8. Structures and Unions

* C Language: extensible language
        - Extension using macros
        - Extension using user- defined data types
                using typedef statement, using structure

8.1 Structures

* array -   aggregation of homogeneous data
* structure - Aggregation of <u>heterogeneous</u> data
                                                                    .

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                                        (,   ,   )
                            (,   ,   )
                                                        .

8.2 Structure template and structure variable

* structure template :   (design)
        -   .
ex)
        struct book
        {
                char title[200] ;
                char author[100] ;
                fload price ;
        } ;
* structure variable declaration (   )

        struct book b1 ;
        -   .

* Simultaneous structure template and variable declaration

```
struct book
{
{
        char title[ 200] ;
        char author[ 100] ;
        fload price ;
}   b1 ;
```

→ structure template book   structure variable b1

* structure initialization
    ex)
```
        struct book b1 =
        {
                "A Book on C",
                "Al Kelley and Ira Pohl",
                1.98
        } ;
```
* structure array

    ex)
```
        struct book b[ 100] ;
        → 100
```

* nested structure
   →
   ex)
      struct name
      {
            char firstname[50];
            char midname[50];
            char lastname [50];
      }
      struct addr
      {
            char zipcode[7] ;
            char addr1[100] ;
            char addr2[100] ;
      }
      struct employee
      {
            struct name ename;
            struct addr eaddr ;
            float salary ;
      }

8.3 Accessing members of structure

* "." → member accessing operator

    ex)

        struct book b1 ;
        strcpy(**b1.title**,"A Book on C") ;
        strcpy(**b1.author**,"Al Kelley and Ira Pohl") ;
        b1.price = 1.98 ;

* accessing members of structure array
    ex)

        struct book b[100] ;
        printf(" title of books are ; \ n") ;
        for(i=0;i<100;i+ +)
        {
            printf(" %d : %s \ n ", **b[i].title**) ;
        }
* (   )   **b.title[i]**

(   )

               100
    1)
    2)
     ,
    scanf("%s %s %f ",...) ;

                        .