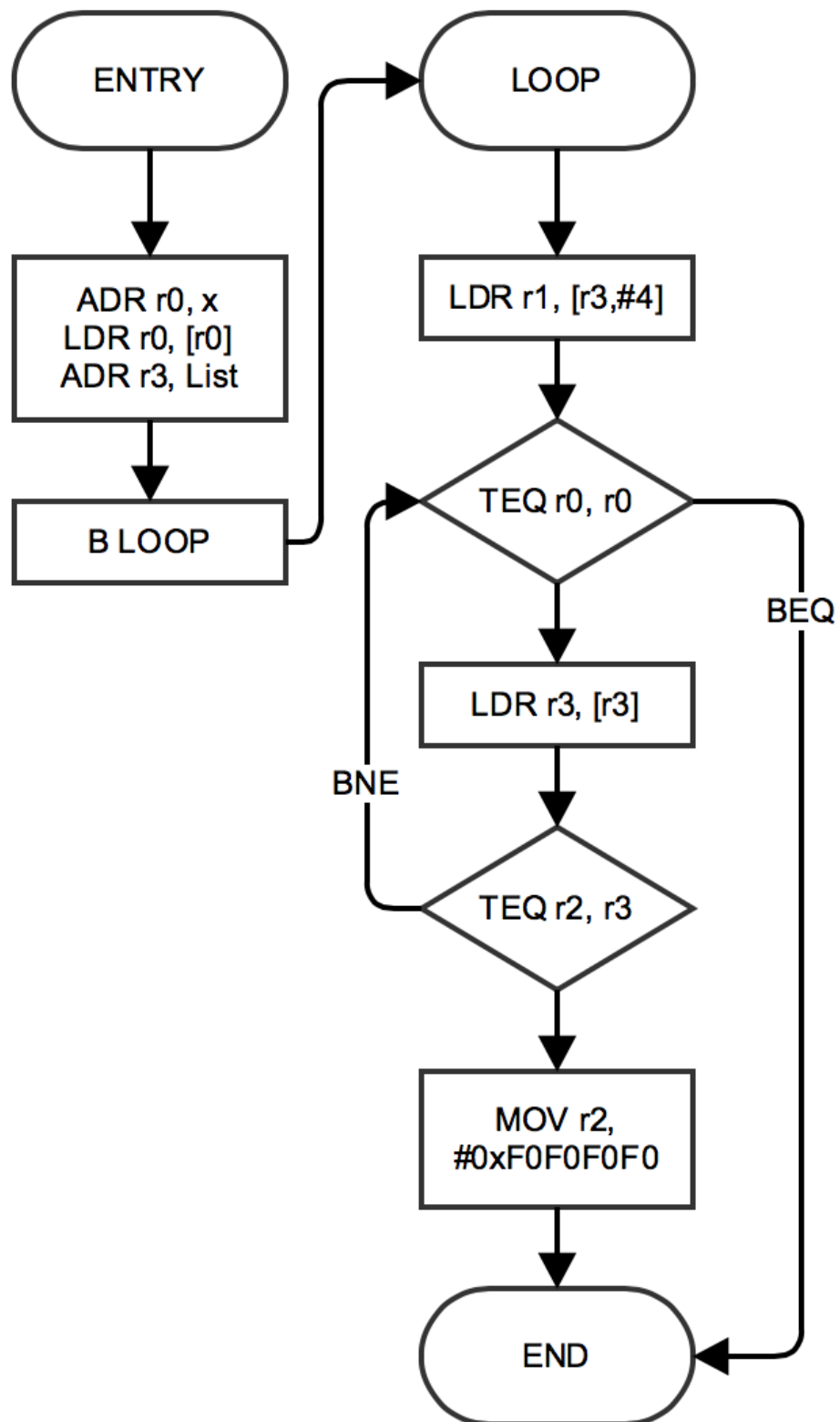


1.



