

CSC 209 Review 7 Solution

August 26, 2020

1 Exercises

1. First, I need to justify if the following declarations are legal on an individual basis:

```
struct {int x, y;} x;  
struct {int x, y;} y;
```

The struct `struct {int x, y;} x;` is legal. `struct {int x, y;} x;` is equivalent to

```
1  struct {  
2      int x;  
3      int y;  
4  } x;
```

and 'x' beside struct represents variable of that type. It is used to declare struct and access members of the struct (e.g. `x.x`, `x.y`).

The same is true for `struct {int x, y;} y;`.

Second, I need to answer if both declarations of struct can appear in a program.

The answer is yes. Each structure has a separate name space for its members.

Notes

- **Declaring Structure Variables**
 - Struct can have many variables that represent the same struct

```
struct part {
    int number;
    char name[NAME_LEN+1];
    int on hand;
} part1, part2;
```

members of struct

variables that represent
this struct

• Initializing Structure Variables

- Struct can be initialized with preset values (like python class under `__init__`)

```
struct {
    int number;
    char name[NAME_LEN+1];
    int on hand;
} part1 = {528, "Disk drive", 10},
  part2 = {914, "Printer cable", 5};
```

values
that initialize
structure variables

2. a) I need to declare structure variables named `c1`, `c2` and `c3`, each having members `real` and `imaginary` of type `double`.

The solution to this problem is:

```
1  struct {
2      double real, imaginary;
3  } c1, c2, c3;
```

- b) I need to modify the declaration in part a) so that

- `c1`'s members initially have the values 0.0 and 1.0
- `c2`'s members initially have the values 1.0 and 0.0
- `c3` is not initialized

The solution to this problem is:

```
1  struct {
2      double real, imaginary;
3  } c1 = {0.0, 1.0},
4      c2 = {1.0, 0.0},
5      c3;
```