



# Fundamentals of Object Oriented Programming

*CSN- 103*

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```
1.  #include <iostream>
2.  using namespace std;
3.
4.  int main() {
5.      // your code goes here
6.      int a=10;
7.      int* pu;
8.      pu=&a;
9.      cout<<pu<<endl;
10.     pu=pu+1;
11.     cout<<pu<<endl;
12.     cout<<*pu;
13.     return 0;
14. }
```

 stdin

Standard input is empty

 stdout

0xbff2a2dc

0xbff2a2e0

-1217862748

```
1  #include <iostream>
2  using namespace std;
3
4  int main() {
5      // your code goes here
6      int a=10;
7      int* pu=&a;
8      cout<<pu<<endl;
9      cout<<*pu<<endl;
10     return 0;
11 }
```

#### Terminal

```
sh-4.3$ g++ point1.cpp
sh-4.3$ a.out
0x7fff2d8d7114
10
sh-4.3$
```

# a.out

- "a.out"
  - the default executable target name when one is not specified.
- For more commands
  - <http://www.cs.fsu.edu/~jestes/howto/g++compiling.txt>



# Static Array

</> source code

```
1 // Example program
2 #include <iostream>
3 using namespace std;
4
5 int main() {
6     // your code goes here
7     int a[5];
8     for (int i=0; i<5; i++)
9         cin>>a[i];
10    for (int i=0; i<5; i++)
11        cout<<" "<<a[i];
12    return 0;
13 }
```

Success time: 0 memory: 3460 signal:0  
20 30 40 50 60

# Static Array

- Memory will be allocated during compile time

</> source code

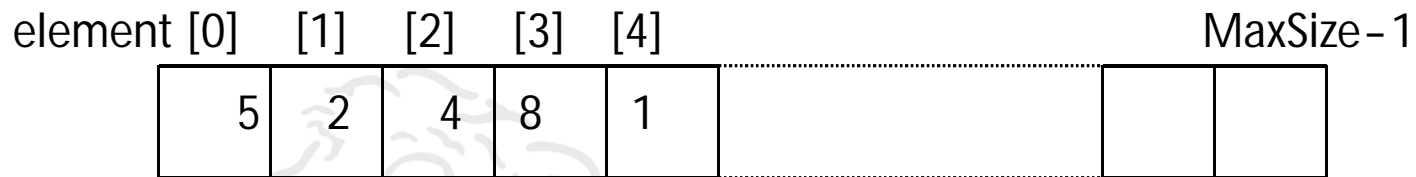
```
1 // Example program
2 #include <iostream>
3 using namespace std;
4
5 int main() {
6 // your code goes here
7 int a[5];
8 for (int i=0; i<5; i++)
9 cin>>a[i];
10 for (int i=0; i<5; i++)
11 cout<<a[i];
12 delete [ ] a;
13 /*for (int i=0; i<5; i++)
14 cout<<a[i];*/
15 return 0;
16 }
```

Runtime error time: 0 memory: 3416 signal:11



# One Dimensional Arrays

- Contiguous: `int a[10];`



- Linked (Using Pointers) length=5

```
int* a;
a=new int[10];
```



- Array is a collection of objects in which all are of same data type.

