1. if you didn’t initialize r2 to 0 then when you add 12 to it there is a chance that there is a number already in r2 so that r2 is no larger than 12 instead of being 12
2. 9
   1. .ORIG x3001
   2. 0101000000100000 ; R0 <- 0
   3. 1001001001111111 ; R1 <- !R1
   4. 0001001001100001 ; R1 <- R1 + 1
   5. 0001011001000010 ; R3 <- R1 + R2
   6. 0000010000000010 ; BRz3008
   7. 0000100000000101 ; BRn x300C
   8. 0000001000000010 ; BRp x300A
   9. 0001000000100000 ; R0 <- R0 + 0
   10. 0000111000000011 ; BRnzp x300D
   11. 0001000000111111 ; R0 <- R0 - 1
   12. 0000111000000001 ; BRnzp x300D
   13. 0001000000100001 ; R0 <- R0 + 1
   14. 1111000000100101 ; HALT
   15. .END
3. 0111 010 100 00111
   1. .ORIG x3000
   2. 0101 001 001 1 00000
   3. 0101 000 000 1 00000
   4. 0010 000 000000101
   5. 0001 001 001 1 01010
   6. 0000 010 000001010
   7. 1111 0000 0010 0001
   8. 0000 111 000000000
   9. 0000 0000 0100 0011 ; FILL #67
   10. .END
   11. .ORIG x3000
   12. 0101 000 000 1 00000
   13. 0101 011 011 1 00000
   14. 0001 011 011 1 00001
   15. 0101 0101 011 0 0100
   16. 0000 010 000000001
   17. 0001 000 000 00001
   18. .END
   19. 0101 000 000 1 00000
   20. 0001 000 000 1 00001
   21. 0101 011 011 1 00000
   22. 0001 011 011 1 00001
   23. 0101 0101 011 0 0100
   24. 0000 010 000000001
   25. 0001 000 000 00000
   26. .END