Programming Languages for the Commodore 64

gcoCom

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Speaker Bio

- a.k.a. "Cenbe"
- collector of programming languages and operating systems for the Commodore 64
- GEOS user (continuously!) since 1987
- several released GEOS applications including geoLink, geoSnap, ulecSwitch, geoGopher
- author of the infamous "Shadow Virus"
- Commodore 64 pages at lyonlabs.org
geoCom (a BASIC compiler for GEOS)

There were few high-level languages for GEOS:

- a couple of Forth interpreters
- BeckerBasic (kind of strange...)
- geoBasic (Danger, Will Robinson!)

Imagine if there had been something like Visual Basic for GEOS...
the geoCom saga

• demo version was always easy to find, complete version not so much (it was a commercial product)
• original version was in German, later released in English
• found the complete version, but what about the docs?
• Thanks, Bo!
CATS: ALL YOUR BASE ARE BELONG TO US.
no, wait... these are the geoCom docs

Programming language
for GEOS 64 and GEOS 128 english
on 40 and 80 column display

MANUAL

Compiler and accessories by:
Falk Rehwagen

Manual by:
Denis Döhler

GEOS-USER-SOFTWARE-SACHSEN
program organization

At the beginning of a program, some commands must be grouped together:

- definition section (program name, permanent name string, author)
- declaration section (variable declarations, label definitions, object references)
- command section (code)
Sound familiar?
language characteristics

- no line numbers, backquote is comment
- keywords in upper-case, variables lower-case
- must declare variables and labels
- subroutines: no parameter passing/return, no local variables, just GOSUB
- REPEAT...UNTIL, WHILE...DO...LOOP (but no FOR...NEXT)
- limited support for assembly-language modules
syntax idiosyncrasies

• expressions must be in parentheses, e.g. \[d6=(65520/6)\]

• arrays: \texttt{ROW 6 INTVAR i}
  \[6\text{-element int array: (i<0>) to (i<5>)}\]

• strings (null-terminated) are declared with their maximum length:
  \texttt{STRVAR 64; status}

• printing (proportional fonts) can include style escapes:
  \texttt{PRINT "/BSelect race:/P"}
tooling

• source code entered in geoWrite
• "Object Editor" is used to create menus, dialog boxes, fonts, arrays of constants, &c. (but no way to preview or print summary)
• DA to switch to compiler or object editor directly without exiting to the deskTop
• note: compiler does not work with uIEC!
• no debugger or xref, but the compiler does produce an error listing...
sample compile error

Error #1:
  Text: cnc_com      Page: 4
  Commands: 9       Chars: 206
  Error $08: Syntax unknown
  Hint: integer

To find the error, count BASIC command words from the top of the page, not including labels.
Object Editor

Positions:
- X1: 0
- Y1: 0
- X2: 48
- Y2: 14

Display: horizontal
Limitation: not limited

Number menu items: 2

Current menu item: 0

Text of menu item:
"geos"

Type of action: submenu

Call up routine/menu: geos_menu

Name: main_menu
GEOS support

- most GEOS APIs supported with keywords
- `CALL` and `CALLSYS` to call APIs directly
- many GEOS variables exposed, although some require an include file
- `ADR` and `VAR AT` for "peek/poke"
- supports VLIR programs, VLIR file handling
- supports processes
- support for graphics printing
memory map

runtime: $0400-$2800 (9K)
code: $2800-$4000 (6K)
constants: $4000-$5000 (4K)
variables: $5000-$6000 (4K)

Address ranges are configurable.

Background screen buffer at $6000 is used. ~14K available for compiled programs, but overlays can be used.
**demo program memory usage**

**Please select option:**

- ![Icon](image) Other source file
- ![Icon](image) Without text to geowrite
- ![Icon](image) Save program
- ![Icon](image) With text to geowrite
- ![Icon](image) Run program
- ![Icon](image) Without object to ObjectEdit
- ![Icon](image) To deskTop
- ![Icon](image) With object to ObjectEdit

<table>
<thead>
<tr>
<th>Source: cnc_com</th>
<th>Page: 12</th>
<th>Cmds: 75</th>
<th>Errors: 0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objectfile: cnc_obj</td>
<td>Mod: 1</td>
<td>Obj-code: kewer</td>
<td></td>
</tr>
<tr>
<td>Code area:</td>
<td>$2800 - $3d1b</td>
<td>(max. $4000)</td>
<td></td>
</tr>
<tr>
<td>Constants area:</td>
<td>$4000 - $4760</td>
<td>(max. $5000)</td>
<td></td>
</tr>
<tr>
<td>Variables area:</td>
<td>$5000 - $54fd</td>
<td>(max. $6000)</td>
<td></td>
</tr>
</tbody>
</table>