**Question 1 - Instruction Set 1 – x295**

C. Evaluating our x295 instruction set using Memory Traffic criteria

**Table 2**

| x295 program<br><br>(1 assembly instruction/<br>machine code instruction<br>per row) | Fetch<br><br>(number of memory<br>accesses of word size)<br>+<br>Explain how you obtain<br>your count | Decode/Execute<br><br>(number of memory<br>accesses of word size)<br>+<br>Explain how you obtain<br>your count |
|---|---|---|
| **Assembly instruction:**<br>ADD x, y, tmp1<br><br><br>**Machine code instruction:**<br>0001 \<Dest 12 bits\><br>0000 \<Src1 12 bits\><br>0000 \<Src2 12 bits\> | **Count: 3**<br><br>**Explanation:**<br><br>**Length is 3 word sizes, since each word size is 16, thus three memory access, one for each word size.** | **Count: 3**<br><br>**Explanation:**<br><br>**x Memory Access 1**<br><br>**y Memory Access 2**<br><br>**tmp1 Memory Access 3** |
| **Assembly instruction:**<br>SUB x, y, tmp2<br><br><br>**Machine code instruction:**<br>0010 \<Dest 12 bits\><br>0000 \<Src1 12 bits\><br>0000 \<Src2 12 bits\> | **Count: 3**<br><br>**Explanation:**<br><br>**Length is 3 word sizes, since each word size is 16, thus three memory access, one for each word size.** | **Count: 3**<br><br>**Explanation:**<br><br>**x Memory Access 1**<br><br>**y Memory Access 2**<br><br>**tmp2 Memory Access 3** |

| Assembly instruction: | Count: 3 | Count: 3 |
|---|---|---|
| `MUL tmp1, tmp2, z`<br><br>**Machine code instruction:**<br><br>`0011 <Dest 12 bits>`<br>`0000 <Src1 12 bits>`<br>`0000 <Src2 12 bits>` | **Explanation:**<br><br>**Length is 3 word sizes, since each word size is 16, thus three memory access, one for each word size.** | **Explanation:**<br><br>**tmp1 Memory Access 1**<br><br>**tmp2 Memory Access 2**<br><br>**z Memory Access 3** |
| **Grand Total: 18** | **Total: 9** | **Total: 9** |

Once completed, submit it on Crowdmark as your answer to Question 1.