

Convert the program into machine code.

LOOP:

EOR X1, X4, X5  
SUBI X1, X1, #15

EOR: 11001010000 00101 000000 00100 00001  
650<sub>16</sub> X5 shift X4 X1

LOOP2:

LDUR X19, [X1, #5]  
CBZ X19, LOOP -3  
LSR X19, X19, 2  
ADD X1, X1, X19  
B LOOP2 -4

SUBI: 11010001000 000000001111 00001 00001  
344<sub>16</sub> #15 X1 X1

LDUR: 1111000010 000000101 00 00001 10011  
7C2<sub>16</sub> #5 00 X1 X19

CBZ: 10110100 111111111111111101 10011  
B4<sub>16</sub> -3 X19

LSR: 11010011010 00000 000010 10011 10011  
69A<sub>16</sub> 0 2 X19 X19

ADD: 10001011000 10011 000000 00001 00001  
458<sub>16</sub> X19 0 X1 X1

B: 000101 1111111111111111111100  
05<sub>16</sub> -4

Convert the following machine code program to assembly.

```

01010100|0000000000000000100|01011
  5416 → B cond      +4      0B6 → LT
1001000100|0000000000001|00010|00010
  24416 → ADDI      +1      X2 X2
000101|00000000000000000000000000000000
  0516 → B      0
1001000100|000000000000|11111|11111
  24416 → ADDI      +0      X31 X31
10110100|00000000000000000101|00000
  B416 → CBZ      +5      X0
  
```

```

B.LT LABEL1(+4)
ADDI X2, X2, #1
LABEL2:
B LABEL2(+0)
ADDI X31, X31, #0
LABEL1:
CBZ X0, +5
  
```

For the following 6-bit 2's complement values, compute the result of the given calculation. If there is an overflow please state this.

A: 110100 B: 011010 C: 100011

i.) A + B

ii.) A + C

iii.) A - B

iv.) A - C

i.)

$$\begin{array}{r}
 110100 \\
 + 011010 \\
 \hline
 001110
 \end{array}$$

No overflow

ii.)

$$\begin{array}{r}
 100000 \\
 110100 \\
 + 100011 \\
 \hline
 010111
 \end{array}$$

Overflow

iii.)

$$\begin{array}{r}
 110100 \\
 - 011010 \\
 \hline
 011010
 \end{array}
 \rightarrow
 \begin{array}{r}
 100100 \\
 110100 \\
 + 100101 \\
 \hline
 011010
 \end{array}$$

Overflow

iv.)

$$\begin{array}{r}
 110100 \\
 - 100011 \\
 \hline
 010001
 \end{array}
 \rightarrow
 \begin{array}{r}
 111001 \\
 110100 \\
 + 011100 \\
 \hline
 010001
 \end{array}$$

No overflow