Experiment No

Objective:

Write an assembly language program to display the contents of 16 bit flag register.

Prerequisite:

TASM assembler

Description:

To display the contents of flag register pushf and pop instructions are used. Each bit of flag register is then masked off with 1 and all 0's (i.e. 1000 0000 0000 0000(16 bit) → 8000h) and based on the result of masking either 0 (30h) or 1 (31h) is get displayed on the screen. Each bit of the above 16 bit number gets shifted in right direction by 1 position before masking to obtain the next bit position of flag register. This whole procedure gets repeated 16 times.

Algorithm

1. Start
2. Initialize data segment through AX register in the DS register.
3. Display the flag bit names as "X X X X O D I T SF ZF x AF X PF X CF "
4. Push the contents of flag register to a stack
5. Pop the contents of stack to register to any 16 bit register (say BX =0000 0100 1000 1001)
6. Move the contents of BX to temporary variable say t
7. Move the 8000h number to AX.(AX← 8000h)
8. Move the count as 16(in decimal) to CX register (as 16 bit flag register)
9. Move the contents of temporary variable t to BX.
10. And the contents of BX and AX.

11. If zero flag is set then goto the step no 14 otherwise goto step no. 12

12. Move the 31h to DL register.

13. Make the unconditional jump to a step no. 15

14. Move the 30h to DL register.

15. Preserve the (8000h) number from AX in t1 temporary variable. (As while displaying 30h or 31 h AH register get modified as 02h function is moved of INT 21h).

16. Display the contents of DL register.

17. Move the contents of t1 to AX register back (As while displaying 30h or 31 h AH register get modified as 02h function is moved of INT 21h).

18. Rotate the contents of AX by 1 positions in right direction.

19. Repeat step no 5 to 17 till count CX reaches to 0.

20. Stop.