Homework 11

Question 1:

Express the following base 10 number in IEEE 754 single-precision floating-point format. Express your answer in Hexidecimal.

```
-13.5625 ⇒ (?)
```

solution

Integer conversion:

```
⇒ (13)/2 ⇒ 6 r 1
⇒ (6)/2 ⇒ 3 r 0
⇒ (3)/2 ⇒ 1 r 1
⇒ (1)/2 ⇒ 0 r 1

Result: 1101
```

Decimal conversion:

```
⇒ (.5625) × 2 = 1.125
⇒ (.125) × 2 = 0.25
⇒ (.25) × 2 = 0.5
⇒ (.5) × 2 = 1.0

Result: .1001
```

Combining

⇒ 1101.1001

Question 2:

Convert the following IEEE 754 single-precision floating-point number to decimal format.

0x40980000

solution

Question 3:

Translate this C++ code into RISC-V assembly language with correct use of Floating-Point instructions where necessary. Submit your code and screenshot of the outputs.

```
int main() {
 float value1 = 3.5;
 float result = 0;

 if (value1 < 7)
     result = 7 + value1;
 else
     result = value1 / 7;

 cout << result << endl;
}
```

solution

something