CPE301 – SPRING 2019

Design Assignment 1B

Student Name: Tanner Tindall

Student #: 8000733733

Student Email: tindat1@unlv.nevada.edu

Primary Github address: <https://github.com/TannerTindall51>

Directory: <https://github.com/TannerTindall51/tindalltannerm_submission/tree/master/Design_Assignments/DA1B>

Submit the following for all Labs:

1. In the document, for each task submit the modified or included code (only) with highlights and justifications of the modifications. Also, include the comments.
2. Use the previously create a Github repository with a random name (no CPE/301, Lastname, Firstname). Place all labs under the root folder ESD301/DA, sub-folder named LABXX, with one document and one video link file for each lab, place modified asm/c files named as LabXX-TYY.asm/c.
3. If multiple asm/c files or other libraries are used, create a folder LabXX-TYY and place these files inside the folder.
4. The folder should have a) Word document (see template), b) source code file(s) and other include files, c) text file with youtube video links (see template).

1. **COMPONENTS LIST AND CONNECTION BLOCK DIAGRAM w/ PINS**

N/A

1. **INITIAL/MODIFIED/DEVELOPED CODE OF TASK 1/A**

|  |
| --- |
| ; |
|  | ; AssemblerApplication2.asm |
|  | ; |
|  | ; Created: 2/21/2020 3:23:09 PM |
|  | ; Author : tanne |
|  | ; |
|  |  |
|  | .equ STARTADDS = 0x0300 ;starting address |
|  | .equ SEVENADDS = 0x0500 ;address for numbers divisible by 7 |
|  | .equ THREEADDS = 0x0600 ;address for numbers divisible by 7 |
|  | .equ BOTHADDS = 0x0700 ;address for numbers divisible by 7 |
|  | .equ ELSEADDS = 0x0800 ;address for any other values |
|  |  |
|  | .def Store = r18 |
|  | .def Counter7 = r19 |
|  | .def Counter3 = r20 |
|  | ;.def CounterBoth = r21 |
|  | ;.def CounterNeither = r22 |
|  | ;.def MainCounter = r23 |
|  |  |
|  |  |
|  |  |
|  | start: |
|  | ldi XL, LOW(STARTADDS) ;Declaring lower bounds of pointer |
|  | ldi XH, HIGH(STARTADDS) ;Declaring upper bounds of pointer |
|  | ldi YL, LOW(SEVENADDS) |
|  | ldi YH, HIGH(SEVENADDS) |
|  |  |
|  | ldi r16, 0x19 ;Loads r22 with lowest value (25) |
|  | ldi r17, 0xE2 ;Loads r23 with highest value (226) |
|  |  |
|  | POPULATE: st X+, r16 ;Loop for populating the memory address, starting with (25) |
|  | inc r16 ;increments lowest value register (r16) |
|  | dec r17 ;decrements highest value register (r17) |
|  | cpi r17, 24 |
|  | brne POPULATE ;once the highest value register reaches 0, exits loop and continues |
|  |  |
|  | PARSE: ld Store, -X ;loads memory address location into register Store from highest to lowest |
|  | CP XL, R0 ;compares the value to 0 |
|  | BREQ end ;if 0, parsing os completed and code ends |
|  | div7: |
|  | subi Store, 0x7 ;subtracts 7 from value in Store |
|  | cpi Store, 7 ; |
|  | brsh div7 ; |
|  | cpse Store, r0 ; |
|  | jmp Skip ; |
|  | ld Store, X ; |
|  | st Y+, Store ; |
|  | ld Counter7, Y ; |
|  |  |
|  | ;div3: |
|  | ;subi Store, 0x3 |
|  | ;cpi Store, 3 |
|  | ; div3 |
|  | ;cpse Store, r0 |
|  | ;jmp Skip |
|  | ;ld Store, X |
|  | ;ldi YL, LOW(THREEADDS) |
|  | ;ldi YH, HIGH(THREEADDS) |
|  | ;st Y+, Store |
|  | ;ld Counter3, Y |
|  |  |
|  | Skip: |
|  | jmp PARSE |
|  |  |
|  | end: jmp end |

1. **DEVELOPED MODIFIED CODE OF TASK 2/A from TASK 1/A**

N/A

1. **SCHEMATICS**

N/A

1. **SCREENSHOTS OF EACH TASK OUTPUT (ATMEL STUDIO OUTPUT)**
2. **SCREENSHOT OF EACH DEMO (BOARD SETUP)**

N/A

1. **VIDEO LINKS OF EACH DEMO**

N/A

1. **GITHUB LINK OF THIS DA**

<https://github.com/TannerTindall51/tindalltannerm_submission/tree/master/Design_Assignments/DA1B>

**Student Academic Misconduct Policy**

<http://studentconduct.unlv.edu/misconduct/policy.html>

“This assignment submission is my own, original work”.

Tanner Tindall