

1 - Calculate the minimum size required for the On-Chip memory block inside the Character buffer block if we quadrupled the size (W and L) of the characters in pixels.(assume a 640x480 display) 25pts

Character block buffer holds **ascii** characters (1 byte each)

At 3x each character would take up 32 pixels x 32 pixels on the screen

The maximum number of characters that fit on a 640 x 480 display would be $20 \times 15 = 300$

Each character is 1 byte (ascii)

300 bytes

_____ bytes

2 - Calculate the minimum size required for the SDRAM used in our pixel buffer example from class.(assume no backbuffer support and a **4x scaler** block instead of the examples 2x scaler) (assume a 640x480 display) 25pts

pixel buffer holds pixel information

16bits / pixel = 2bytes/pixel

The maximum number of independent pixels that fit on a 640 x 480 display with the 4x block in the design is $160 \times 120 = 19,200$

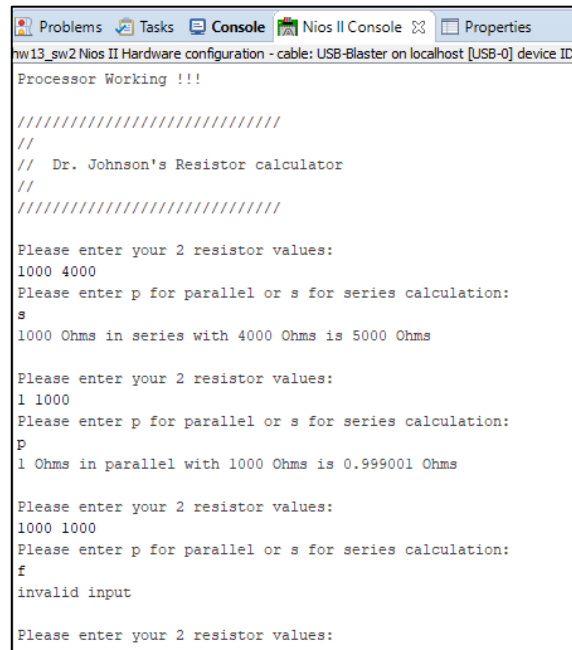
2 bytes/pixel

38,400 bytes

_____ bytes

3 – Modify your Nios_Basic processor hardware to change the memory from 12000B to 150000B and create a new BSP, but **DO NOT** check the `enable_small_C_library` box (allows access to `scanf()`).

Write a program to request 2 integer resistor values and a character (s or p), then calculate the parallel or series resistance depending on the character entered (s or p). Provide your code and examples below 50pts



```
hw13_sw2 Nios II Hardware configuration - cable: USB-Blaster on localhost [USB-0] device ID
Processor Working !!!

////////////////////////////////////
//
//   Dr. Johnson's Resistor calculator
//
////////////////////////////////////

Please enter your 2 resistor values:
1000 4000
Please enter p for parallel or s for series calculation:
s
1000 Ohms in series with 4000 Ohms is 5000 Ohms

Please enter your 2 resistor values:
1 1000
Please enter p for parallel or s for series calculation:
p
1 Ohms in parallel with 1000 Ohms is 0.999001 Ohms

Please enter your 2 resistor values:
1000 1000
Please enter p for parallel or s for series calculation:
f
invalid input

Please enter your 2 resistor values:
```