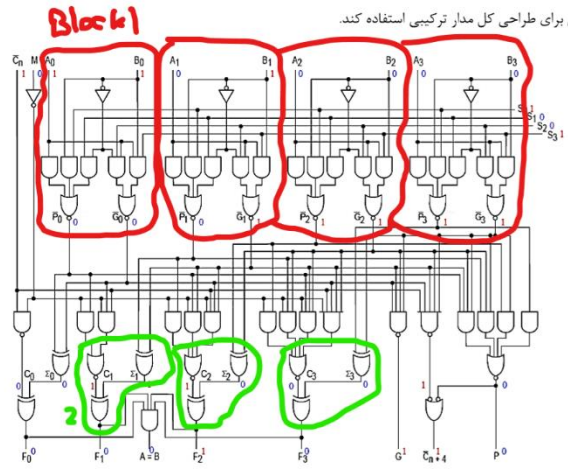
گروه 2 : درین رستمی و پارسا فدائی خدمت

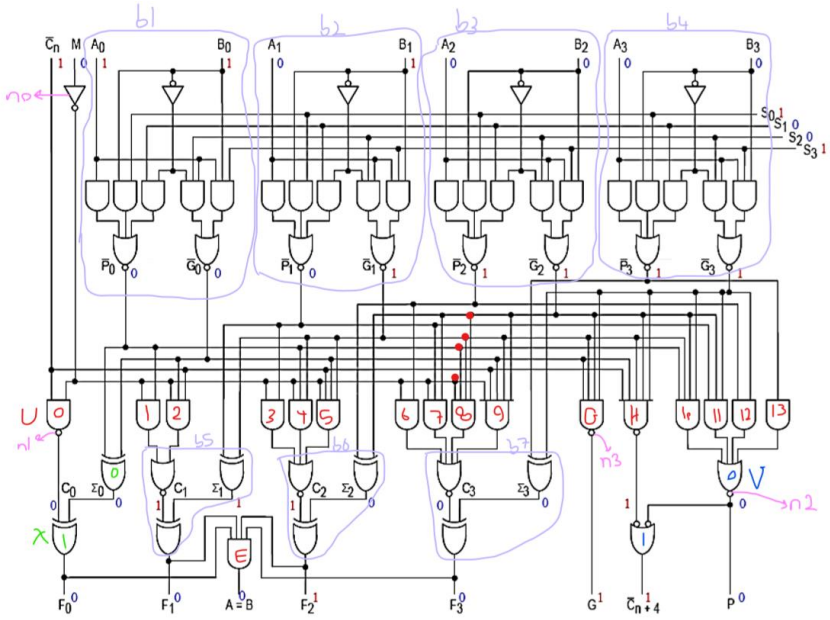
ماژول های Block1 و Block2 استفاده شده برای طراحی مدار:

نشان دهند. با توجه به اینکه مدار دارای زیربخش‌های مشابهی است، دانشجو می‌تواند از آن بخش‌ها نمونه‌ای تهیه کند و در ماژول اصلی از آن برای طراحی کل مدار ترکیبی استفاده کند.



شکل(1): شماتیک واحد محاسبه و منطق ۷۴۱۸۱ با نمونه‌ای از ورودی و خروجی‌های محاسبه شده

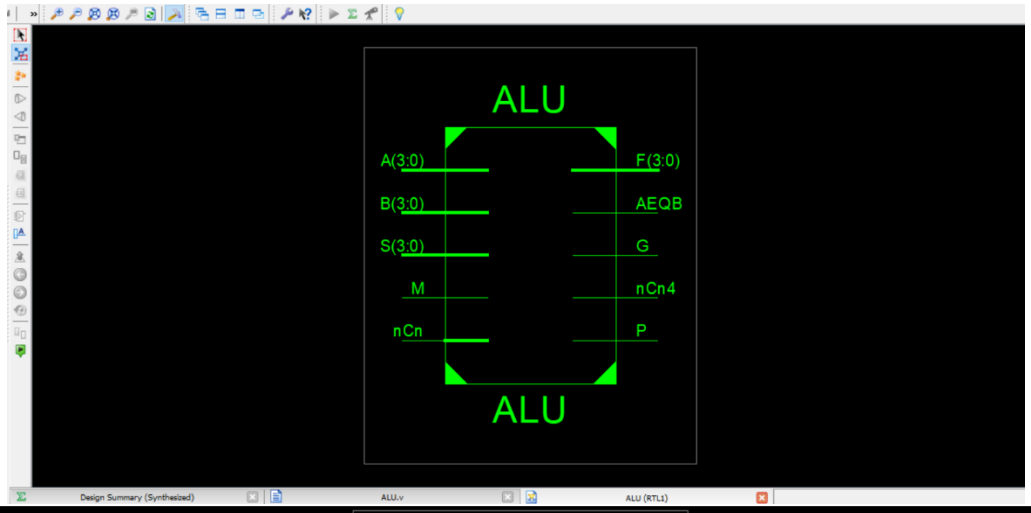
نامگذاری ماژول ها در ماژول اصلی:

