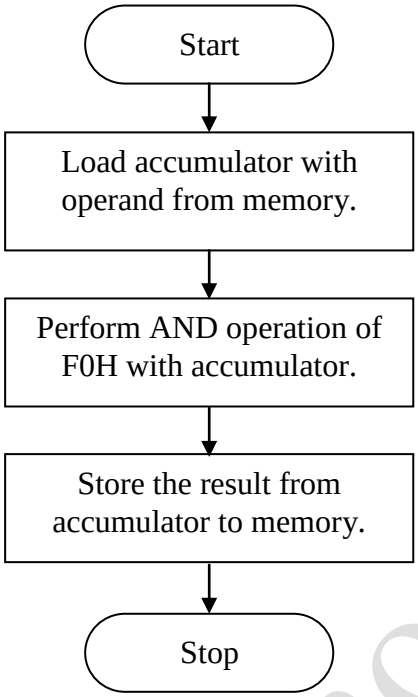
**Program 7:** Mask the lower nibble of an 8-bit number.

**Flowchart:**




**Program:**

| Address | Mnemonics | Operand | Opcode | Remarks |
|---|---|---|---|---|
| 2000 | LDA | 3000H | 3A | Load H-L pair with data from 3000H. |
| 2001 | | | 00 | Lower-order of 3000H. |
| 2002 | | | 30 | Higher-order of 3000H. |
| 2003 | ANI | F0H | E6 | AND Immediate F0H with reg. A. |
| 2004 | | | F0 | Immediate value F0H. |
| 2005 | STA | 3001H | 32 | Store the result at memory location 3001H. |
| 2006 | | | 01 | Lower-order of 3001H. |
| 2007 | | | 30 | Higher-order of 3001H. |
| 2008 | HLT | | 76 | Halt. |

**Explanation:**

- This program masks the lower nibble of an 8-bit number stored in memory location 3000H.
- Let us assume that the operand stored at memory location 3000H is 45H.
- The operand is moved to accumulator from memory location 3000H.
- Then, AND operation of F0H is performed with accumulator. This results in the masking of lower nibble.
- The result is stored at memory location 3001H.

**Output:**

**Before Execution:**

3000H: 45H

**After Execution:**

3001H: 40H