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Lab 5 Prelab

1. Add, subtract, and multiply operations:
   a) ADC – adds two 8-bit registers and adds the carry bit
   b) ADD – adds two 8-bit registers without considering carry bit
   c) ADIW – adds a 6-bit constant to a 16-bit register pair
   d) DEC – decreases an 8-bit register by 1
   e) FMUL – multiplies two 8-bit registers as unsigned fractional numbers
   f) FMULS – multiplies two 8-bit registers as signed fractional numbers
   g) FMULSU – multiplies two 8-bit registers with one as a signed fractional number and the other as an unsigned fractional number
   h) INC – increases an 8-bit register by 1
   i) MUL – multiplies two 8-bit registers as unsigned numbers
   j) MULS – multiplies two 8-bit registers as signed numbers
   k) MULSU – multiplies two 8-bit registers with one as a signed number and the other as an unsigned number
   l) SBC – subtracts two 8-bit registers and subtracts the carry bit
   m) SBCI – subtracts an 8-bit constant from an 8-bit register and subtracts the carry bit
   n) SBIW – subtracts a 6-bit constant from a 16-bit register pair
   o) SUB – subtracts two 8-bit registers without the carry bit
   p) SUBI – subtracts an 8-bit constant from an 8-bit register without the carry bit
2. Pseudocode for 16-bit add from data memory:

```
Load to registers from $0111, $0110, $0121, $0120
Add registers with data from $0110, $0120
Add with carry registers with data from $0111, $0121
Store first result in $0100
Store second result in $0101
```

3. Pseudocode for 16-bit subtract from data memory:

```
Load to registers from $0111, $0110, $0121, $0120
Subtract the $0110 data register from the $0120 data register
Subtract with carry the $0111 data register from the $0121 data register
Store first result in $0100
Store second result in $0101
```