

NYCU Computer Organization HW 3

1. Show the IEEE 764 binary representation of the number -0.75_{ten} in single precision (considering the implicit leading 1).
2. What decimal number does this single precision float represent?
1 1000 0001 0100 0000 0000 0000 0000 000
3. Try adding the number 0.5_{ten} and -0.4375_{ten} in binary using the algorithm of divider.
4. Please convert a temperature in Fahrenheit to Celsius

float f2c (float fahr)

```
{
    Return ((5.0f/9.0f) * (fahr - 32.0f));
}
```

Assume that the floating-point argument fahr is passed in f10 and the result should also go in f10. What is the RISC-V assembly code? We assume the compiler places the three floating-point constants in memory within easy reach of register x3.

f2c:

```
flw    f0, const5(x3)    // f0 = 5.0f
flw    _____      // f1 = 9.0f

fdiv.s _____      // f0 = 5.0f / 9.0f
flw    f1, const32(x3)  // f1 = 32.0f
fsub.s _____      // f10 = fahr - 32.0f
fmul.s f10, f0, f1      // f10 = (5.0f / 9.0f) * (fahr - 32.0f)
jalr   _____      // return
```