The Forever Extending Hungry Snake Project

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This short documentation has been made in order to try and help you get to know how to work on a project on theC64, stock Commodore 64, 1541Ultimate or the Ultimate 64 and/or VICE. This is basically to help you learn the basics of putting a project together, assemble it and final compiling it on your home computer.

Before we get started. You will need a selection of utilities. You can easily use utilities from various **Public Domain** disks to pick out some Public Domain tools which you may like to use for your game project. I have chosen the following utilities for designing and building this project on **theC64** full size.

- **Sprite Editor V1.2 –** for making sprites
- **Font Editor V1.3 –** for making charset graphics
- **Small Change Screen Designer V2.0** – for designing/making the title and game screen
- **Starion Text Editor V2.0 –** for writing scroll text and greetings, etc
- **DMC V2.0 –** for programming and composing the music (I also used a relocator for title music for memory restriction for this project)
- **Code Sucker Monitor –** for putting the complete game project together and loading data
- **Turbo Assembler V5.2 –** For programming
- **XTC Packer V1.0** - for packing
- **Fast Cruel V2.5 –** for crunching

If you are creating or developing a game project on theC64. Make sure your programs do not have custom fast loader, or your cjm (or D64) use the accuratedisk function. This has a major BUG in the disk save function in Firmware V1.3.2 Hopefully the team are aware of this and will perhaps fix this bug some time in the future.

SETTING UP

For this project. All sprites, game font, music, and so on, are ready done. So all we need to do is just load the data in to memory and then use the Turbo Assembler to view the code. If you have an Action Replay cartridge with Machine Code Monitor it is an advantage. Otherwise grab yourself the Code Sucker Monitor, install it to $7000 from the menu on to your disk.Then type **LOAD "CSMON*",8,1** then type in **SYS28672** to start the assembler.

Attach / Insert **The Forever Extending Hungry Snake** disk. If you look at the directory of the disk. You will notice that there is a file put together called **GAME DATA**. This basically has all of the game files stored as one file. **DO NOT LOAD THIS STRAIGHT AWAY –** Unless of course you are using the Final Replay with Turbo Assembler built in. If you don't have this. Manually load each filename to their specified address. Which is as follows:

```
L "GAMEFONT*",8,0800
L "GAME MUSIC*",8,1000
L "GAMESPRITES*",8,2000
L "GAMESCREEN*",8,3000
L "TITLESCREEN*",8,3800
```

L “SCROLLTEXT*”,8,4000

Exit the M/C monitor by typing in X and then load in the TURBO ASSEMBLER, and enter it using **SYS 36864**. ***Note: Some versions of turbo assembler use a direct RUN. Avoid those versions if using theC64 or if you don't have an Action Replay / Retro Replay cartridge.***

VIEWING THE SOURCE CODE

The source code on the disk was saved as a SEQUENTIAL file. This code can also be exported to PC in ASCII format for use with cross-assembler/cross-compilers. To load in the source code, type in:

BACKARROW then type **E**

Type as the filename **GAMECODE.ASM** and wait for the file to load. After it is ready the code should be displayed. All there is to do now is explore it.

First of all. Since the code is quite big. We will want to make a quick alteration to the music pointers. This is because the TITLE MUSIC has NOT yet been loaded in. The reason being, is due to the length of the text code memory. This code would have overwritten some of the title music player. Therefore if testing. We should set the music to play the in game music only.

The code displays the music player as this:

music2init = $6000
musicplay = $6003

titlemusic = $00
getreadyjingle = $01
gameoverjingle = $02

Change all title music parameters to the following:

Remember to restore all of the music parameters before compiling the final production of this game.

music2init = $1000
music2play = $1003

titlemusic = $00
getreadyjingle = $01
gameoverjingle = $02

You will notice at the start of the code:

tass = $9000

This is the target address for the turbo assembler.

