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Lab 4 PreLab

1.

**ADC (ADD WITH CARRY TWO REGISTERS):** Adds 2 registers and the C Flag and places result in Rd.

**ADD (ADD WITHOUT CARRY):** Adds 2 registers and places the result in Rd.

**ADIW (ADD IMMEDIATE TO WORD):** Adds an immediate value (0 - 255) to a register pair and places result back in the register pair.

**FMUL (FRACTIONAL MULTIPLY UNSIGNED):** Performs 8 × 8-bit → 16-bit unsigned multiplication and shifts result 1 bit left.

**FMULS (FRACTIONAL MULTIPLY SIGNED):** Performs 8 × 8-bit → 16-bit signed multiplication and shifts the result 1 bit left.

**FMULSU (FRACTIONAL MULTIPLY SIGNED WITH UNSIGNED):** Performs 8-bit × 8-bit → 16-bit signed multiplication and shifts result 1 bit left.

**MUL (MULTIPLY UNSIGNED):** Performs 8 × 8-bit → 16-bit unsigned multiplication.

**MULS (MULTIPLY SIGNED):** Performs 8 × 8-bit → 16-bit signed multiplication.

**MULSU (MULTIPLY SIGNED WITH UNSIGNED):** Performs 8 × 8-bit → 16-bit multiplication of a signed and unsigned number.

**SUB (SUBTRACT WITHOUT CARRY):** Subtracts two registers and places the result in Rd.

**SUBI (SUBTRACT IMMEDIATE):** Subtracts a register and a constant and places the result in the destination register Rd.

**SBC (SUBTRACT WITH CARRY):** Subtracts 2 registers with C Flag and places result in Rd.

**SBCI (SUBTRACT IMMEDIATE WITH CARRY):** Subtracts a constant from a register and subtracts with the C Flag and places the result in Rd.

**SBIW (SUBTRACT IMMEDIATE FROM WORD):** Subtracts an immediate value (0-63) from a register pair and places the result in the register pair.

2.

Pseudo-code:

Add low bytes ($0110 and $0121) together plus carry bit and store result in $0100,

Add high bytes ($0111 and $0122) together plus carry bit and store result in $0101