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CSE2312-001 (Spring 2021)
Homework #3

Notes:

- All numbers are in base-10 unless otherwise noted.
- If part of a problem is not solvable, explain why in the answer area.
- Print out the form and handwrite your answers in the spaces below.
- Place the hw3.s file and the scanned answers to problem 1 in a single zip file with name lastname_hw3.zip, where lastname is your last name as listed in MyMav.
- Submit the single zip file to Canvas before 11:59:00pm on Thursday, April 8.
- Make sure that the code follows the procedure call standards for ARM architecture (see IHI0042F section 5.1), with emphasis on this requirement: "A subroutine must preserve the contents of the registers r4-r8, r10, r11 and SP (and r9 in PCS variants that designate r9 as v6)." (in other words, push and pop R4-11 if you need to use them, as shown in the vector.s examples in class)

1. Suppose that BUSINESS7 structure is defined as:

```
typedef struct _BUSINESS7
{
    uint32_t taxId;
    char name[27];
    char direction;
    char street[35];
    uint32_t addNo;
    char city[30];
    char state[3];
    uint32_t zip;
} BUSINESS7;
```

Show the relative offset of each field in the structure from the beginning of the structure for the unpacked (default alignment) case:

4 bytes of padding

0 uint32_t taxID
4 char name[27]
31 char direction
32 char street[35]
67 char pad[1]
68 uint32_t addNO
72 char city[30]
102 char state[3]
105 char pad[3]
108 uint32_t zip

Show the relative offset of each field in the structure from the beginning of the structure for the packed case:

0 uint32_t taxId
4 char name[27]
31 Char direction
32 Char street[35]
67 uint32_t addNo
71 char city[30]
101 char state[3]
104 uint32_t zip