```
; =============================================================
;  geoGopherScr: scrolling and paging routines
; =============================================================
.if             Pass1
                .noeqin
                .include    geoGopherSym
                .include    geoGopherMac
                .include    geoGopher.inc
                .include    ultimate.inc
                .eqin
.endif
; =============================================================
;  Set up for gopher item scrolling. (Note: setCfg is in geoGopherCfg
;  because it uses constants defined there).
; =============================================================
setGoph:        LoadB       scrlTop,15
                LoadB       scrlBot,186
                LoadW       scrlLeft,312
                LoadB       thmbTop,23
                LoadW       thmbLeft,314
                LoadB       thmbMax,155
                LoadB       maxItems,7
                rts
; =============================================================
;  Set up for text (info item or file) scrolling.
; =============================================================
setText:        LoadB       scrlTop,7
                LoadB       scrlBot,194
                LoadW       scrlLeft,308
                LoadB       thmbTop,15
                LoadW       thmbLeft,310
                LoadB       thmbMax,171
                LoadB       maxItems,1          ;count pages, not lines
                rts
```

```
; ==============================================================
;  Check for mouse click over scroll bar area.
; ==============================================================
chkMouse:       lda       mouseData
                bpl       5$
                rts                      ;ignore releases
5$              MoveB     thmbTop,r2L    ;click above scroll thumb?
                ldx       thumbSav
                dex
                stx       r2H
                MoveW     scrlLeft,r3
                lda       scrlLeft
                clc
                adc       #7
                sta       r4L
                lda       scrlLeft+1
                adc       #0
                sta       r4H
                php
                sei
                jsr       IsMseInRegion
                plp
                cmp       #$ff
                bne       10$
                jsr       doPgUp
                rts
10$             lda       thumbSav       ;click below scroll thumb?
                clc
                adc       thumbHi
                sta       r2L
                lda       scrlBot        ;r2H = scrlBot-7
                sec
                sbc       #8
                sta       r2H
                lda       scrlLeft       ;r3 = scrlLeft+1
                clc
                adc       #1
                sta       r3L
                lda       scrlLeft+1
                adc       #0
                sta       r3H
                lda       scrlLeft
                clc
                adc       #6
                sta       r4L
                lda       scrlLeft+1
                adc       #0
                sta       r4H
                php
                sei
                jsr         IsMseInRegion
                plp
                cmp         #$ff
                bne         20$
                jsr         doPgDown
20$             rts
;               =================================================
doPgUp:         jmp         (pageUp)
doPgDown:       jmp         (pageDown)
; =============================================================
;  Draw (clear) scrollbar area.
; =============================================================
drawScrl:       lda         #0              ;clear
                jsr         SetPattern
                lda         scrlTop         ;r2L = scrlTop+7
                clc
                adc         #7
                sta         r2L
                lda         scrlBot         ;r2H = scrlBot-7
                sec
                sbc         #7
                sta         r2H
                lda         scrlLeft        ;r3 = scrlLeft+1
                clc
                adc         #1
                sta         r3L
                lda         scrlLeft+1
                adc         #0
                sta         r3H
                LoadW       r4,319
                jsr         Rectangle
                MoveB       scrlTop,r3L
                MoveB       scrlBot,r3H
                MoveW       scrlLeft,r4
                lda         #$ff            ;solid line
                jsr         VerticalLine
                rts
; =============================================================
;  Draw (non-functional) top and bottom scroll arrows. For screen refreshes.
; =============================================================
doArrows:       LoadW       r0,topArrow
                LoadB       r1L,39          ;X position in cards
                LoadB       r1H,14          ;Y position in pixels
                LoadB       r2L,1           ;width in cards
                LoadB       r2H,8           ;height in pixels
                jsr         BitmapUp
                LoadW       r0,botArrow
                LoadB       r1L,39          ;X position in cards
                LoadB       r1H,180         ;Y position in pixels
                LoadB       r2L,1           ;width in cards
                LoadB       r2H,8           ;height in pixels
                jsr         BitmapUp
                rts
```

```
; ==============================================================
;  Dispatch routine for bottom button in scrollbar (gopher items).
; ==============================================================
itmBot:         lda         topItem         ;already at bottom?
                clc
                adc         maxItems
                cmp         numItems
                bcc         10$
                jsr         beep
                rts
10$             lda         numItems
                sec
                sbc         maxItems
                sta         topItem
                tax
                jsr         doItems
                rts
; ==============================================================
;  Dispatch routine for top button in scrollbar (gopher items).
; ==============================================================
itmTop:         lda         topItem         ;already at top?
                bne         10$
                jsr         beep
                rts
10$             ldx         #0
                stx         topItem
                jsr         doItems
30$             rts
```

```
; ============================================================
;  Page down routine (called through otherPressVector).
