Projeto SystemC

Sistema composto por 6 módulos:

1. Processador MIPS 32 bits
2. Memória de 4GB
    a. endereços de 32 bits
    b. palavra de 32 bits
3. Módulo de DMA – transfere arquivos para a memória
4. Interface Computador I/O
5. Cifrador IDEA
6. Processamento de Imagens: realce

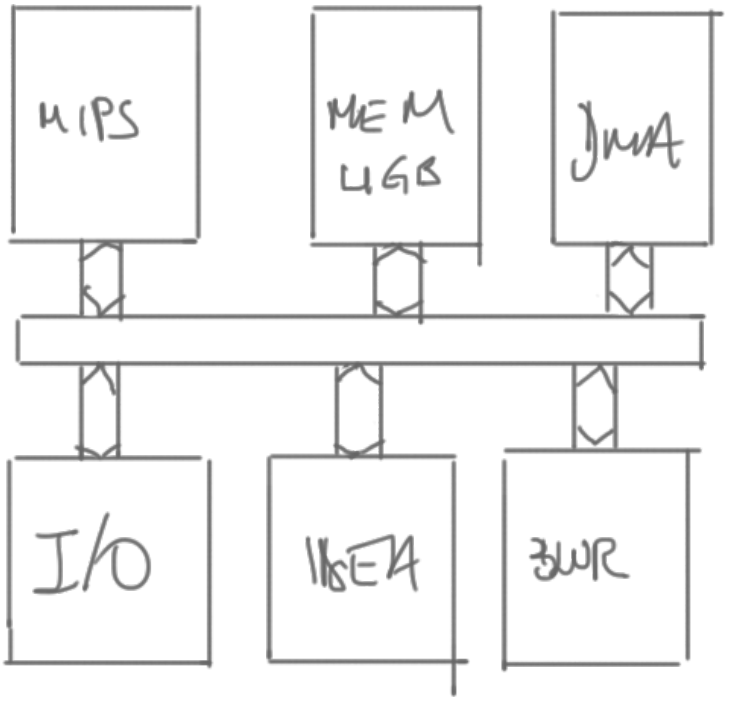

Figura 1. Sistema em Chip

1. Mapa de Memória

    Endereço base para o mapeamento de I/O: 0xFF000000

    1.1 Espaço de memória: 0x00000000 – 0xFEFFFFFF
    1.2 Mapa de I/O da interface com o PC:
        1.2.1 0xFF000000 – 0xFF3FFFFC: 4-byte pixel rows, video buffer
        obs: `unused[31:24], r[23:16], g[15:8], b[7:0]`
        1.2.2 0xFF400000 – 0xFF4000FF : 1-byte ASCII key code
        obs: `zero if not pressed.`
        1.2.3 0xFF400100: 1-btye estado do botão esquerdo do mouse (zero não pressionado)
        1.2.4 0xFF400101: 1-byte estado do botão direito do mouse (zero não pressionado)
        1.2.5 0xFF400102: 1 byte – requisição de fechamento de janela

1.2.6 0xFF400104: 4-bytes window size in pixeles (w[31:16], y[15:0]

1.2.7 0xFF400108: 4-byte mouse position in pixels (x[31:16], y[15:0])

1.2.8 0xFF40010C: 4-byte mouse position in pixels in the last time a mouse button was pressed (x[31:16], y[15:0])

1.2.9 0xFF400110: 4-byte mouse position in pixels in the last time a mouse button was released (x[31:16], y[15:0])

1.2.10 0xFF400114: ascii code of a pressed key – up to 4 simultâneous pressed keys – one byte each

1.3 Interface Deblur

1.3.1 0xFF400200: largura da imagem

1.3.2 0xFF400204: altura da imagem

1.3.3 0xFF400208: kernel [0,0]

1.3.4 0xFF40020C: kernel [0,1]

1.3.5 0xFF400210: kernel [0,2]

1.3.6 0xFF400214: kernel [1,0]

1.3.7 0xFF400218: kernel [1,1]

1.3.8 0xFF40021C: kernel [1,2]

1.3.9 0xFF400220: kernel [2,0]

1.3.10 0xFF400224: kernel [2,1]

1.3.11 0xFF400228: kernel [2,2]

1.3.12 0xFF400300: ready – flag que indica convolução pronta

1.3.13 0xFF500000 – 0xFF8FFFFC: 4-byte pixel rows, video buffer obs: unused[31:24], r[23:16], g[15:8], b[7:0]

1.4 Interface IDEA

1.4.1 0xFF900000 – 0xFF9000CC – 52 chaves de 16 bits

1.4.2 0xFF9000D0 – 0xFF9000DC: 4 words a cifrar - input

1.4.3 0xFF9000E0 – 0xFF9000EC: 4 words cifradas - output