Assembly Language

Tiago Oliveira
Instituto de Matemática e Estatística
Departamento de Ciência da Computação
Universidade Federal da Bahia

Creating a Program

It simply calls another function named asm main. This is really a routine that will be written in assembly

Advantages in using the C driver routine:

- Setup the program to run correctly in protected mode;
- All the segments and their corresponding segment registers will be initialized by C;
- They use C's I/O functions: printf

Assembling the code

To assembly the code. From the command line, type:

nasm -f object-format first.asm

Compile the driver.c file using a C compiler, use:

gcc -c driver.c

The -c switch means to just compile, do not attempt to link yet

Linking the object files

Linking is the process of combining the machine code and data in object files and library files together to create an executable file.

C code requires the standard C library and special startup code to run. It is much easier to let the C compiler call the linker with the correct parameters, than to try to call the linker directly.

gcc -o first driver.o first.o asm_io.o

Compiling and linking

gcc -o first driver.c first.o asm_io.o

skel.asm

```
1  %include "asm_io.inc"
2  segment .data
3  ;
4  ; initialized data is put in the data segment here
5  ;
6
7  segment .bss
8  ;
9  ; uninitialized data is put in the bss segment
10 ;
11
12 segment .text
13         global  _asm_main
14 _asm_main:
15         enter   0,0               ; setup routine
16         pusha
17
18 ;
19 ; code is put in the text segment. Do not modify the code before
20 ; or after this comment.
21 ;
22
23         popa
24         mov     eax, 0            ; return back to C
25         leave
26         ret
```

skel.asm

Skeleton File

This program asks for two integers as input and prints out their sum.

first.asm
drive.c

Modify the example to sum three number

Bibliografia

CARTER, Paul A. **PC Assembly Language**. Github, 2004.

Contatos:
tiagocompuesc@gmail.com