

## EXPERIMENT – 3

### DSP-LAB

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Q) Fixed point addition and multiplication in MATLAB.

**Code:**

```
x1 = 3.1425;
x2 = 4.2357;
scale_factor = 2^12;% here Q=12

[add_float,mult_float] = FixedPoint(x1, x2, scale_factor);

disp(['add_float: ' num2str(add_float)]);
disp(['mult_float: ' num2str(mult_float)]);

function [add_float,mult_float] = FixedPoint(x1, x2,
scale_factor)
    x1_fixed = fix(x1 * scale_factor);
    x2_fixed = fix(x2 * scale_factor);

    add_fix = x1_fixed + x2_fixed;
    add_float = add_fix / scale_factor;

    mult_fix = x1_fixed * x2_fixed;
    mult_float = mult_fix/ (scale_factor * scale_factor);
end
```

**RESULT:**

add\_float: 7.3779

mult\_float: 13.3097