


<b>Soal Praktikum</b> <i>Practicum Case</i>	
<b>COMP6362004</b> <b>Data Structures</b>	
<b>Teknik Informatika</b> <i>Computer Science</i>	<b>E221-COMP6362004-EP01-01.5</b>
<b>Periode Berlaku</b> Semester Genap 2021/2022 <i>Valid on Even Semester Year 2021/2022</i>	<b>Revisi 00</b> <i>Revision 00</i>

## Learning Outcomes

- Explain the concept of data structure and its usage in application.
- Construct data structure in application

## Topic

- Session 01 - Array and Structure

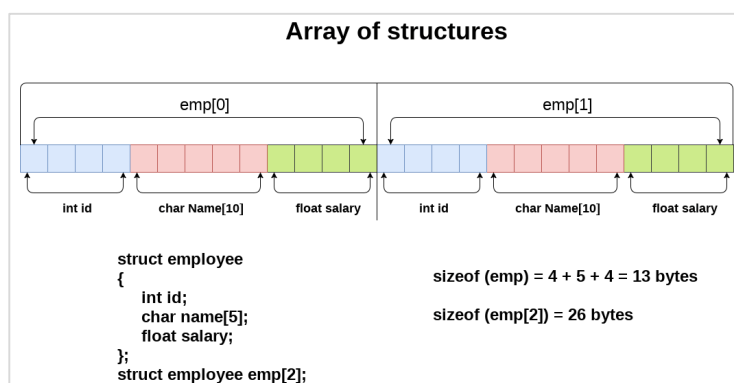
## Sub Topics

- Array of Struct
- Struct Declaration
- Struct Implementation
- Array of Struct Implementation

## Tutorial/Panduan

Arrays allow to define type of variables that can hold several data items of the same kind. Similarly structure is another user defined data type available in C that allows to combine data items of different kinds. Structures are used to represent a record. Suppose you want to keep track of your books in a library. You might want to track the following attributes about each book, such as Title, Author, Subject, and Book ID.

```
struct Books {
    char title[50];
    char author[50];
    char subject[100];
    int book_id;
} book;
```



An array of structures in C can be defined as the collection of multiple structures variables where each variable contains information about different entities. The array of structures in C are used to store information about multiple entities of different data types. The array of structures is also known as the collection of structures.

Let's see an example of an array of structures that stores information of 5 students and prints it.

```
#include<stdio.h>
#include <string.h>
struct student{
int rollno;
char name[10];
};
int main(){
int i;
struct student st[5];
printf("Enter Records of 5 students");
for(i=0;i<5;i++){
printf("\nEnter Rollno:");
scanf("%d",&st[i].rollno);
printf("\nEnter Name:");
scanf("%s",&st[i].name);
}
printf("\nStudent Information List:");
for(i=0;i<5;i++){
printf("\nRollno:%d, Name:%s",st[i].rollno,st[i].name);
}
return 0;
}
```

```
Enter Records of 5 students
Enter Rollno:1
Enter Name:Sonoo
Enter Rollno:2
Enter Name:Ratan
Enter Rollno:3
Enter Name:Vimal
Enter Rollno:4
Enter Name:James
Enter Rollno:5
Enter Name:Sarfraz
```

```
Student Information List:
Rollno:1, Name:Sonoo
Rollno:2, Name:Ratan
Rollno:3, Name:Vimal
Rollno:4, Name:James
Rollno:5, Name:Sarfraz
```

## Soal

### Case

Jojo is young entrepreneur. Jojo has a small air freshener shop. He needs your help to change the cashier system of his shop to be paperless. Furthermore, the cashier program must be able to handle every transaction.

- Program always shows List of air freshener which contains some descriptions such as **No, Code, Air Freshener Name, Available, and Price** of the available air freshener.

No.	Code	Air Freshener Name	Available	Price
01.	AR004	Classic Rose	20	Rp. 28000,-
02.	AR005	Fresh Lemon	40	Rp. 30000,-
03.	AR007	Wild Lavender	25	Rp. 30000,-
04.	AR011	Elegant Vanilla	20	Rp. 32000,-
05.	AR016	Freesia & Jasmine	18	Rp. 33000,-
06.	AR019	Exotic Flower	21	Rp. 34000,-
07.	AR022	Ocean Scape	30	Rp. 35000,-