```
(1) void main()  
{ float a[8]={20.0,30.0,40.0};  
  for (int i=0; i<8; i++)  
    cout <<a[i]<<endl;  
}
```

Output:

20.0, 30.0, 40.0, 0.0, 0.0, 0.0,0.0,0.0

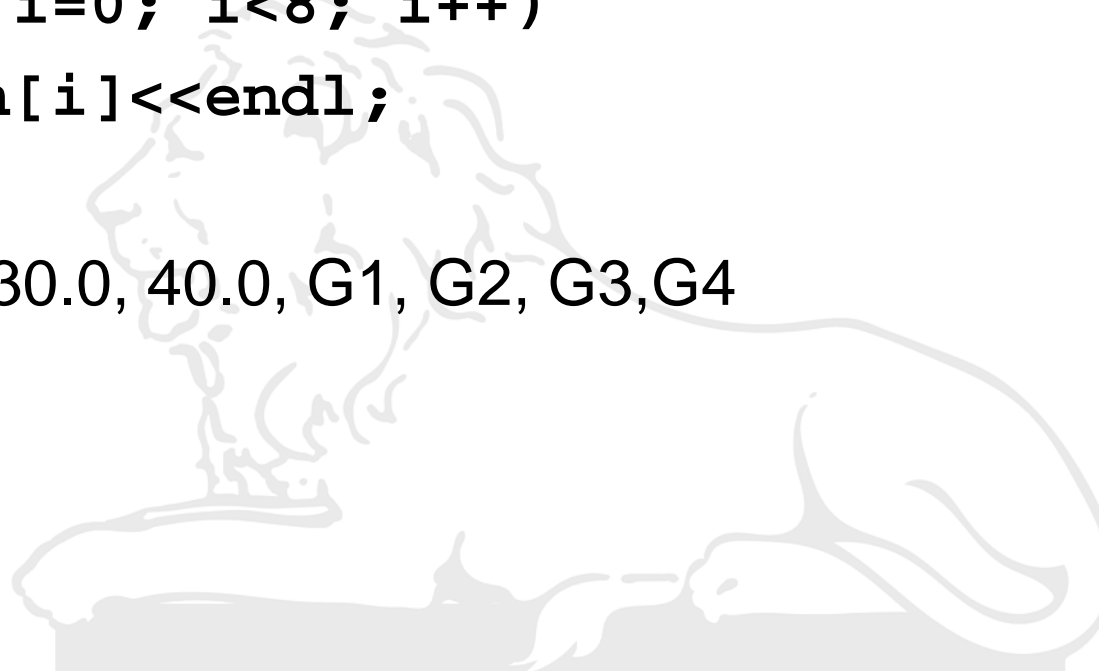


(2)

```
float a[4]={10.0,20.0,30.0,40.0};  
for (int i=0; i<8; i++)  
    cout <<a[i]<<endl;
```

Output:

10.0, 20.0, 30.0, 40.0, G1, G2, G3,G4

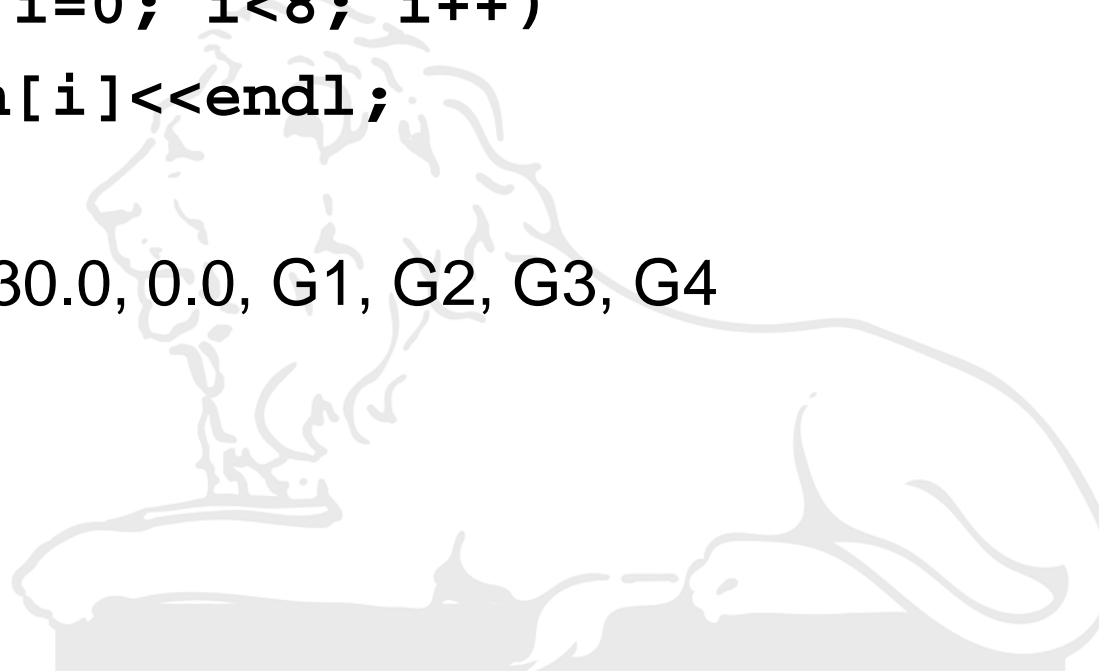


(3)

