**Introduction to Programming EE2310 Homework 2-2**

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**Problem**

Use two unsigned chars to store an unsigned fixed-point value. Design a program to calculate the multiplication of two above fixed-point values.

**My Solution**

Use bitwise operation to calculate with chars.

**Additional Features**

* The main calculation are all done with char type.
* The problem regarding the overflow of char were treated.
* Use if to detect if there is overflow or not.

**Program Flow & Structure**

int main()

LINE

1) Cin into buffers (m,n,p,q) and save to unsigned chars (a1,a2,b1,b2).

2) Calculate a\*b (shifted) with chars and save to abS.

*My method: Left shift all the parts 16 bits to calculate. Shift back after calculation.*

3) Shift back integer and fractional part of abS respectively and save each parts into separate chars (intA,intB,fracA,fracB).

*p.s. Overflow parts included (intB & fracA).*

4) Calculate a\*b by using intA,intB,fracA,fracB and save the final results to abO. Print out the results.

5) Save the original value of a & b into float (fa,fb). Use them to calculate a\*b directly and compare with abO to verify the result of step(1)~(4). Check if there is overflow or not.

09~12

16

20~24

27~28

31~32

**Output Result**



