Problem Set 2:

P1.a. How to separate screen on VGA

At beginning of each frame, circuitry scan display memory for data starting at the address specified by the start address registers.

The scan line that matches the split screen scan line is not part of the split screen; the split screen starts on the following scan line.

To TURN ON - Set the split screen start scan line to a READABLE register, set start address before split screen.

To TURN OFF – Set split screen start scan line to a value equal or greater than the last scan line displayed

How to change color palette

Output value of palette entry to the PEL Address Write Mode Register.

Output component values to the PEL Data Register in order RGB

PEL Address Write Mode Register will automatically increment, allow component values of the palette entry to be written to the Data Register

P2. A.

MTCP\_BIOC\_ON: Enables button “interrupt on change”-whenever there is a state change in any of the port pin. In this case, if enabled, the controller jumps to the interrupt vector when the state of the button is changed

When: when game starts and controller’s buttons need to be used

Effect: gives controller an interrupt whenever button status is changed (pressed)

Return: MTCP\_ACK

MTCP\_LED\_SET: LED display values

When: Need to display values on LED

Effect: When LED display is in user mode, value specified by this command is displayed

Return: MTCP\_ACK

B.

MTCP\_ACK: signal for successful command, after every command is done

MTCP\_BIOC\_EVENT: tells controller which button is pressed

MTCP\_RESET: generates when RESET button is pressed or on an MTCP\_RESET\_DEV command

C. waiting takes too long