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7.19. The number of times the program loops is about five times because the BRzp Loop is a conditional loop.

7.21. In the program we are first clearing R0 and adding the value of 10 to R2. At R3 we are getting numbers at that location. Then we mask the R4 by the 0x8000 so then R0 is a counter. Then BRz loop will check if the number is 0 or 1 seeing if it is positive or negative. Next decrease the count at R2 finally store the value from R0 to address x5000.

7.23. (a) - ADD R1, R1, #-1 In order to reach the last character in the string

(b) - LDR R4, R1, #0 Load the first and last character into R3 or R4

(c) - ADD R0, R0, #1 Compares characters from R3 and R4 returns in R5

(d) - ADD R1, R1, #-1 traversing backward in the string decreasing by 1

(e) - BR LOOP Check for characters if so then go back to LOOP

7.24. The error is in the LOOP BRz DONE where we want to shift R3 to the left by 4 bits. Instruction checks the condition code that changes the statement ADD R3, R3, R3. BRz DONE branch base on the change of loop counter and R2 is ADD R2, R2, #-1.