



CMSC 106

Lecture Set #10 - Structures

Set Started:
Wednesday, November 9, 2011



Structured Types

- **array**- composite variable, all elements have same type.
- **structure** (or **struct**)- composite variable with components (called members or fields) which can be different types.



parallel arrays

```
char month[][4]= {"Feb", "Feb", "Mar"};  
int day[]= {17, 25, 4};  
int year[]= {1998, 1998, 1998};
```

```
printf("%s %d %d", month[1], day[1], year[1]);
```





Structure Initializers

- values listed in braces
- fields initialized in the order they appear in the structure definition
- if too few values, remaining fields initialized to 0

Date birthday = {"Dec", 25, 1964};



Arrays of Structures

```
Date duedates[PROJCOUNT];
strcpy(duedates[0].month, "Feb");
duedates[0].day= 17;
duedates[0].year= 1998;
strcpy(duedates[1].month, "Feb");
duedates[1].day= 25;
duedates[1].year= 1998;
... etc.

int i;
for (i = 0; i < PROJCOUNT; i++){
    printf("%s %d %d", duedates[i].month,
           duedates[i].day, duedates[i].year);
}
```



Passing Structures, structure references and arrays of structures as parameters

- Like Arrays
 - they are a composite type
 - you can pass the whole or pass just a part
 - they can be initialized using {} as they first come into existence
 - they can't be compared using the == operator (or <, >, !=)
 - you can compare/process individual members one by one
- Unlike Arrays
 - they don't have to have all parts be of the same type
 - you must use the name of each part rather than the index
 - names of structures are not references
 - you must use & to get its address
 - a structure can be the return value of a function
 - they can be assigned using the = (assignment operator)
