CPE 390: Microprocessor Systems

HW2

Due: 2/20/18

1. Install the MiniIDE and 68HC12 simulator and complete the tasks in the tutorial: "Getting Started with the HCS12 IDE". (You don't need to hand anything in on this – just do it)

2. Write assembler directive(s) to reserve space starting at memory address $B300 for a labeled table named *xdata* that will be required to hold 24 16-bit words, followed by a labeled table named *nines* initialized with the first ten positive numbers that are divisible by seven (9 through 90) stored as unsigned 8-bit integers. *(Note: I am not asking you to write a program to calculate these values – I just want you to initialize a memory table with these values)* (5 points)

3. What would be the contents of memory initialized by the following assembler directives: (show memory address and data (if known) for each location – this should be done by hand – not using the assembler/simulator) (5 points)

```
        ORG     $1000
        DC.B    $FF, $F8, $01
XYZ:    EQU     $84
        DS.B    3
        DC.W    XYZ
        DCB.B   4, $05
```

4. Write a program (starting at address $4000) to find the average of four 16-bit unsigned integers stored at locations $5000, $5002, $5004 and $5006 and store the 16-bit result at location $5010. Round your result to the nearest integer. (You can assume that the sum of the four integers is not greater than 64K). Use assembler directives to initialize the four numbers to be 586, 1234, 2961 and 198 (decimal). Enter your program into the MiniIDE and assemble it. Load your assembled code into the simulator and check that it operates correctly. In your report, show your code and show a screen shot of the simulator after your program has completed with the memory display window set to show addresses starting at $5000. (15 points)