Also, add underneath the ***=$4800** jump address:

```
lda #<tass
sta $0318
lda #>tass
sta $0319
```

and comment out using ;

```
;lda #$fa
;sta $0328
```

Now save to a different disk this code, for just in case you may want to use it again. The safest way would be to write is as a sequential file. So press **BACK ARROW** and **W** to write to disk. Type in the filename and write it.

TESTING THE SOURCE

To test the game and any changes you have done to the it. You will need to assemble the program. This can be done by pressing **BACK ARROW** and **3**. The program will then assemble, unless of course there are some errors in place. If there are, you will need to check through these. Just in case error reports are printed on screen. Hold the **CONTROL** key on your theC64 or other machine. If successful assembling, pressing **S** will start. The game should then run.

If writing/updating source code, make sure you save your work as often, when you need to. This is for just in case the computer program you make crashes the assembler.

BUILDING THE COMPLETE PROJECT

The best way is to basically assemble and run the game, then press FREEZE/RESET button on the Action Replay/Retro Replay cartridge and enter the machine code monitor and save all data from the start of the memory location to the end address of the very last file.

However if using theC64, or you don't have a cartridge at all. This would be more challenging, but isn't all that difficult. There is a possible way to compile your code along with game data. However, you would need to use a M/C Monitor in order to put it all together. Before you can do that. A target source code file of your project needs to be put on to the disk. To assemble a target object to disk press **BACK ARROW** and **5.** Wait, a moment … If you are building The Forever Extending Hungry Snake. Have you set the music and jingles to their correct init/play values as the code was beforehand?

After saving the target object file to disk. It is safe to reset your C64. Then load in the Code Sucker Monitor. Then once again load in all of the files to the addresses above, and also add the title music using **L "TITLE MUSIC*",8,6000**. The music data file loads from $6000 - $6EA0 … Since there are no other files to load after this address. We will specify $6EA0 as the end address.

Save all of the files as GAME DATA if you want to. Then load in the target object file:

L "GAMECODE.OBJ",8

This will load the object target file to $4800, as in the assembler (*=$4800)

Save all of the project with the M/C monitor, using the command

```
S “SNAKEGAME”,8,0800,6EA0
```

Now type **J 4800**. (If using Action Replay monitor use G 4800 instead)

COMPRESSION AND BUILDING A RUNNABLE FILE

The final build is made. You will want to try and get the program to run from BASIC. Unfortunately this program will not work from a BASIC run. Therefore it is up to you to pack the final production using file compression. If you want to, you can easily use a PC with Exomizer or PuCrunch to compress the game. If you do this use the following command:

```
exomizer sfx $4800 snakegame.prg -o hungrysnake.prg -x2
```

or

```
pucrunch snakegame.prg -s hungrysnake.prg -x $4800
```

If you want to pack and crunch the game in an oldschool fashion. Then you can use a packer then a cruncher. My example for compression of The Forever Extending Hungry Snake game is based on using the **XTC PACKER V2.0** and **FAST CRUEL V2.5** because at the end of the day, I don't want to be waiting **AGES** for a program to crunch.

Here's how to pack the Forever Extending Hungry Snake:

XTC Packer V1.0

LOADNAME: SNAKEGAME
SAVENAME: SNAKEGAME+
JMP: $4800
$001 $37

After packing the game. Load the save packed file to disk. Reset to BASIC and then load the packed file, but don't run it yet. Type in **LIST**, as this will give a clue of the jump address for the depacker when using a cruncher.

```
SYS 2059
```

(In hex that is $080B)

How to crunch the packed file in **Fast Cruel V2.5**

LOADNAME: SNAKEGAME+
SAVENAME: HUNGRY SNAKE /TND
JMP: $080B
$001 $37
SEI/CLI: Doesn't matter, I normally used CLI
Should the decruncher set 2D/2E? No

Crunching will take a short amount of time with this program.

RESET your machine. Load the game in and then type in **RUN**, wait a short period of time and the game will then run and you are ready to play.

I hope this document helps those of you who fancy a go at programming a new C64 game in assembly on theC64 full size.

Also I hope you have loads of fun with The Forever Extending Hungry Snake.

http://richard-tnd.itch.io/hungrysnake