2. Each call of the POWER subroutine needs 9 stack frames to return. This is because each call of the subroutine has 2 parameters + 1 result + 6 saved registers. For the base case of $n = 0$, there is only one call of the POWER subroutine.

n = 0: $\text{POWER}(x, 0) = 1 \text{ call} * 9 \text{ frames} = 9 \text{ stack frames}$

n = 1: $\text{POWER}(x, 1) + \text{POWER}(x, 1-1=0) = 2 \text{ calls} * 9 \text{ frames} = 18 \text{ stack frames}$

n = 2: $\text{POWER}(x, 2) + \text{POWER}(x, 2/2=1) + \text{POWER}(x, 1-1=0) = 3 \text{ calls} * 9 \text{ frames} = 27 \text{ stack frames}$

n = 3: $\text{POWER}(x, 3) + \text{POWER}(x, 3-1=2) + \text{POWER}(x, 2/2=1) + \text{POWER}(x, 1-1=0) = 4 \text{ calls} * 9 \text{ frames} = 36 \text{ stack frames}$

n = 4: $\text{POWER}(x, 4) + \text{POWER}(x, 4/2=2) + \text{POWER}(x, 2/2=1) + \text{POWER}(x, 1-1=0) = 4 \text{ calls} * 9 \text{ frames} = 36 \text{ stack frames}$

n = 5: $\text{POWER}(x, 5) + \text{POWER}(x, 5-1=4) + \text{POWER}(x, 4/2=2) + \text{POWER}(x, 2/2=1) + \text{POWER}(x, 1-1=0) = 5 \text{ calls} * 9 \text{ frames} = 45 \text{ stack frames}$

n = 6: $\text{POWER}(x, 6) + \text{POWER}(x, 6/2=3) + \text{POWER}(x, 3-1=2) + \text{POWER}(x, 2/2=1) + \text{POWER}(x, 1-1=0) = 5 \text{ calls} * 9 \text{ frames} = 45 \text{ stack frames}$

n = 7: $\text{POWER}(x, 7) + \text{POWER}(x, 7-1=6) + \text{POWER}(x, 6/2=3) + \text{POWER}(x, 3-1=2) + \text{POWER}(x, 2/2=1) + \text{POWER}(x, 1-1=0) = 6 \text{ calls} * 9 \text{ frames} = 54 \text{ stack frames}$

n = 8: $\text{POWER}(x, 8) + \text{POWER}(x, 8/2=4) + \text{POWER}(x, 4/2=2) + \text{POWER}(x, 2/2=1) + \text{POWER}(x, 1-1=0) = 5 \text{ calls} * 9 \text{ frames} = 45 \text{ stack frames}$

n = 9: $\text{POWER}(x, 9) + \text{POWER}(x, 9-1=8) + \text{POWER}(x, 8/2=4) + \text{POWER}(x, 4/2=2) + \text{POWER}(x, 2/2=1) + \text{POWER}(x, 1-1=0) = 6 \text{ calls} * 9 \text{ frames} = 54 \text{ stack frames}$

n = 10: $\text{POWER}(x, 10) + \text{POWER}(x, 10/2=5) + \text{POWER}(x, 5-1=4) + \text{POWER}(x, 4/2=2) + \text{POWER}(x, 2/2=1) + \text{POWER}(x, 1-1=0) = 6 \text{ calls} * 9 \text{ frames} = 54 \text{ stack frames}$

n = 11: $\text{POWER}(x, 11) + \text{POWER}(x, 11-1=10) + \text{POWER}(x, 10/2=5) + \text{POWER}(x, 5-1=4) + \text{POWER}(x, 4/2=2) + \text{POWER}(x, 2/2=1) + \text{POWER}(x, 1-1=0) = 7 \text{ calls} * 9 \text{ frames} = 63 \text{ stack frames}$

n = 12: $\text{POWER}(x, 12) + \text{POWER}(x, 12/2=6) + \text{POWER}(x, 6/2=3) + \text{POWER}(x, 3-1=2) + \text{POWER}(x, 2/2=1) + \text{POWER}(x, 1-1=0) = 6 \text{ calls} * 9 \text{ frames} = 54 \text{ stack frames}$

