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Cpts 360

Prelab1 – Part1

1. Variables in C may be classified as

globals ---|--- UNINITIALIZED globals;

|--- INITIALIZED globals;

locals ---|--- AUTOMATIC locals;

|--- STATIC locals;

In terms of the above classification and the variables g, a, b, c, d,

Which variables are in DATA? initialized global/static variables g(t2.c,t4.c).

Which variables are in BSS ? uninitialized global: g(t1.c,t3.c), d(t6.c).

2. In terms of the TEXT, DATA and BSS sections,

Which sections are in a.out, which section is NOT in a.out?

WHY? BSS is not, to avoid unnecessarily wasting memory on uninitialized variables when the program is not running.

(B). For each case, use cc -m32 -static t.c to generate a.out.

Record the sizes again and compare them with the sizes in (A).

WHAT DO YOU SEE?

In t2.c bss went down by 4 because the global variable was initialized and bss which contains the uninitialized data such that g went to the initialized data: data.

In t3.c bss went up to 40032 and the dec went up to 41843. The reason is that g is an uninitialized data with 10000 size of array. 10000 \* 4 is 40000 plus the 32 bit array address size. The dec is just a summation of text, data, and bss.

In t4.c data went up to 40328 and dec went up to 41839. It is because the unsigned data from t3.c is initialized, thus the data went to the data section and the total of the dec is down by 4 in comparison to t3.c.

In t5.c text went up to 1710 and data went up to 308, dec went up to 2026. The reason is that I added more code.

In t6.c, all text, bss and dec went up because there was more code added in the c file and with the static int, d[10000] became uninitialized thus it went to the bss section. Dec went up because all text and bss went up.