

Multiply

A 2 bit Booth's algorithm (using just the ALU + a little extra logic). Uses the fact that:

$$A + 3B = A - B + 4B$$

```
static public int booth(int op1,int op2) {
    boolean borrow=false;
    int result=0;
    for(int n=0; (op2!=0) || borrow; n+=2) {
        if(!borrow)
            switch(op2 & 3) {
                case 0 : result = result;           break;
                case 1 : result = result + (op1<<n); break;
                case 2 : result = result - (op1<<(n+1)); break;
                case 3 : result = result - (op1<<n); break;
            }
        else
            switch(op2 & 3) {
                case 0 : result = result + (op1<<n); break;
                case 1 : result = result + (op1<<(n+1)); break;
                case 2 : result = result - (op1<<n); break;
                case 3 : result = result;           break;
            }
        borrow = (op2 & 3)>1;
        op2 = op2 >> 2;
    }
    return result;
}
```
