**Homework: Numeral Systems**

**Problem 1. Decimal to binary**

* Write a program to convert decimal numbers to their binary representation.

**Problem 2. Binary to decimal**

* Write a program to convert binary numbers to their decimal representation.

**Problem 3. Decimal to hexadecimal**

* Write a program to convert decimal numbers to their hexadecimal representation.

**Problem 4. Hexadecimal to decimal**

* Write a program to convert hexadecimal numbers to their decimal representation.

**Problem 5. Hexadecimal to binary**

* Write a program to convert hexadecimal numbers to binary numbers (directly).

**Problem 6. binary to hexadecimal**

* Write a program to convert binary numbers to hexadecimal numbers (directly).

**Problem 7. One system to any other**

* Write a program to convert from any numeral system of given base s to any other numeral system of base d (2 ≤s, d ≤ 16).

**Problem 8. Binary short**

* Write a program that shows the binary representation of given 16-bit signed integer number (the C# type short).

**Problem 9.\* Binary floating-point**

* Write a program that shows the internal binary representation of given 32-bit signed floating-point number in IEEE 754 format (the C# type float).

*Example:*

| **number** | **sign** | **exponent** | **mantissa** |
| --- | --- | --- | --- |
| -27,25 | 1 | 10000011 | 10110100000000000000000 |