```
float a[4]={10.0,20.0,30.0};  
for (int i=0; i<8; i++)  
    cout <<a[i]<<endl;
```

Output:

10.0, 20.0, 30.0, 0.0, G1, G2, G3, G4

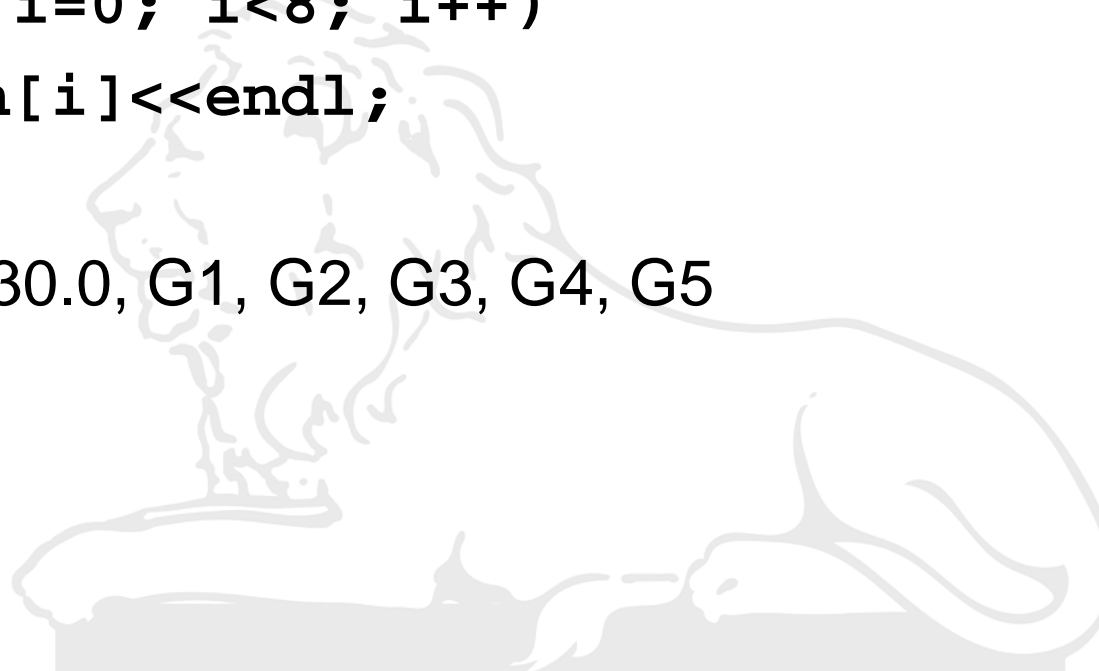


(4)

```
float a[]={10.0,20.0,30.0};  
for (int i=0; i<8; i++)  
    cout <<a[i]<<endl;
```

Output:

10.0, 20.0, 30.0, G1, G2, G3, G4, G5



(5) ↓ 4002 ↓ 4018  
`int a[6]={10,20,30,40,50,60};`  
`cout <<a<<endl;`  
`cout <<a[0]<<endl;`  
`cout <<a+4<<endl;`  
`cout <<a[4]<<endl;`

Output:

Base address

10

Address of a[4] (or) &a[4]

50

