Laboratory 2

Assembly Language Programming and Debugging

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Code  Line # | Extended  Assembly | Indexed with offset | | PC | N | Z | V | C |
| Assembly | Machine code |
| 1 | **LDAA** $3000 | **LDX**  #$3000 |  |  |  |  |  |  |
| 2 | **LDAA** 0,X |  |  |  |  |  |  |
| 3 | **LDAB** $3001 |  |  |  |  |  |  |  |
| 4 | **ABA** | **ABA** |  |  |  |  |  |  |
| 5 | **STAA** $3002 |  |  |  |  |  |  |  |
| 6 | **LDAA** $3003 |  |  |  |  |  |  |  |
| 7 | **LDAB** $3004 |  |  |  |  |  |  |  |
| 8 | **SBA** | **SBA** |  |  |  |  |  |  |
| 9 | **ST**AA $3005 |  |  |  |  |  |  |  |
| endmain: BRA endmain | | |  |  |  |  |  |  |

Figure 5 : Program Code.

**Q1:** Do the following addition and subtraction by hand:

1. $9C + $B5 **Overflow** (if unsigned num.): Yes No

**Overflow** (if signed num.): Yes No

1. $3E - $F7 **Overflow** (if unsigned num.): Yes No

**Overflow** (if signed num.): Yes No

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Code  Line # | Extended  Assembly | Using Labels | | PC | N | Z | V | C |
| Assembly | Machine Code |
| 1 | **LDAA** $3000 | **LDAA** operandA |  |  |  |  |  |  |
| 2 | **LDAB** $3001 |  |  |  |  |  |  |  |
| 3 | **ABA** | **ABA** |  |  |  |  |  |  |
| 4 | **STAA** $3002 |  |  |  |  |  |  |  |
| 5 | **LDAA** $3003 |  |  |  |  |  |  |  |
| 6 | **LDAB** $3004 |  |  |  |  |  |  |  |
| 7 | **SBA** | **SBA** |  |  |  |  |  |  |
| 8 | **ST**AA $3005 |  |  |  |  |  |  |  |
| endmain: BRA endmain | | |  |  |  |  |  |  |

Figure 10 - Program Code.