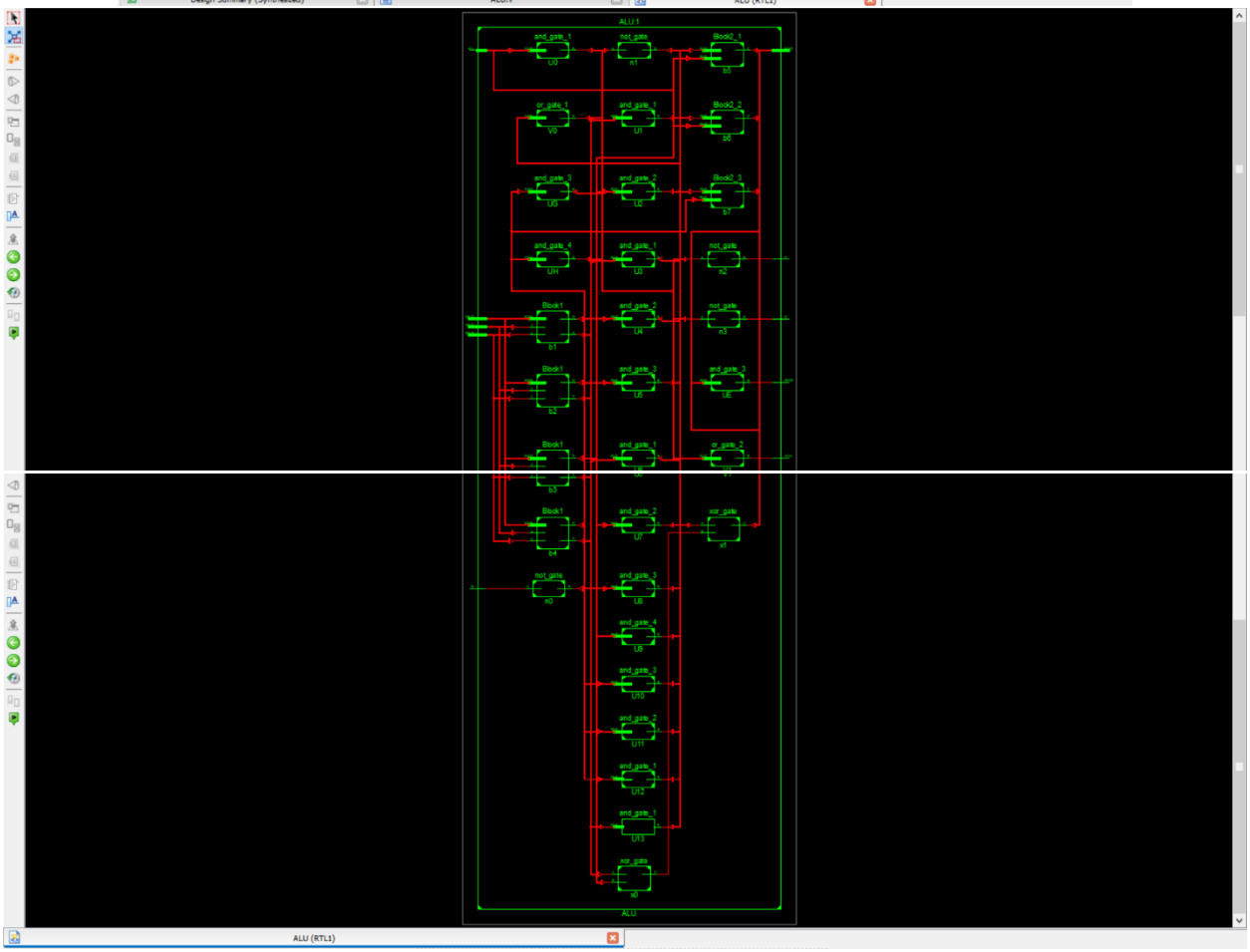


سنتز و پیاده سازی روی FPGA :