; ============================================================
itmPgDn:        lda         topItem
                clc
                adc         maxItems
                cmp         numItems        ;can page down at all?
                bcc         10$
                jsr         beep
                rts
10$             adc         maxItems
                sec
                sbc         #1
                cmp         numItems        ;can go down full page?
                bcc         20$
                lda         numItems        ;no, go to bottom
                sec
                sbc         maxItems
                sta         topItem
                bra         30$
20$             lda         topItem         ;yes, page down
                clc
                adc         maxItems
                sta         topItem
30$             ldx         topItem
                jsr         doItems
                rts
; ============================================================
;  Page up routine (called through otherPressVector).
; ============================================================
itmPgUp:        ldx         topItem
                bne         10$
                jsr         beep
                rts
10$             cpx         maxItems        ;can go up full page?
                bcc         20$
                lda         topItem         ;yes, page up
                sec
                sbc         maxItems
                sta         topItem
                bra         30$
20$             lda         #0              ;no, go to top
                sta         topItem
30$             ldx         topItem
                jsr         doItems
                rts
```

```
; ============================================================
;  Draw thumb for scrollbar.
;                   destroyed:  a8, a9 (from call to thumbPos)
; ============================================================
doThumb:        jsr         thumbPos        ;sets thumb height and position
                sta         thumbSav        ;top of thumb
                lda         #0              ;clear
                jsr         SetPattern
                lda         scrlTop         ;r2L = scrlTop+7
                clc
                adc         #7
                sta         r2L
                lda         scrlBot         ;r2H = scrlBot-7
                sec
                sbc         #7
                sta         r2H
                lda         scrlLeft        ;r3 = scrlLeft+1
                clc
                adc         #1
                sta         r3L
                lda         scrlLeft+1
                adc         #0
                sta         r3H
                lda         scrlLeft        ;r4 = scrlLeft+6
                clc
                adc         #6
                sta         r4L
                lda         scrlLeft+1
                adc         #0
                sta         r4H
                jsr         Rectangle       ;clear scroll area
                lda         #1              ;solid
                jsr         SetPattern
                lda         thumbSav        ;already calculated
                sta         r2L
                clc
                adc         thumbHi
                sta         r2H
                MoveW       thmbLeft,r3
                ldx         #THUMB_WD       ;r4 = thmbLeft+(THUMB_WD-1)
                dex
                txa
                clc
                adc         thmbLeft
                sta         r4L
                lda         thmbLeft+1
                adc         #0
                sta         r4H
                jsr         Rectangle       ;draw thumb
                rts
```

```
; ============================================================
;  Calculate top position of thumb for scrollbar.
;  Solve for offset from thmbTop:
;  offset / (lowest thumb pos. - thmbTop) = topItem / max. top item
;  (topItem * (lowest thumb pos. - thmbTop)) / max. top item = offset
;               pass:       numItems set
;               return:     sets thumbHi (height of thumb)
;                           returns top of thumb in .A
;               destroyed:  a8, a9
; ============================================================
thumbPos:       lda         maxItems          ;all items fit on screen?
                cmp         numItems
                bcc         10$
                MoveB       thmbMax,thumbHi
                lda         thmbTop
                rts
10$             jsr         thumbSiz          ;sets thumbHi
                lda         scrlBot
                sec
                sbc         #8                ;for arrow icon
                sbc         thumbHi           ;lowest possible thumb pos.
                sbc         thmbTop
                sta         a9L               ;src (byte)
                lda         topItem
                sta         a8L               ;dest (word)
                lda         #0
                sta         a8H
                ldx         #a8               ;dest
                ldy         #a9               ;src
                jsr         BMult             ;topItem * (lowest thumb pos. - thmbTop)
                lda         numItems
                sec
                sbc         maxItems
                sta         a9L               ;max. top item
                lda         #0
                sta         a9H
                ldx         #a8               ;dest
                ldy         #a9               ;src
                jsr         Ddiv              ;divide result by max. top item
                lda         thmbTop
                clc
                adc         a8L               ;and add to thmbTop
                rts
```

```
; ============================================================
;  Calculate height of thumb for scrollbar.
;  Solve for thumb height:
;  thumbHi / thmbMax = maxItems / numItems
;  (maxItems * thmbMax) / numItems = thumbHi
; ============================================================
thumbSiz:   lda     thmbMax
            sta     a9L
            lda     maxItems
            sta     a8L
            lda     #0
            sta     a8H
            ldx     #a8         ;dest
            ldy     #a9         ;src
            jsr     BBMult      ;maxItems * thmbMax
            lda     numItems
            sta     a9L
            lda     #0
            sta     a9H
            ldx     #a8         ;dest
            ldy     #a9         ;src
            jsr     Ddiv        ;(maxItems * thmbMax) / numItems
            lda     a8L
            cmp     #THUMBMIN
            bcs     10$
            lda     #THUMBMIN
            bne     30$
10$         lda     thmbMax
            cmp     a8L
            bcs     20$
            lda     thmbMax
            bne     30$
20$         lda     a8L
30$         sta     thumbHi
            rts
```