Problem EX-3 (1 part)  

MIPS and C  

Part A: Consider the following MIPS code. Write a C program corresponding to this MIPS code by filling in body of the C program fragment provided below. Assume that the registers $2$, $3$, and $6$ hold variables “Pixels,” “P,” and “Result,” respectively.

# Computes the OR of four 8-bit pixels packed in a 32-bit data word.  
# $2$: Pixels: packed data word  
# $3$: P: a single pixel  
# $6$: Result: bit-wise OR of all pixels  

.data
Pixels: .word -12869361    # decimal equivalent of 0xFF3BA10F

.text
Dilate: lw $2, Pixels($0)  
and $6, $2, 255      # mask: extract P0 (0xFF)
sl $2, $2, 8        # logical shift right by 8 bits
and $3, $2, 255      # mask; extract P1
sl $2, $2, 8        # shift off P1
or $6, $3, $6       # $6: P1 or P0
and $3, $2, 255      # mask; extract P2
sl $2, $2, 8        # shift off P2, $2 is right with just P3
or $6, $3, $6       # $6: P2 or P1 or P0
or $6, $2, $6       # $6: P3 or P2 or P1 or P0
jr $31

int Pixels = -12869361;  
int main()  
{  
    int P;  
    int Result;

    return Result;
  }