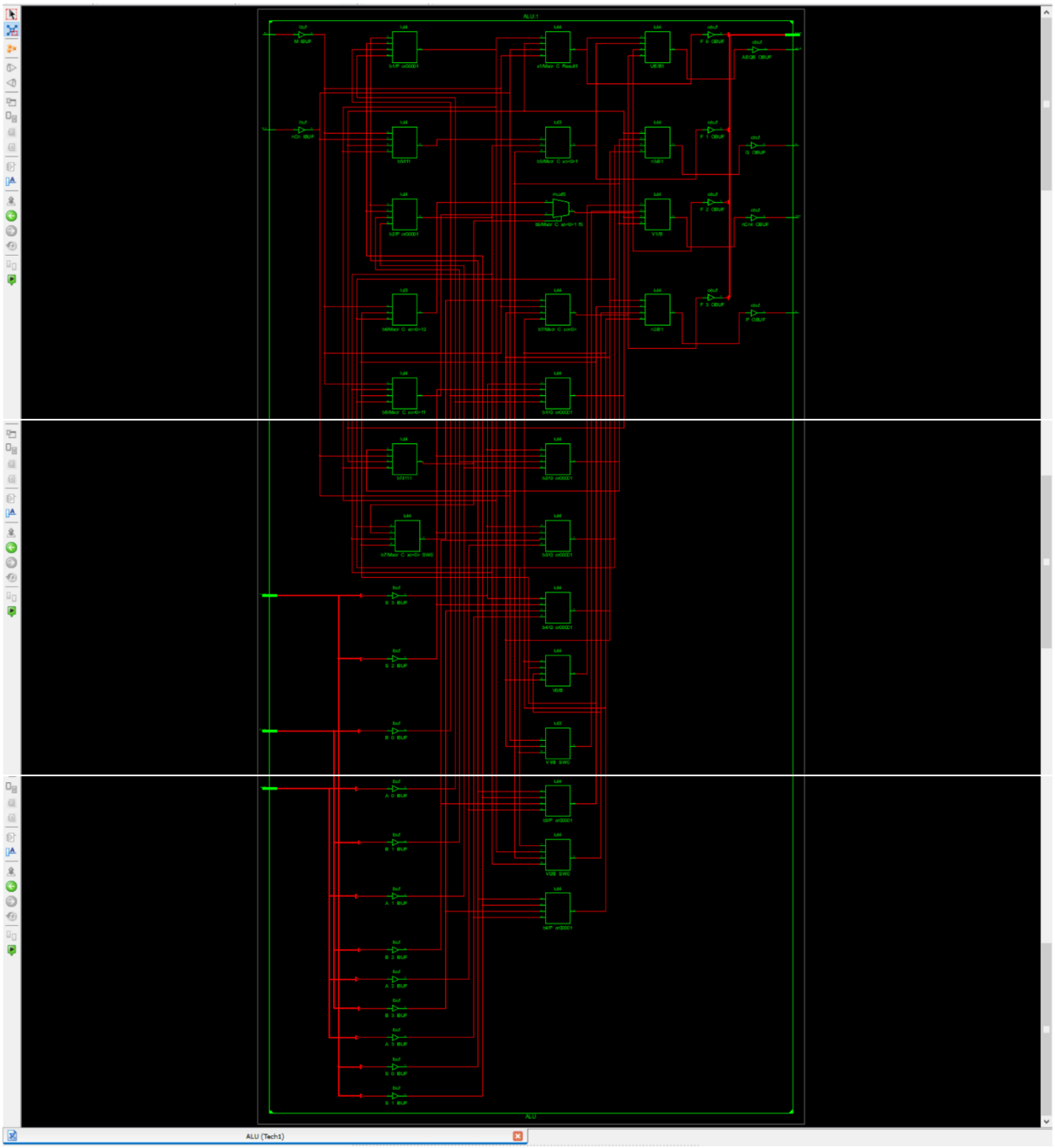
شماتیک:

RTL Schematic:

