Final examination on Logic Circuit Design (Group 1)

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1 Conversion from decimal to negabinary

Question. The *negabinary* representation of a number is similar to the binary representation, except that the base is not 2 but -2. Therefore, the shape of the negabinary representation with n bits $b_{n-1}, b_{n-2}, \ldots, b_0$ is

$$b_{n-1}(-2)^{n-1} + b_{n-2}(-2)^{n-2} + \ldots + b_1(-2)^1 + b_0$$

Devise a C function converting a decimal number, possibly negative, into its negabinary form:

```
char* from10toNeg2 (int dec);
```

Hint. In C, if `a => 0` and `b < 0`, then `a/b <= 0` and `a%b >= 0`. Also, if `a <= 0` and `b < 0`, then `a/b => 0` and `a%b <= 0`. For instance, $17 = (-8)(-2) + 1$ and $-17 = 8(-2) - 1$.