



YOUR FREEDOM IN LEARNING

EE306 - Microprocessors

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#31

1 Longest Alternating Strings

```
.global _start
_start:
    LDR R1, TEST_NUM // load the data word into R1
    LDR R3, CONSECUTIVE_ALTERNATING // load the alternating word into R3
    MOV R0, #0 // R0 will hold the result
    EOR R1, R1, R3
LOOP:
    CMP R1, #0 // loop until the data contains no more 1s
    MOV R4, R0
    BEQ LOOP1
    LSR R2, R1, #1 // perform SHIFT, followed by AND
    AND R1, R1, R2
    ADD R0, #1 // count the string lengths so far
    B LOOP

    LDR R1, TEST_NUM // load the data word into R3
    LDR R3, CONSECUTIVE_ALTERNATING1 // load the alternating word into R3
    MOV R0, #0 // R0 will hold the result
LOOP1:
    CMP R1, #0 // loop until the data contains no more 1s
    BEQ END
    LSR R2, R1, #1 // perform SHIFT, followed by AND
    AND R1, R1, R2
    ADD R0, #1 // count the string lengths so far
    B LOOP1

COMPARE_RESULTS:
    CMP R0, R4
    MOVL R0, R4
    MOV R4, #0
END:
    B END

TEST_NUM: .word 0x103fe05f
CONSECUTIVE_ALTERNATING: .word 0xAAAAAAAA
CONSECUTIVE_ALTERNATING1: .word 0x55555555
.end
```