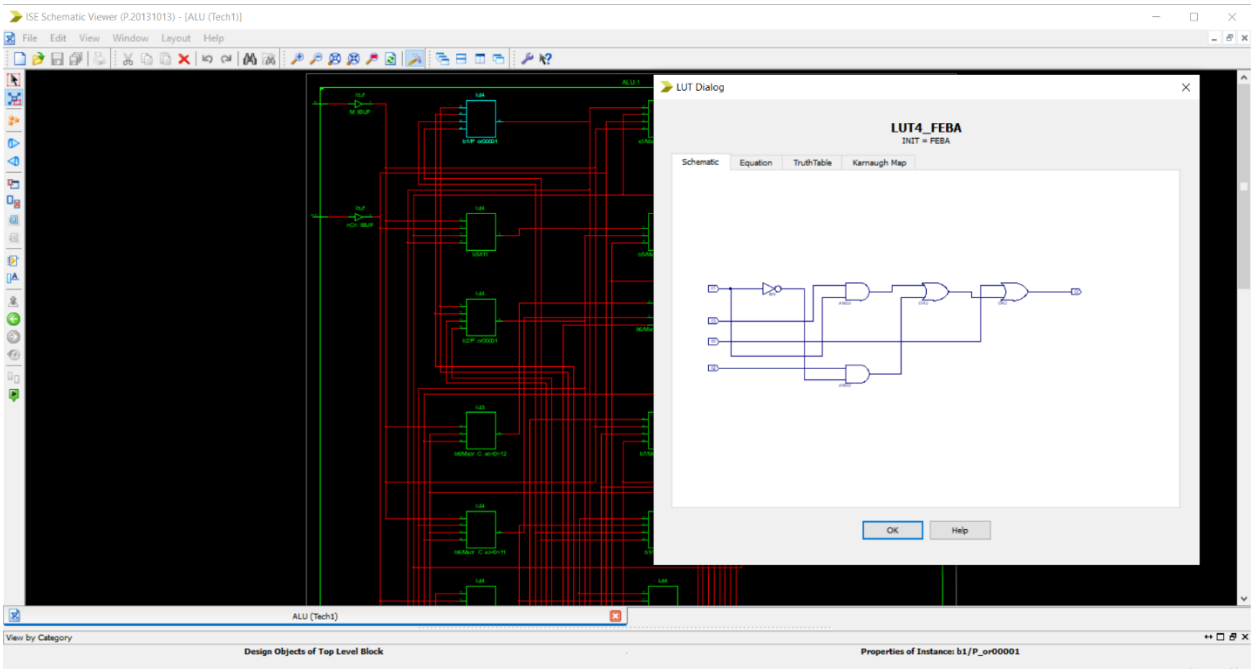


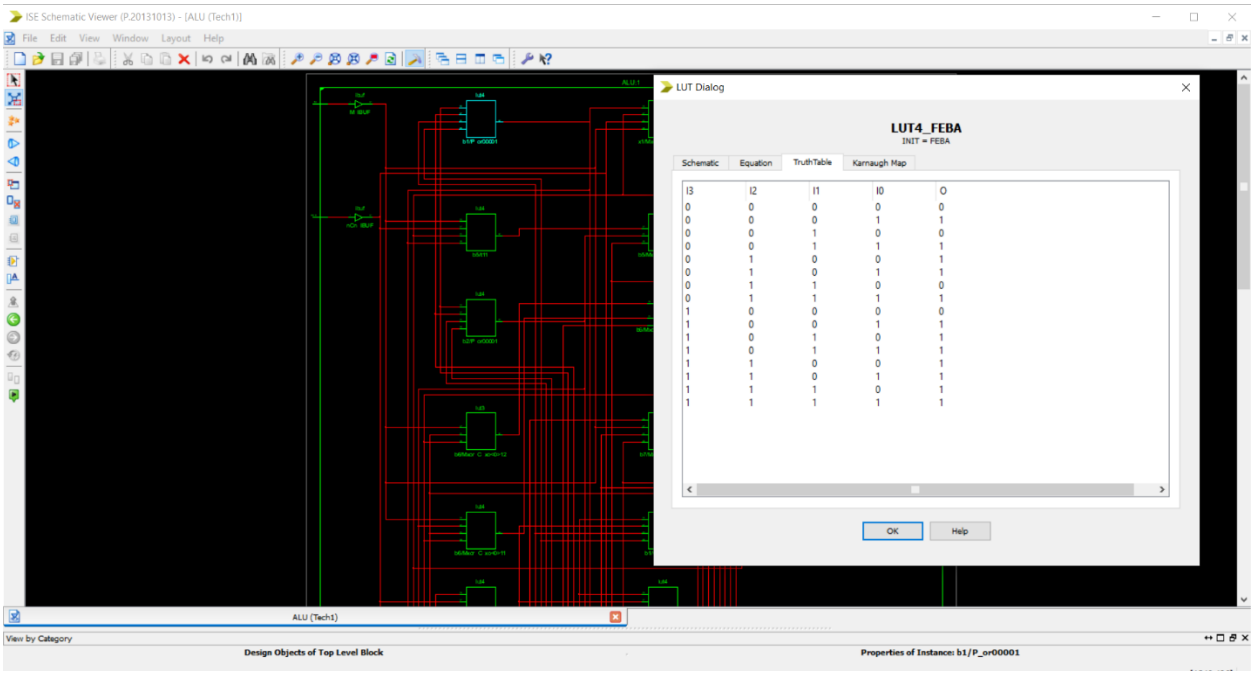


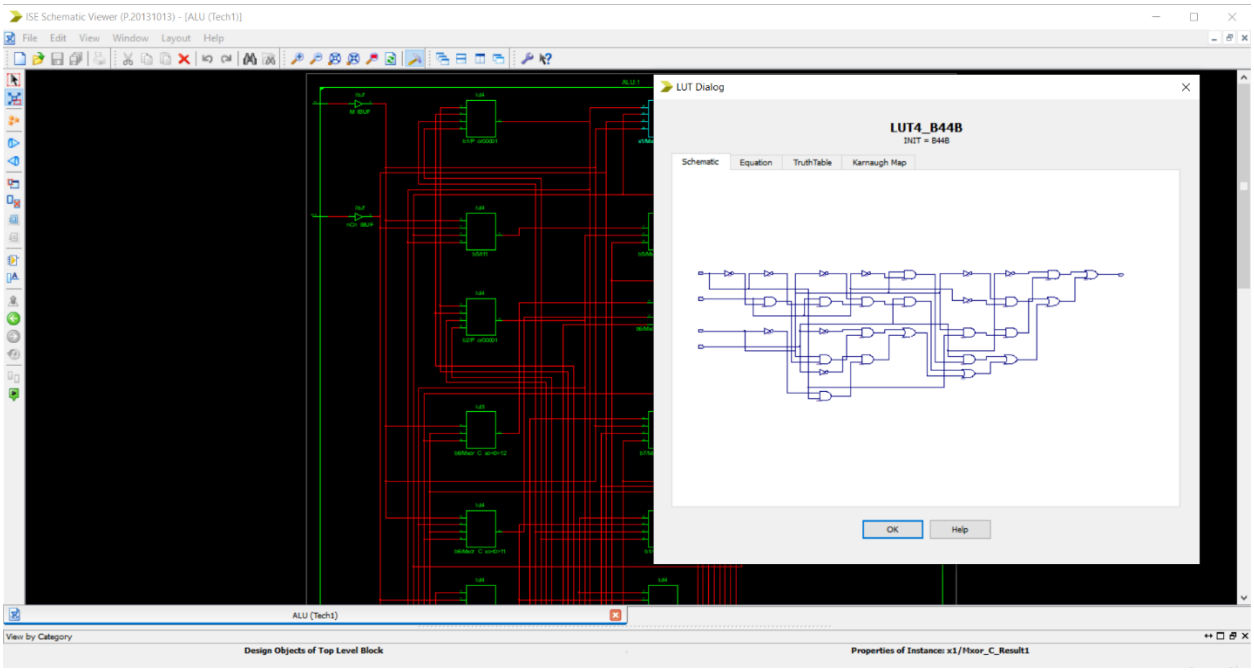
Technology Schematic:

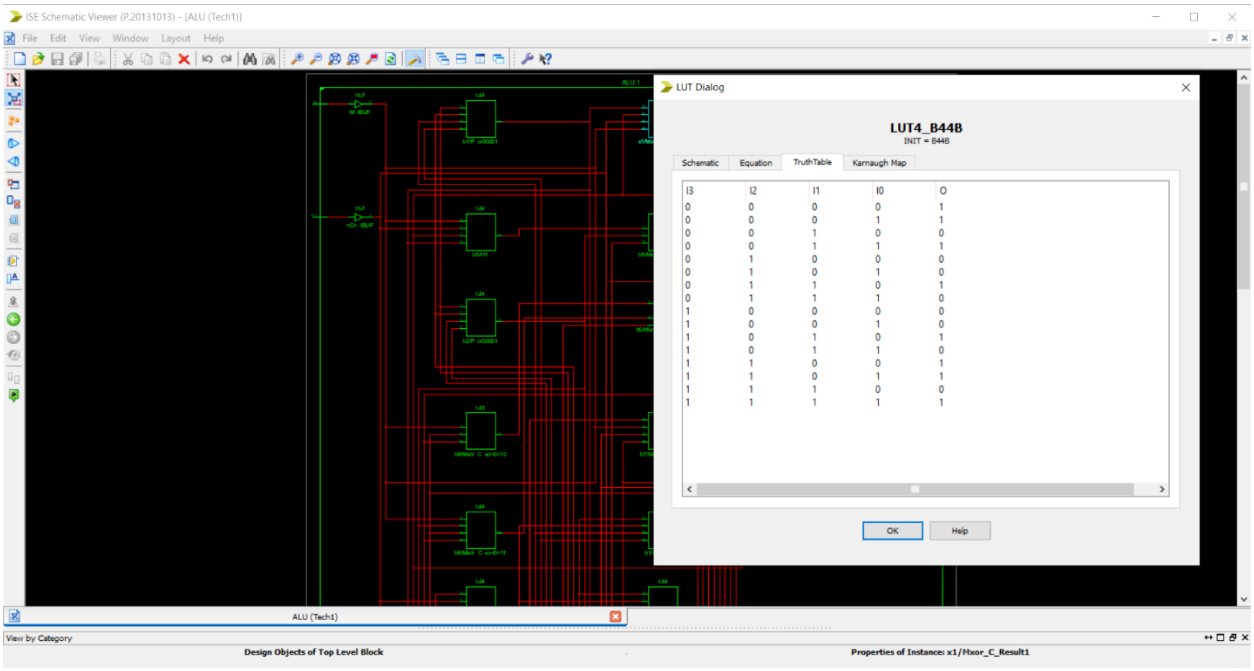


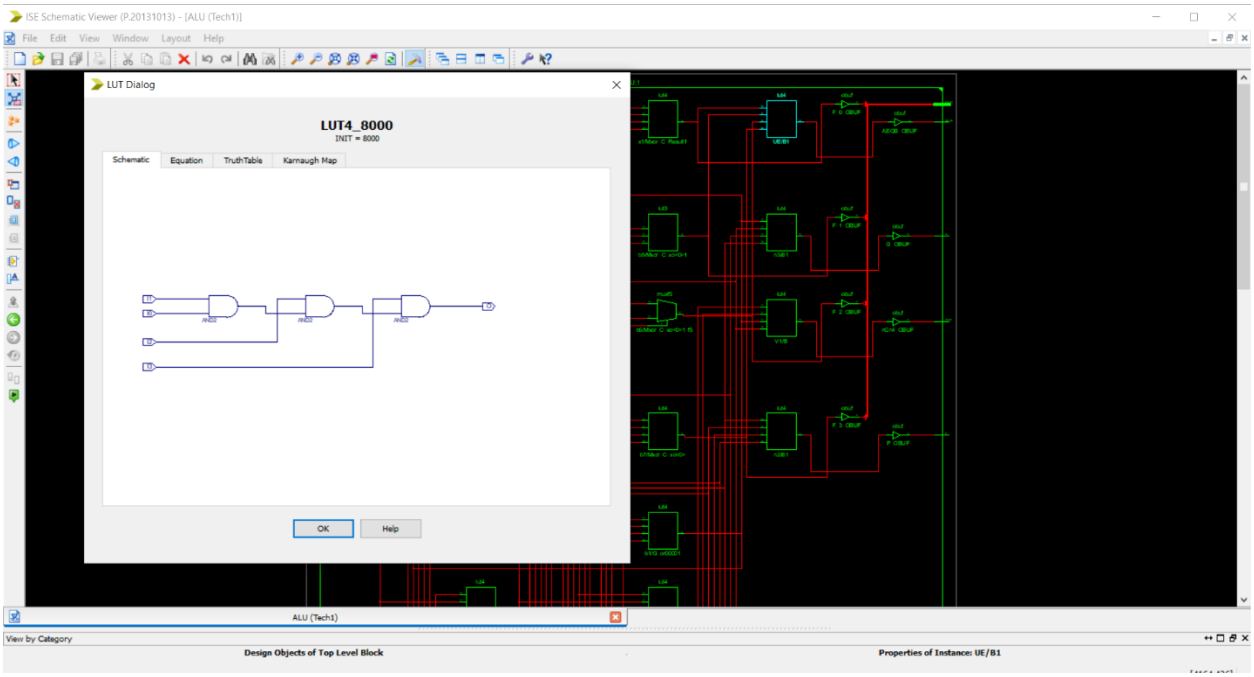
جزئیات چند LUT :