```
for ( i = 0; i < 1000; i++)  
a[i] = rand ( ) % 1000
```



- Write a C++ program to generate 1000 random numbers between 0 to 999 and find max, min and average of these numbers.

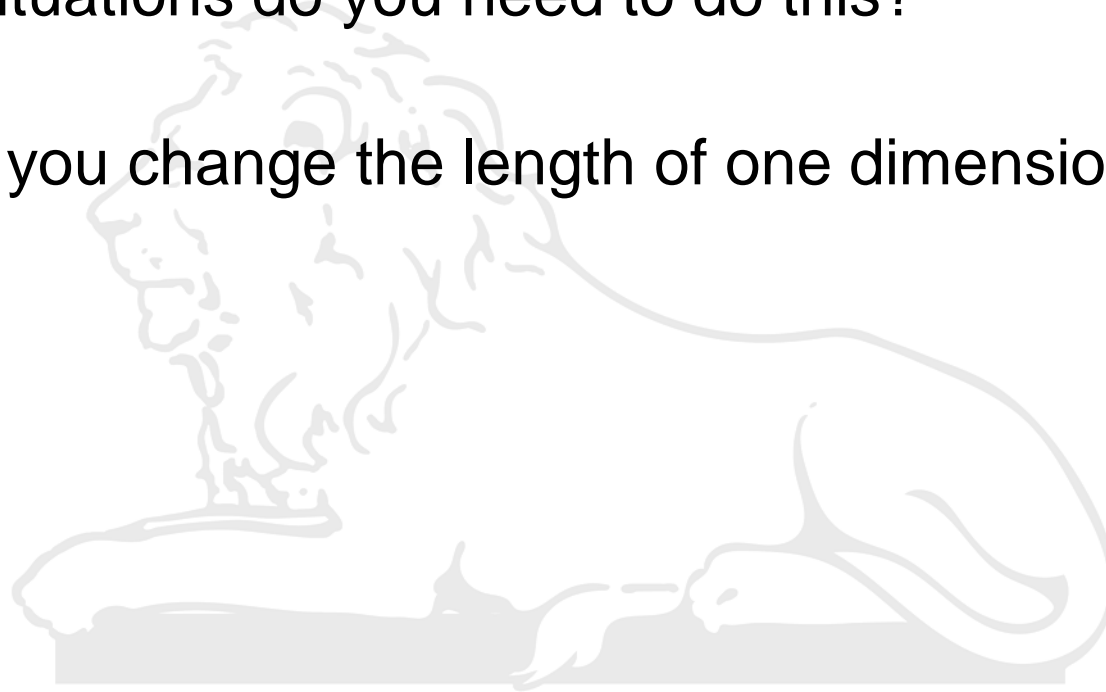


# Changing the Length of 1D Array

*delete*



- What does it mean to change the length of an array?
- In what situations do you need to do this?
- How can you change the length of one dimensional array?



## C++

```
int *a;  
int n=10;  
while (n>0)  
{ a=new int[n];  
for (int i=0; i<n;i++)  
cin>>a[i];  
sort(a,n); //some  
           //function  
n--;  
delete [ ] a;  
}
```

## JAVA

```
int [ ] a;  
int n=10;  
while (n>0)  
{ a=new int[n];  
for (int i=0; i<n;i++)  
a[i] = input.nextInt();  
sort(a,n); //some function  
n--;  
}
```

# Global variable in C++

*int b;*



```
1  #include <iostream>
2
3  using namespace std;
4
5  int a[1];
6  int main()
7  {
8      cout << "Array concept is so funny in C++" << endl;
9
10     for (int i=10; i<20; i++)
11         a[i]=i+1;
12
13     for (int i=10; i<20; i++)
14         cout<<a[i]<<endl;
15
16     return 0;
17 }
```



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