```c
/*
 * structs.c
 * Jim Lewis
 * cot 3011 Sample
*/

#include <stdio.h>
#include <string.h>


//RED CODE goes into the structs.h file
// this is the definition of the structure
// no memory is allocated by this definition
// there are no variables
struct student
{
    char first[30];
    char last[30];
    int age;
    double gpa;
};

// function prototypes
struct student getStudent(void);
void displayStudent(struct student);

//BLACK CODE goes into the driver (main.c)
int main()
{
    // this is the declaration of two structures
    // memory is allocated for both
    // the second is initialized with values
    // s1 and s2 are now structures - they are not objects
    // they do not include functions
    struct student s1, s2 = {"Sue", "Allen", 21, 2.98};
    struct student s3;
    s3 = getStudent();
    s1.age = 58;
    s1.gpa = 3.19;
    strcpy(s1.first, "Joe"); // strcpy is actually from chapt. 10
    strcpy(s1.last, "Smith");
    displayStudent(s1);
    displayStudent(s2);
    displayStudent(s3);
    return 0;
}

//GREEN CODE goes into the structs.c file
// creates a student struct and initializes it
// returns a copy of that struct
```

```
struct student getStudent()
{
    struct student temp = { "Helen", "Hayes", 87, 2.33 };
    return temp;
}

// displays the student
void displayStudent(struct student theStudent)
{
    printf("-------------\n");
    printf("  Student \n");
    printf("-------------\n");
    printf("%s, %s\n", theStudent.last, theStudent.first);
    printf("%d\n", theStudent.age);
    printf("%4.2lf\n", theStudent.gpa);
}
```