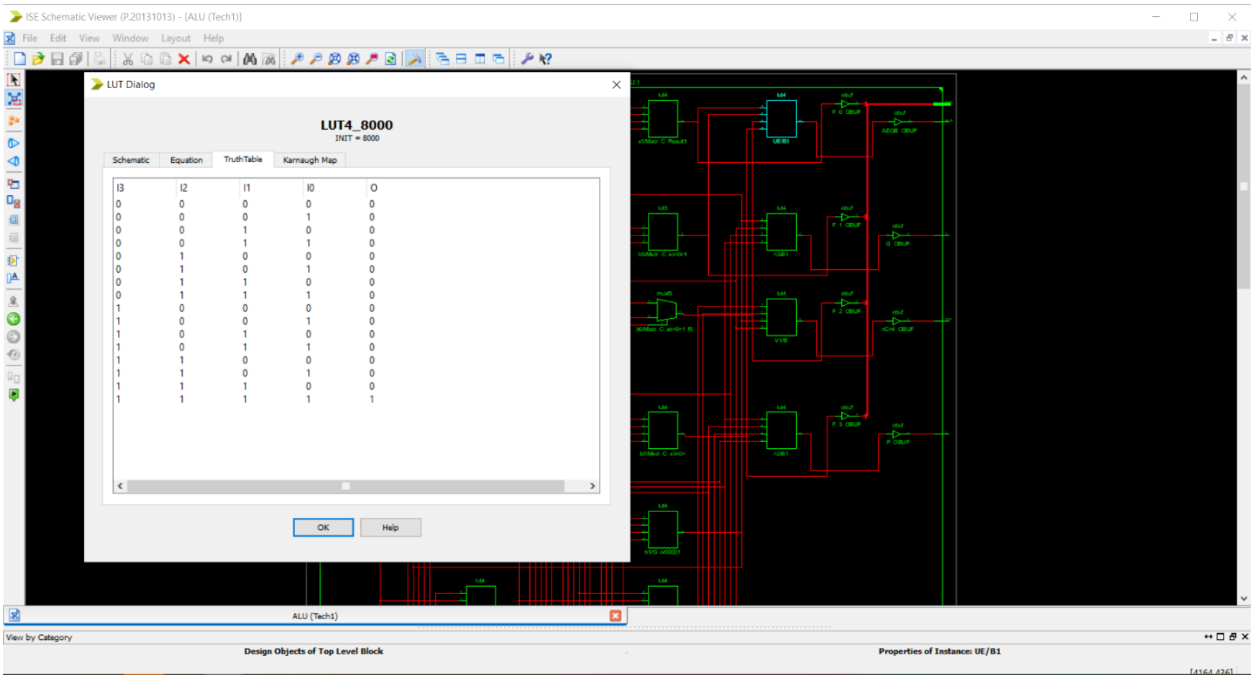





ISE Schematic Viewer (P.20131013) - [ALU (Tech1)]
File Edit View Window Layout Help
LUT Dialog
LUT4_B44B
INIT = B44B
Schematic
Equation
TruthTable
Karnaugh Map
OK
Help
ALU (Tech1)
View by Category
Design Objects of Top Level Block
Properties of Instance: x1/Mxor_C_Result1

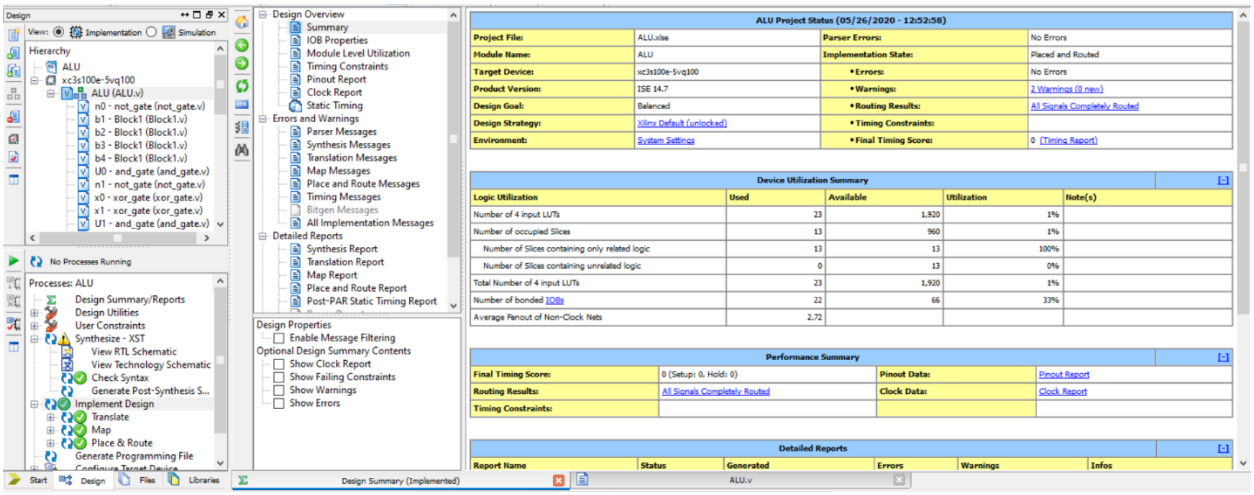

ISE Schematic Viewer (P.20131013) - [ALU (Tech1)]
File Edit View Window Layout Help
LUT Dialog
LUT4_B44B
INIT = B44B
Schematic
Equation
TruthTable
Karnaugh Map
I3 I2 I1 I0 O
0 0 0 0 1
0 0 0 1 1
0 0 1 0 0
0 0 1 1 1
0 1 0 0 0
0 1 0 1 0
0 1 1 0 1
0 1 1 1 0
1 0 0 0 0
1 0 0 1 0
1 0 1 0 1
1 0 1 1 0
1 1 0 0 1
1 1 0 1 1
1 1 1 0 0
1 1 1 1 1
OK
Help
ALU (Tech1)
View by Category
Design Objects of Top Level Block
Properties of Instance: x1/Mxor_C_Result1


