

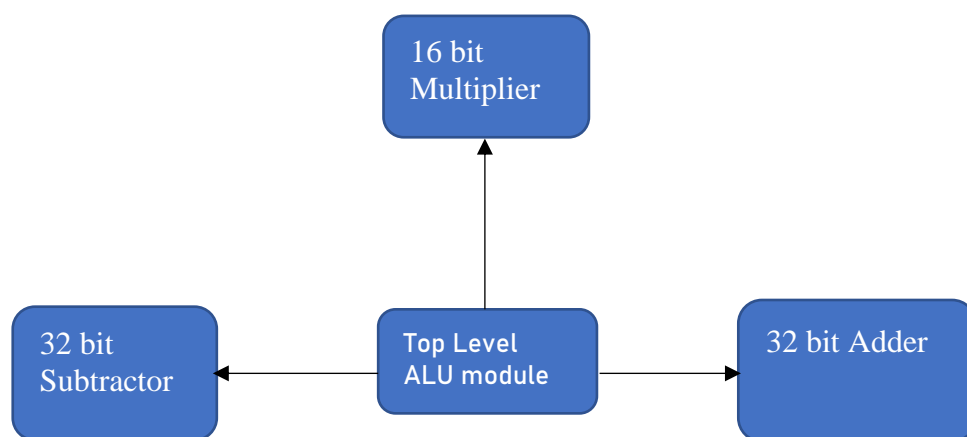
FPGA realization of ALU for mobile GPU

Submitted By : Savio Sebastian(SC22M056) and Akash Chandran(SC22M134)

We have designed a small ALU, for a hand held device like a mobile. This algorithm would give quick results due to parallel computations, but we get lesser accuracy. For multiplication we consider only the first 8 bits after the decimal point and rest of the bits are ignored and hence, we get lesser accuracy. This device also supports 32-bit addition and subtraction.

On further development we can also extend this device to division operation. But as division is not a very important operation in an ALU it hasn't been included in this version.

Now coming to the files/ modules used



Output obtained: The inputs and outputs are in Hexadecimal.

0-multiplication 1-Addition 2-subtraction 3-High Impedance

0 a=X00060000 b=X00020000 result=X0000000c ;the operation is 0

5 a=X00060000 b=X00020000 result=X00080000 ;the operation is 1

10 a=X00060000 b=X00020000 result=X00040000 ;the operation is 2

15 a=X00020000 b=X00060000 result=X00006666 ;the operation is 0

20 a=X00020000 b=X00060000 result=X00080000 ;the operation is 1

25 a=X00020000 b=X00060000 result=Xfffc0000 ;the operation is 2

30 a=X00040000 b=X00030000 result=X0000000c ;the operation is 0

35 a=X00040000 b=X00030000 result=X00070000 ;the operation is 1

40 a=X00040000 b=X00030000 result=X00010000 ;the operation is 2

45 a=X00180000 b=X00020000 result=X00000030 ;the operation is 0

50 a=X00180000 b=X00020000 result=X001a0000 ;the operation is 1

55 a=X00180000 b=X00020000 result=X00160000 ;the operation is 2

60 a=X00170000 b=X00040000 result=X0000005c ;the operation is 0

65 a=X00170000 b=X00040000 result=X001b0000 ;the operation is 1

70 a=X00170000 b=X00040000 result=X00130000 ;the operation is 2

75 a=X00170000 b=X00040000 result=Xzzzzzzzz ;the operation is 3