**CODE LISTING 2:** The main function and two subfunctions all place a portion of their scratch memory into a structure called scr_scrmem, which is allocated at the start of main and de-allocated at the end of main. While this code uses the standard memory allocator, in a DSP application additional parameters would be added to the allocation function to allow for placing the structure at a specific location.

```
#include <malloc.h>

void subfunc1(scrmemptr);
void subfunc2(scrmemptr);

struct scr_scrmem {
        int sf1_out, sf2_out, total;
        union {
                struct scr_sf1 {
                        int sf1_scratch1[100];
                        int sf1_scratch2[100];
                        int sf1_total;
                } sf1;
                struct scr_sf2 {
                        int sf2_scratch1[50];
                        int sf2_scratch2[50];
                        int sf2_total;
                } sf2;
        } u;
};

typedef struct scr_scrmem* scrmemptr;

int main() {

        scrmemptr p_scrmem;

        p_scrmem = malloc(sizeof(struct scr_scrmem));

        subfunc1(p_scrmem);
        subfunc2(p_scrmem);

        p_scrmem->total=p_scrmem->sf1_out+p_scrmem->sf2_out;

        free(p_scrmem);

}

void subfunc1(scrmemptr p_scrmem) {

        int i;

        /* code which uses scr_sf1 local scratch variables */

        return;

}

void subfunc2(scrmemptr p_scrmem) {

        int i;

        /* code which uses scr_sf2 local scratch variables */

        return;

}
```