Apple FORTRAN: Complex Numbers and Character String Functions

In learning FORTRAN, you sometimes have to simulate complex number functions without actually using CMPLX(A,B) (which takes the real number A and the imaginary number B and returns the complex number result) or AIMAG(A) (which returns the imaginary part of the complex number A). REAL Fortran77 brings an easy solution: use character strings and simple arithmetic, treating the real and imaginary parts of the complex numbers separately. Alas, the designers of Apple FORTRAN chose not to include the character string functions and procedures.

The following hints at a solution; an end-user wanted to print character strings in the graphics page using WSTRING(string), which also wasn't implimented.

The small assembly language function below returns the ascii value of the nth character of a string. Frustrated Apple FORTRAN programmers will find this useful.

For the complex function other such routines might need to be written; a length-of-string and an index function would be very helpful.

```
;
;        Function CHAR1 (string,N)
;
;        returns ASCII value of Nth character in string
;
;        William B. Judd, TRI, 10/27/83
;
;_____________________________________________________________________

         .macro  pop
          pla
          sta
         .macro  push
          lda

         .func   char1,2         ; two parameters

return   .equ    0
string   .equ    2
n        .equ    4
junk     .equ    6
```

```
        pop     return          ; save return address
        pop     junk            ; discard stack bias
        pop     junk
        pop     n               ; get n address
        pop     string          ; get string address

        lda     #0              ; push msb of return value
        pha
        tay
        lda     (n),y           ; get index value
        tay
        dey                     ; reduce offset
        lda     (string),y      ; get nth char
        pha                     ; push value

        push    return
        rts

        .end

$EXT integer function char1 2
$uses turtlegraphics
$uses applestuff
c
c  to test char1 function
c

        program test
        character*10 a
        a = 'ABCDEFGHIJK'
        call inittu
        do 10 i=1,10
          k = char1(a,i)
10        call wchar (char(k))

c *** hard halt
20      goto 20
        end
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