**Assembly Language (A&E)**

**Fall 2015**

**Assignment-4**

**Submission: Sunday 25th October, 2015 (on slate)**

**[Q1] (Video Memory)**

**DONE:**

Write an infinite loop that shows two asterisks moving from right and left centers of the screen to the middle and then back. Simply slow down.Use two empty nested loops with large counters to introduce some delay so that the movement is noticeable.

**[Q2] (String Instructions)**

DONE: Write a subroutine findSubstr that takes a null terminated string and a null terminated substring as its parameters and prints “Substring Found.” on video screen if that substring is found in that string and prints “Substring Not Found.” otherwise.

Sample :

str: db ‘Marry has a little lamb.’,0

substr1: db ‘lamb’,0 ; findSubstr prints “Substring Found.” for this substring.

Substr2: db ‘lame’,0 ; findSubstr prints “Substring Not Found.” for this substring.

**[Q3] (String instructions and memory)**

**DONE:**

Write a subroutine CopyBlock taking a parameter n, this subroutine should copy the top block of n rows (of video screen) to bottom block of n rows after swapping background and foreground colors and reversing the row characters.

Sample is given as follows:

CopyBlock(n) ; // where if n=2, the top 2 rows will be copied to bottom 2 rows with swapped background and foreground colors.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **A** | **B** | **C** | **A** | | **B** | | **C** | | **A** | | **B** | | **C** | | **D** |
| **X** | **Y** | **T** | **X** | | **Y** | | **T** | | **Z** | | **X** | | **Y** | | **Z** |
| **.**  **.**  **.** | | | | | | | | | | | | | | | |
| **Z** | **Y** | **X** | **Z** | **T** | | **Y** | | **X** | | **T** | | **Y** | | **X** | |
| **D** | **C** | **B** | **A** | **C** | | **B** | | **A** | | **C** | | **B** | | **A** | |

Note:

- You can safely assume that the top and bottom blocks are non-overlapping blocks.

- Top block starts from first row of video screen and bottom block’s last row is the last row of video screen.

-You cannot use a temporary array.

DONE:

**[Q4] (String Instructions and memory)**

Write a procedure to copy a given area on the screen at the center of the screen without using a temporary array. The routine will be passed top, left, bottom, and right in that order through the stack. The parameters passed will always be within range the height will be odd and the width will be even so that it can be exactly centered.