- The program consists of 3 menus:
  - Sell
  - Add Stock
  - Exit

- If user chooses **Sell**, then:
  - Ask user to input **air freshener code** he/she wants to sell.
  - **The air freshener code must consist of 5 characters** and be available in **the list of air freshener**. If user inputs **the wrong code or another code**, the program will show the message **“--- The air freshener code doesn't exist ---”** and ask *user* to input again. **This code** is case sensitive.
  - Then ask user to input **the quantity**.
  - **The quantity must be between 0 and x**, where  $x = [\text{available chosen air freshener}]$ .
  - The user cannot sell the air fresheners more than **the quantity** available on the list. If user tries to do so, show the message **“...The quantity of air freshener is not enough...”**
  - If user succeeds to sell, then show:  
**“Total Price is: Rp [price of air freshener] x [quantity of air freshener] = Rp [total price],-”**  
**“--- Thank You ---”**
  - Then update **the stock of available air freshener**.  
 $[\text{available air freshener}] = [\text{available air freshener}] - [\text{quantity of air freshener that has been sold}]$
- If user chooses **Add Stock**, then:
  - Ask user to input **the air freshener code** he/she wants to add to the list.
  - The air freshener code must **consist of 5 characters** and be available in **the list of air freshener**. If user inputs **the wrong code or another code**, the program will show the message **“--- The air freshener code doesn't exist ---”** and ask *user* to input again. **This code** is case sensitive.
  - Then ask user to input **the quantity**.
  - Validate **the quantity of air freshener must be between 1 and 100**.
  - If user succeeds to add stock, then show: **“--- Adding Stock Success ---”**
  - Then update **the stock of available air freshener**.  
 $[\text{available air freshener}] = [\text{available air freshener}] + [\text{quantity of air freshener added}]$
- If user chooses **Exit**, then the program ends.

### Print Screen of Main Menu

JOJO AIR FRESHENER SHOP CASHIER				
=====				
No.	Code	Air Freshener Name	Available	Price
01.	AR004	Classic Rose	20	Rp. 28000,-
02.	AR005	Fresh Lemon	40	Rp. 30000,-
03.	AR007	Wild Lavender	25	Rp. 30000,-
04.	AR011	Elegant Vanilla	20	Rp. 32000,-
05.	AR016	Freesia & Jasmine	18	Rp. 33000,-
06.	AR019	Exotic Flower	21	Rp. 34000,-
07.	AR022	Ocean Scape	30	Rp. 35000,-
-----				
Menu :				
1. Sell				
2. Add Stock				
3. Exit				
Input choice : _				

## Print Screen of Sell Menu (Menu '1')

```

Menu :
1. Sell
2. Add Stock
3. Exit
Input choice : 1

Input Air Freshener Code [5 chars]: AR005
Input Quantity [0..40]: 10

Total Price is : Rp 30000,- x 10 = Rp 300000,-
--- Thank You ---

```

No. :	Code	Air Freshener Name	Available	Price
01.	AR004	Classic Rose	20	Rp. 28000,-
02.	AR005	Fresh Lemon	30	Rp. 30000,-
03.	AR007	Wild Lavender	25	Rp. 30000,-
04.	AR011	Elegant Vanilla	20	Rp. 32000,-
05.	AR016	Freesia & Jasmine	18	Rp. 33000,-
06.	AR019	Exotic Flower	21	Rp. 34000,-
07.	AR022	Ocean Scape	30	Rp. 35000,-

The list is updated

## Print Screen of Add Stock (Menu '2')

```

Menu :
1. Sell
2. Add Stock
3. Exit
Input choice : 2

Input Air Freshener Code [5 chars]: AR011
Input Quantity [1..100]: 25

--- Adding Stock Success ---

```

No. :	Code	Air Freshener Name	Available	Price
01.	AR004	Classic Rose	20	Rp. 28000,-
02.	AR005	Fresh Lemon	30	Rp. 30000,-
03.	AR007	Wild Lavender	25	Rp. 30000,-
04.	AR011	Elegant Vanilla	45	Rp. 32000,-
05.	AR016	Freesia & Jasmine	18	Rp. 33000,-
06.	AR019	Exotic Flower	21	Rp. 34000,-
07.	AR022	Ocean Scape	30	Rp. 35000,-

The list is updated

**Note:** If menu 1, 2, and 3 are done, then you may get **max. 70**.

If you explain menu 1, 2, 3 in a presentation before next session, then you may get **max. +30**.

## References:

[https://www.tutorialspoint.com/cprogramming/c\\_structures.htm](https://www.tutorialspoint.com/cprogramming/c_structures.htm)

<https://www.javatpoint.com/array-of-structures-in-c>