ISE Schematic Viewer (P.20131013) - [ALU (Tech1)]
File Edit View Window Layout Help
LUT Dialog
LUT4_8000
INIT = 8000
Schematic
Equation
TruthTable
Karnaugh Map
OK
Help
ALU (Tech1)
View by Category
Design Objects of Top Level Block
Properties of Instance: UE/B1


ISE Schematic Viewer (P.20131013) - [ALU (Tech1)]
File Edit View Window Layout Help
LUT Dialog
LUT4_8000
INIT = 8000
Schematic
Equation
TruthTable
Karnaugh Map
I3 I2 I1 I0 O
0 0 0 0 0
0 0 0 1 0
0 0 1 0 0
0 0 1 1 0
0 1 0 0 0
0 1 0 1 0
0 1 1 0 0
0 1 1 1 0
1 0 0 0 0
1 0 0 1 0
1 0 1 0 0
1 0 1 1 0
1 1 0 0 0
1 1 0 1 0
1 1 1 0 0
1 1 1 1 1
OK
Help
ALU (Tech1)
View by Category
Design Objects of Top Level Block
Properties of Instance: UE/B1

سنجش تاخیر مدار ترکیبی:

Summary:



Post-PAR Static Timing Report:

Data Sheet report:

All values displayed in nanoseconds (ns)

Pad to Pad

Source Pad	Destination Pad	Delay
A<0>	AEQB	10.615
A<0>	F<0>	6.736
A<0>	F<1>	8.728
A<0>	F<2>	8.913
A<0>	F<3>	9.991
A<0>	G	6.991
A<0>	P	8.851
A<0>	nCn4	8.796
A<1>	AEQB	10.513

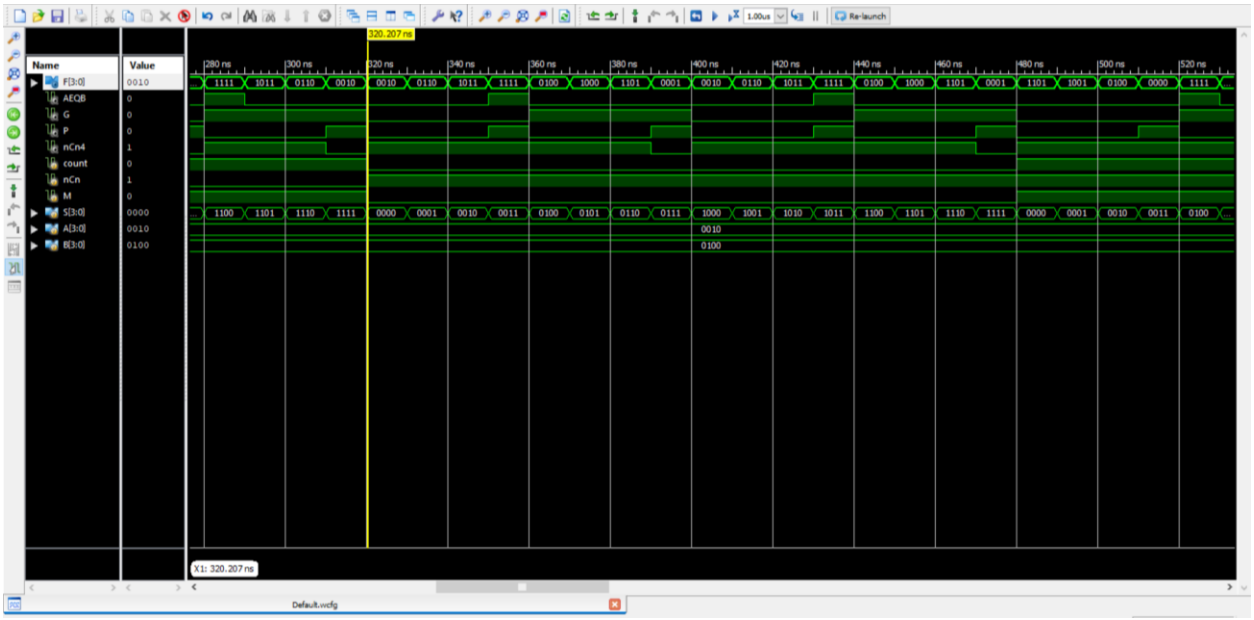
A<1>	|F<1>	7.565|
A<1>	|F<2>	8.811|
A<1>	|F<3>	9.889|
A<1>	|G	7.348|
A<1>	|P	9.021|
A<1>	|nCn4	8.966|
A<2>	|AEQB	10.034|
A<2>	|F<2>	9.037|
A<2>	|F<3>	9.170|
A<2>	|G	7.401|
A<2>	|P	9.434|
A<2>	|nCn4	9.379|
A<3>	|AEQB	8.650|
A<3>	|F<3>	8.026|
A<3>	|G	7.009|
A<3>	|P	7.495|
A<3>	|nCn4	8.167|
B<0>	|AEQB	11.138|
B<0>	|F<0>	7.259|
B<0>	|F<1>	8.998|
B<0>	|F<2>	9.436|
B<0>	|F<3>	10.514|
B<0>	|G	7.514|
B<0>	|P	9.121|
B<0>	|nCn4	9.066|
B<1>	|AEQB	10.808|
B<1>	|F<1>	8.029|
B<1>	|F<2>	9.106|
B<1>	|F<3>	10.184|

