

# Chapter # 4

## Structures



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# Objectives



- Structure declarations & definitions.
- Accessing structure members.
- Nested structures.
- Structures as objects & data types.
- Enumerations.

# Structure



## Structure declaration

```
struct struct_name  
{  
//Structure members  
};
```

# Structure



## Declaration:

```
struct part  
{  
int modelnumber;  
int partnumber  
float cost;  
};
```

## Definition:

```
part part1;
```

## Accessing structure members:

```
part1.modelnumber=1021; //using dot operator
```

# Example



```
#include<iostream>
#include<conio.h>
using namespace std;
```

```
struct part
{
int modelnumber;
int partnumber;
float cost;
} part1;
```

```
int main()
{
part1.modelnumber=1231;
part1.partnumber=323;
part1.cost=1000.23;
cout<<"Model
number="<<part1.modelnumber
;
cout<<"\nPart
number="<<part1.partnumber;
cout<<"\nCost="<<part1.cost;
getche();
return 0;
}
```

# Initializing Structure Variables & Structure Assignments



```
struct part
{
int modelnumber;
int partnumber
float cost;
};
int main()
{
part part1={234,567,100.23}; //initialization
part part2;
part2=part1; //structure assignment
....
}
```

# Structures within Structures



```
#include<iostream>
#include<conio.h>
using namespace std;
struct Distance
{
int feet;
float inches;
};
struct Room
{
Distance length;
Distance width;
};
```

# Contd...



```
int main()
```

```
{
```

```
Room dining;
```

```
dining.length.feet=13;
```

```
dining.length.inches=2.3F;
```

```
dining.width.feet=12;
```

```
dining.width.inches=2.5F;
```

Or Room dining={ {13,2.3},{12,2.5} };

```
float l=dining.length.feet+dining.length.inches/12;
```

```
float w=dining.width.feet+dining.width.inches/12;
```

```
cout<<"Dining room area="<<l*w;
```

```
getche();
```

```
return 0;
```

```
}
```



# Exercise



```
#include <iostream>
using namespace std;
struct date
{
    int month;
    int day;
    int year;
};
```

```
int main()
{
    date d1; //variable of type 'date'
    char slash; //absorbs slash
    character
    cout << "\nEnter a date (format
12/31/96): ";
    cin >> d1.month >> slash >>
d1.day >> slash >> d1.year;
    cout << "You entered ";
    cout << d1.month << '/' << d1.day
<< '/' << d1.year << endl;
    return 0;
}
```

# Enumerations



```
#include<iostream>
#include<conio.h>
using namespace std;
enum days {Mon,Tue,Wed,Thur,Fri};
int main()
{
    days day1,day2;
    day1=Mon;
    day2=Tue;
    int diff=day2-day1;
    cout<<"\nDiff="<<diff;
    if(day1<day2)
        cout<<"\nday1 comes before day2";
    getch();
    return 0;
}
```