- CPSC 275: Introduction to Computer Systems

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Fall 2025

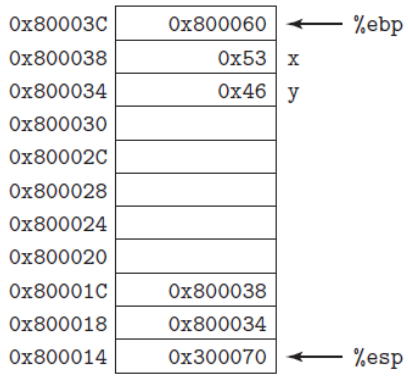
- Syllabus
- Schedule
- Resources
- Upload
- Solution

Solution to Homework 18

1. One step in learning to read IA32 code is to become very familiar with the way arguments are passed on the stack. The key to solving this problem is to note that the storage of `d` at `p` is implemented by the instruction at line 3 of the assembly code, from which you work backward to determine the types and positions of arguments `d` and `p`. Similarly, the subtraction is performed at line 6, and from this you can work backward to determine the types and positions of arguments `x` and `c`. The following is the function prototype:

   ```
   int fun(short c, char d, int *p, int x);
   ```

2. A. `0x80003C`
   B. `0x800014`
   C. `x` at `0x800038`; `y` at `0x800034`
   D.



   E. Byte addresses `0x800020` through `0x800033` are unused.

3. Registers `%edi`, `%esi`, and `%ebx` are callee-save. The procedure must save them on the stack before altering their values and restore them before returning. The other three registers, `%eax`, `%ecx`, and `%edx`, are caller-save. They can be altered without affecting the behavior of the caller.

- **Welcome: Sean**

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