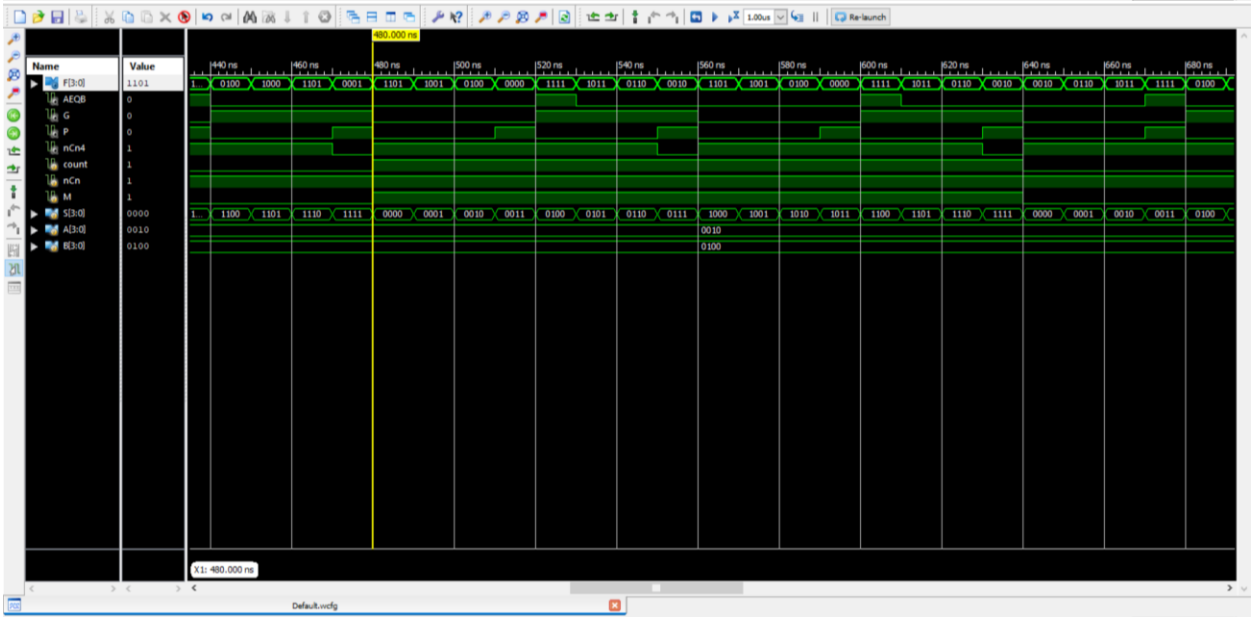
B<1>	|G	| 7.643|
B<1>	|P	| 9.316|
B<1>	|nCn4	| 9.261|
B<2>	|AEQB	| 9.711|
B<2>	|F<2>	| 8.714|
B<2>	|F<3>	| 8.847|
B<2>	|G	| 7.078|
B<2>	|P	| 9.111|
B<2>	|nCn4	| 9.056|
B<3>	|AEQB	| 9.082|
B<3>	|F<3>	| 8.458|
B<3>	|G	| 7.446|
B<3>	|P	| 7.927|
B<3>	|nCn4	| 8.599|
M	|AEQB	| 8.360|
M	|F<0>	| 6.299|
M	|F<1>	| 6.926|
M	|F<2>	| 7.363|
M	|F<3>	| 6.384|
S<0>	|AEQB	| 10.436|
S<0>	|F<0>	| 6.653|
S<0>	|F<1>	| 8.645|
S<0>	|F<2>	| 8.734|
S<0>	|F<3>	| 9.812|
S<0>	|P	| 8.817|
S<0>	|nCn4	| 8.762|
S<1>	|AEQB	| 10.518|
S<1>	|F<0>	| 6.735|
S<1>	|F<1>	| 8.727|

S<1>	|F<2>	8.816|
S<1>	|F<3>	9.894|
S<1>	|P	8.850|
S<1>	|nCn4	8.795|
S<2>	|AEQB	10.492|
S<2>	|F<0>	6.583|
S<2>	|F<1>	8.285|
S<2>	|F<2>	8.790|
S<2>	|F<3>	9.868|
S<2>	|G	7.602|
S<2>	|P	9.000|
S<2>	|nCn4	8.945|
S<3>	|AEQB	10.743|
S<3>	|F<0>	6.864|
S<3>	|F<1>	8.566|
S<3>	|F<2>	9.041|
S<3>	|F<3>	10.119|
S<3>	|G	7.538|
S<3>	|P	9.211|
S<3>	|nCn4	9.156|
nCn	|AEQB	8.961|
nCn	|F<0>	6.267|
nCn	|F<1>	6.934|
nCn	|F<2>	7.259|
nCn	|F<3>	8.337|
nCn	|nCn4	7.544|

شبیه سازی:


Name
Value
F[3:0]
AEQB
G
P
nCn4
count
nCn
M
S[3:0]
A[3:0]
B[3:0]
X1: 0.000 ns
X1: 160.000 ns
Default.wcfg


320.207 ns
Name
Value
F[3:0]
AEQB
G
P
nCn4
count
nCn
M
S[3:0]
A[3:0]
B[3:0]
X1: 320.207 ns
Default.wcfg


480.000 ns
Name
Value
F[3:0]
AEQB
G
P
nCn4
count
nCn
M
S[3:0]
A[3:0]
B[3:0]
X1: 480.000 ns
Default.wcfg