DSP LAB

Simulation Hw-1

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Q) Fixed point addition and multiplication in C code

Code:

```c
#include <stdio.h>

void FixedPoint_add_mult (double x1,double x2,int
scale_factor){
    int x1_fixed = (int)(x1*scale_factor);
    int x2_fixed = (int)(x2* scale_factor);

    double fixed_sum= x1_fixed+x2_fixed;
    double unscale = (fixed_sum )/(1<<12) ;
    double fixed_mult= x1_fixed*x2_fixed;
    double unscale_1 = (fixed_mult) /((1<<12)*(1<<12)) ;
    printf("Fixed Sum: %.4f\n", unscale);
    printf("Fixed Multiplication: %.4f\n", unscale_1);

}
int main(){
    double x1= 3.1425;
    double x2=4.2357;
    int Q = 12;
    int scale_factor=1<<Q;
    FixedPoint_add_mult(x1,x2,scale_factor);
}
```

Result:

```
fixed Sum: 7.3779
Fixed Multiplication: 13.3097
```