

8.Single precision format:

Program:

```
#include <stdio.h>

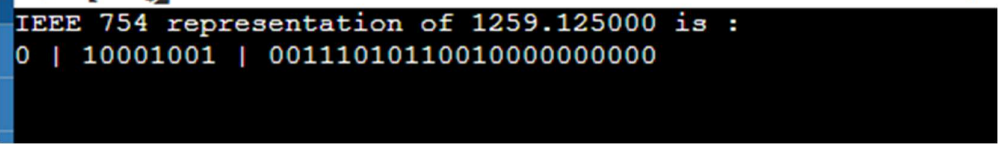
void printBinary(int n, int i)
{
    int k;
    for (k = i - 1; k >= 0; k--) {
        if ((n >> k) & 1)
            printf("1");
        else
            printf("0");
    }
}

typedef union {
    float f;
    struct
    {
        unsigned int mantissa : 23;
        unsigned int exponent : 8;
        unsigned int sign : 1;
    } raw;
} myfloat;

void printIEEE(myfloat var)
{
    printf("%d | ", var.raw.sign);
    printBinary(var.raw.exponent, 8);
    printf(" | ");
    printBinary(var.raw.mantissa, 23);
    printf("\n");
}
```

```
int main()
{
    myfloat var;
    var.f = 1259.125;
    printf("IEEE 754 representation of %f is : \n",
        var.f);
    printIEEE(var);
    return 0;
}
```

Output:

A terminal window with a black background and white text. The text displays the IEEE 754 representation of the floating-point number 1259.125000. The output is split into three parts by vertical bars: the sign bit, the exponent, and the mantissa.

```
IEEE 754 representation of 1259.125000 is :
0 | 10001001 | 001110101100100000000000
```