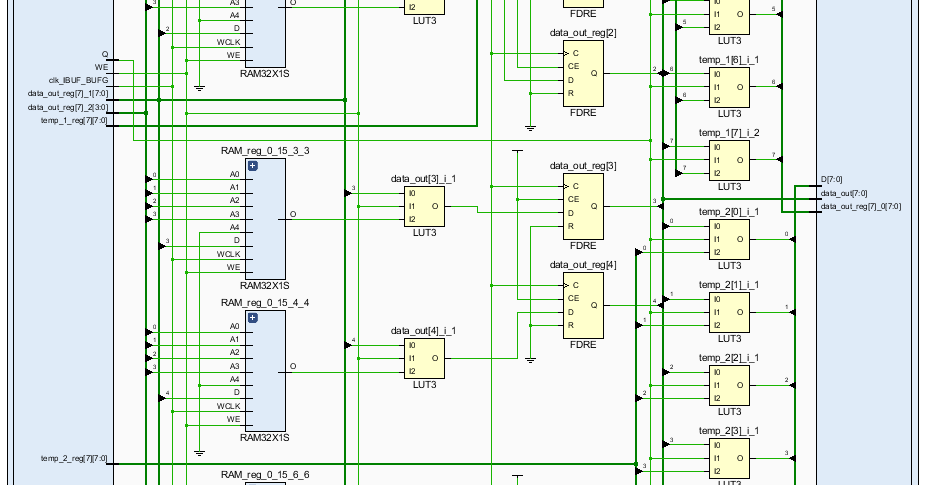
****

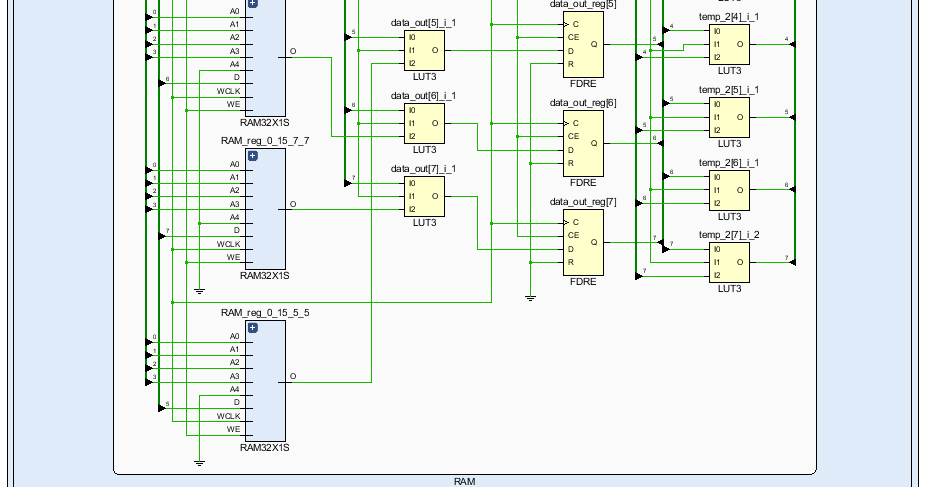
**tablo içeren bir resim

Açıklama otomatik olarak oluşturuldu**

****

****

****

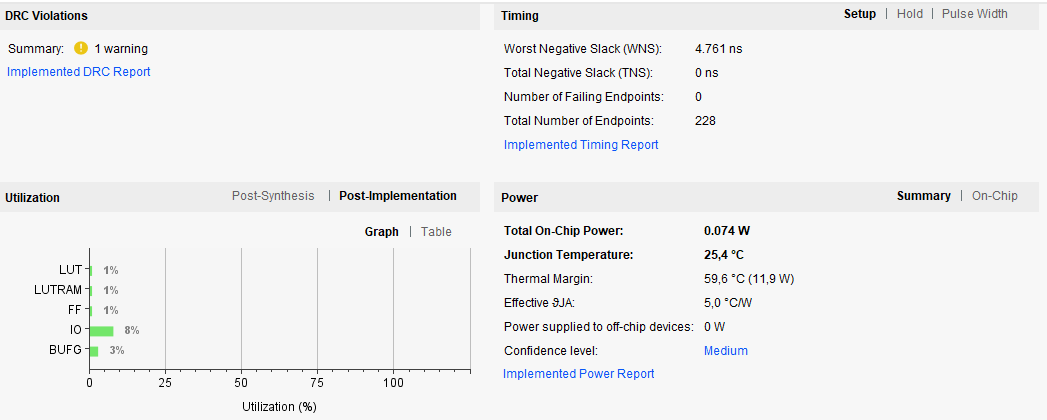
****

**BASYS3 IMPLEMENTATION**

**PROJECT SUMMARY**

**metin içeren bir resim

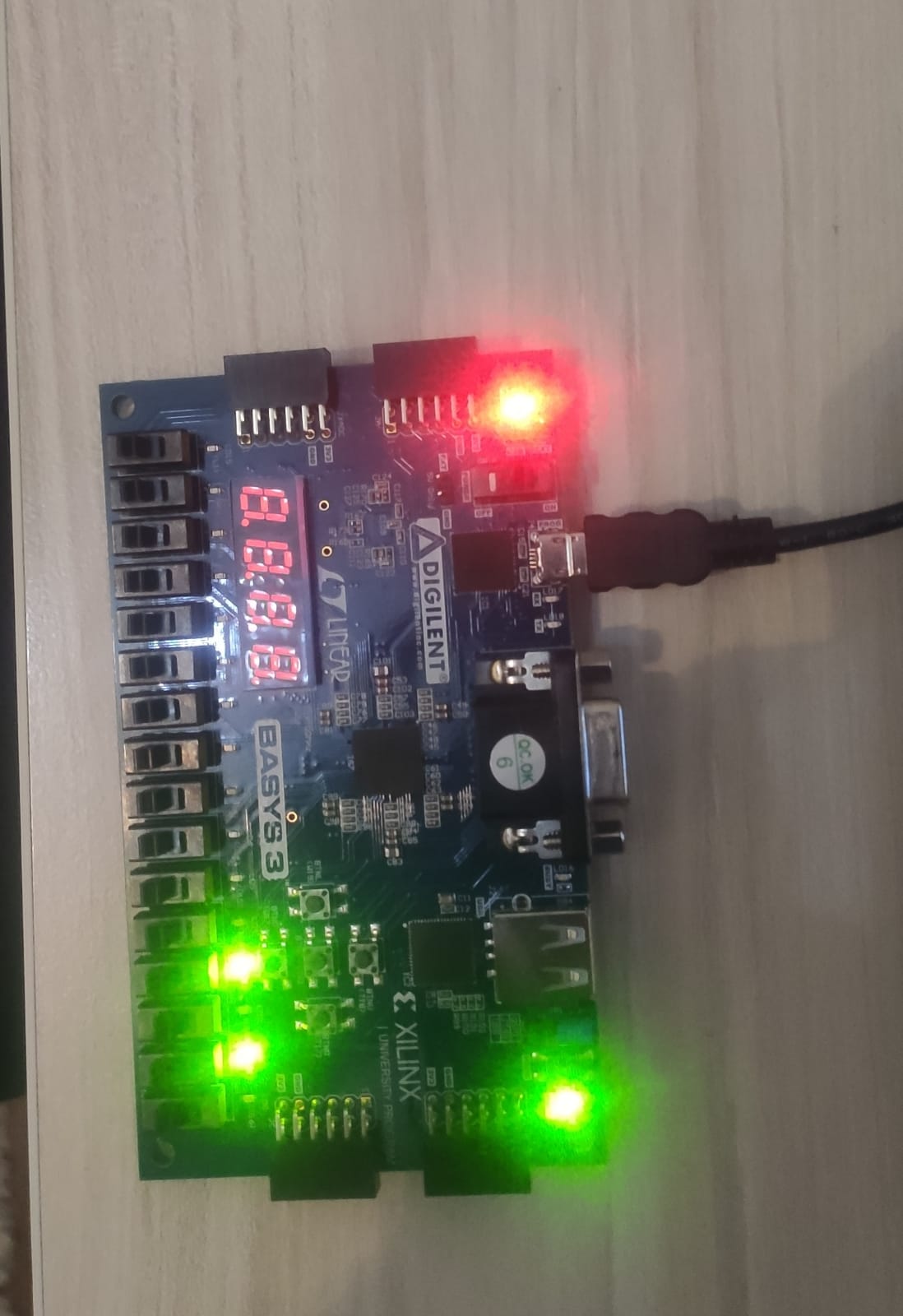
Açıklama otomatik olarak oluşturuldu**

****

**metin içeren bir resim

Açıklama otomatik olarak oluşturuldu**

**XDC FILE FOR BASYS 3**

**metin içeren bir resim

Açıklama otomatik olarak oluşturuldu**

**GCD Result is 10 and Leds 2 and 4 of the first 8 LEDs on the board are ON. So 00001010**

**APPENDIX**

**TOP MODULE**

**metin içeren bir resim

Açıklama otomatik olarak oluşturuldu**

**RAM Module**

**metin içeren bir resim

Açıklama otomatik olarak oluşturuldu**

**metin içeren bir resim

Açıklama otomatik olarak oluşturuldu**

**GCD Module**

**metin içeren bir resim

Açıklama otomatik olarak oluşturuldu**

**metin içeren bir resim

Açıklama otomatik olarak oluşturuldu**

**Sorting Module**

**metin içeren bir resim

Açıklama otomatik olarak oluşturuldu**

**metin içeren bir resim

Açıklama otomatik olarak oluşturuldu**

**metin içeren bir resim

Açıklama otomatik olarak oluşturuldu**

**metin içeren bir resim

Açıklama otomatik olarak oluşturuldu**

**metin içeren bir resim

Açıklama otomatik olarak oluşturuldu**

**metin içeren bir resim

Açıklama otomatik olarak oluşturuldu**