**System Programming**

Assignment 1

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1. Write a sequence of instructions for SIC to set ALPHA equal to the product of BETA and GAMMA. Assume that ALPHA, BETA, and GAMMA are defined as below:

***ANSWER***

* LDA ALPHA
* STA BETA
* MUL GAMMA
* STA ALPHA

ALPHA RESW 1

BETA RESW 1

GAMMA RESW 1

1. Write a sequence of instructions for SIC to set ALPHA equal to the integer portion of BETA Divide GAMMA. Assume that ALPHA, BETA, and GAMMA are defined as below:

***ANSWER***

* LDA ALPHA
* STA BETA
* DIV GAMMA
* STA ALPHA

ALPHA RESW1

BETA RESW1

GAMMA RESW1

1. Suppose that ALPHA is an array of 100 words, as defined below. Write a sequence of instructions for SIC to set all 100 elements of the array to 0.

***ANSWER***

* LDA ZERO
* STA INDEX

LOOP LDX INDEX

* LDA ZERO
* STA ALPHA, X
* LDA INDEX
* ADD THREE
* STA INDEX
* COMP K300
* JLT LOOP

INDEX RESW 1

ALPHA RESW 100

ZERO WORD 0

K300 WORD 300

THREE WORLD 3

1. Suppose that RECORD contains a 100-byte record, as below. Write a subroutine for SIC that will write this record onto device 05.

***ANSWER***

READ LDX ZERO

RLOOP TD INDEV

* JEQ RLOOP
* RD INDEV
* STCH RECORD, X
* TIX K100
* JLT RLOOP
* RSUP

INDEV BYTE X’05’

RECORD RESB 100

K100 WORD 100

1. Write a subroutine for SIC that will print from 1 till 10.

***ANSWER***

* LDX ZERO
* STA INDEX

PLOOP LDX INDEX

* LDA ALPHA
* TIX K10
* JLT PLOOP

ZERO WORD 0

K10 WORD 10

INDEX RESW 1

ALPHA RESW 1