```
 1    /* Program that counts consecutive 1's and holds the length of the longest string */
 2
 3                .text                   // executable code follows
 4                .global _start
 5    _start:     MOV     R4, #TEST_NUM   // R4 will hold the address of the next data word
 6                MOV     R5, #0          // R5 will hold length of the string of ones
 7    MAIN:       LDR     R1, [R4], #4    // R1 <- next word
 8                CMP     R1, #0
 9                BEQ     END             // 0 indicates the end of the list
10                BL      ONES            // Count longest string of 1's
11                CMP     R5, R0          // Result is returned in 0
12                MOVLT   R5, R0          // Store greater value in R5
13                B       MAIN            // Keep looping until the list is done
14
15    END:        B       END
16
17    // Subroutine ONES to find longest string of ones in R1
18    // Result is returned in R0
19    ONES:       MOV     R0, #0          // R0 will hold the result
20    LOOP:       CMP     R1, #0
21                BEQ     END_ONES        // loop until the data contains no more 1's
22                LSR     R2, R1, #1      // perform SHIFT, followed by AND
23                AND     R1, R1, R2
24                ADD     R0, #1          // count the string length so far
25                B       LOOP
26    END_ONES:   MOV     PC, LR          // Return
27    // End of subroutine ONES
28
29    TEST_NUM:   .word   0x103fe00f, 0x111ff332, 0x12345678
30                .word   0xaf428039, 0x724c8831, 0xa92ee391
31                .word   0xe0d4bd47, 0x8f8adad8, 0xdfa7ea48
32                .word   0xe99e1b93, 0xa4cc303b, 0xda87b4e7
33                .word   0
34
35                .end
36
```