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# Question 1:

1. Write a program that displays your name horizontally in the middle of the screen using display memory.

a. Write a procedure that on each call shifts your string one row downwards.

b. Change your program so that the string keeps on shifting downwards, and whenever the string exits the lower boundary of the screen, it reappears from the top boundary.

# Answer:

|  |  |
| --- | --- |
| 1 | ORG 100h |
| 2 |  |
| 3 | .DATA |
| 4 |  |
| 5 | STR1    *DB*  'MAIZ NADEEM' |
| 6 | SIZE    *DW*  10 |
| 7 |  |
| 8 | .CODE |
| 9 |  |
| 10 | MAIN PROC |
| 11 |  |
| 12 | MOV AX, 0XB800 |
| 13 | MOV ES, AX |
| 14 | MOV SI, (13-1)\*160 + (40-5-1)\*2 |
| 15 |  |
| 16 | MOV CX, SIZE |
| 17 | MOV AH, 0X07 |
| 18 | XOR BX, BX |
| 19 |  |
| 20 | NAMEPRINT:  MOV AL, [STR1 + BX] |
| 21 | MOV ES:SI, AX |
| 22 | ADD SI, 2 |
| 23 | INC BX |
| 24 | LOOP NAMEPRINT |
| 25 |  |
| 26 | PROCCALL:   CALL DOWN |
| 27 | LOOP PROCCALL |
| 28 |  |
| 29 | MAIN ENDP |
| 30 | RET |
| 31 |  |
| 32 | DOWN PROC |
| 33 |  |
| 34 | MOV CX, SIZE |
| 35 |  |
| 36 | ERASE:      SUB SI, 2 |
| 37 | MOV ES:SI, 0X0720 |
| 38 | LOOP ERASE |
| 39 |  |
| 40 | MOV CX, SIZE |
| 41 | MOV BX, 0 |
| 42 | ADD SI, 160 |
| 43 | CMP SI, 80\*25\*2 |
| 44 | JG  SHIFTTOP |
| 45 |  |
| 46 | NAMEPRINT2: MOV AL, [STR1 + BX] |
| 47 | MOV ES:SI, AX |
| 48 | ADD SI, 2 |
| 49 | INC BX |
| 50 | LOOP NAMEPRINT2 |
| 51 | RET |
| 52 |  |
| 53 | SHIFTTOP:   MOV SI, (40-5-1)\*2 |
| 54 |  |
| 55 | NAMEPRINT3: MOV AL, [STR1 + BX] |
| 56 | MOV ES:SI, AX |
| 57 | INC BX |
| 58 | ADD SI, 2 |
| 59 | LOOP NAMEPRINT3 |
| 60 |  |
| 61 | DOWN ENDP |
| 62 |  |
| 63 | RET |

# Question 2:

# **2. Write a program that displays your name vertically in the middle of the screen using display memory.**

# **a. Write a procedure that on each call shifts your string one column to the right.**

# **b. Change your program so that the string keeps on shifting right, and whenever the string exits the right boundary of the screen, it reappears from the left boundary**

# Answer:

|  |  |
| --- | --- |
| 1 | ORG 100h |
| 2 |  |
| 3 | .DATA |
| 4 |  |
| 5 | STR1    *DB*  'MAIZ NADEEM' |
| 6 | SIZE    *DW*  10 |
| 7 |  |
| 8 | .CODE |
| 9 |  |
| 10 | MAIN PROC |
| 11 |  |
| 12 | MOV AX, 0XB800 |
| 13 | MOV ES, AX |
| 14 | MOV SI, (13-5-1)\*160 + (40-1)\*2 |
| 15 |  |
| 16 | MOV CX, SIZE |
| 17 | MOV AH, 0X07 |
| 18 | XOR BX, BX |
| 19 |  |
| 20 | NAMEPRINT:  MOV AL, [STR1 + BX] |
| 21 | MOV ES:SI, AX |
| 22 | ADD SI, 80\*2 |
| 23 | INC BX |
| 24 | LOOP NAMEPRINT |
| 25 |  |
| 26 | PROCCALL:   CALL DOWN |
| 27 | LOOP PROCCALL |
| 28 |  |
| 29 | MAIN ENDP |
| 30 | RET |
| 31 |  |
| 32 | DOWN PROC |
| 33 |  |
| 34 | MOV CX, SIZE |
| 35 |  |
| 36 | ERASE:      SUB SI, 80\*2 |
| 37 | MOV ES:SI, 0X0720 |
| 38 | LOOP ERASE |
| 39 |  |
| 40 | MOV CX, SIZE |
| 41 | MOV BX, 0 |
| 42 | ADD SI, 2 |
| 43 | CMP SI, 80\*25\*2 |
| 44 | JG  SHIFTLEFT |
| 45 |  |
| 46 | NAMEPRINT2: MOV AL, [STR1 + BX] |
| 47 | MOV ES:SI, AX |
| 48 | ADD SI, 80\*2 |
| 49 | INC BX |
| 50 | LOOP NAMEPRINT2 |
| 51 | RET |
| 52 |  |
| 53 | SHIFTLEFT:  MOV SI, (13-5-1)\*160 |
| 54 |  |
| 55 | NAMEPRINT3: MOV AL, [STR1 + BX] |
| 56 | MOV ES:SI, AX |
| 57 | INC BX |
| 58 | ADD SI, 80\*2 |
| 59 | LOOP NAMEPRINT3 |
| 60 |  |
| 61 | DOWN ENDP |
| 62 |  |
| 63 | RET |