Example #16 -- ARM Selective Control Constructs

Read one character from the standard input stream and classify it.

.global main
.text
main:
    push {lr}
    bl getchar @ Read one character (returned in r0)
    mov r4, r0 @ Copy character to r4 (r0 reused)

    // if( character is equal to '$' )then
    //   print "Found a dollar sign"
    // endif
    if1:
        cmp r4, #$'@' @ Compare character to '$'
        bne endif1
        then1:
            ldr r0, =fmt1 @ Print "Found a dollar sign"
            bl printf
        endif1:

    // if( character is in the first half of the ASCII set )then
    //   print "Found a character in the first half of the ASCII set"
    // else
    //   print "Found a character in the second half of the ASCII set"
    // endif
    if2:
        cmp r4, #0x40 @ Compare character to an at sign ('@')
        bge else2
        then2:
            ldr r0, =fmt2 @ Print "... first half ..."
            bl printf
            b endif2
        else2:
            ldr r0, =fmt3 @ Print "... second half ...
            bl printf
        endif2:
// if( character is between '0' and '9' )then
// print "Found a decimal digit"
// endif

if3:
    cmp    r4, #'0'    @ Compare character to '0'
    blt    endif3
    cmp    r4, #'9'    @ Compare character to '9'
    bgt    endif3
then3:
    ldr    r0, =fmt4   @ Print "Found a decimal digit"
    bl      printf
endif3:

pop    {lr}
bx      lr

.data
fmt1:
.asciz  "\nFound a dollar sign\n"
fmt2:
.asciz  "\nFound a character in the first half of the ASCII set\n"
fmt3:
.asciz  "\nFound a character in the second half of the ASCII set\n"
fmt4:
.asciz  "\nFound a decimal digit\n"

<2 lemon:~/Examples > gcc example16.s
<3 lemon:~/Examples > a.out
$
Found a dollar sign

Found a character in the first half of the ASCII set

<4 lemon:~/Examples > a.out
?

Found a character in the first half of the ASCII set

<5 lemon:~/Examples > a.out
W

Found a character in the second half of the ASCII set

<6 lemon:~/Examples > a.out
0

Found a character in the first half of the ASCII set

Found a decimal digit

<7 lemon:~/Examples > a.out
9

Found a character in the first half of the ASCII set

Found a decimal digit