

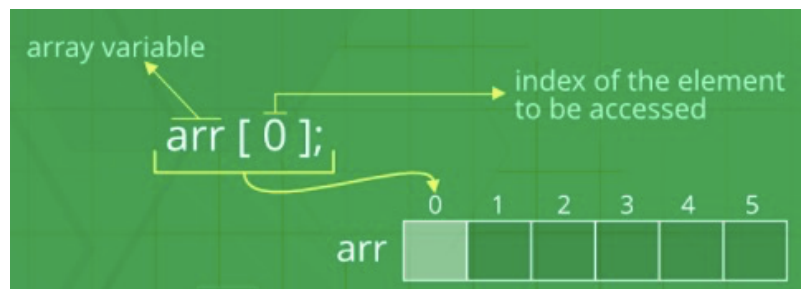
Array Operations in C++

1. Addition
2. Subtraction
3. Multiplication

Initializing an array

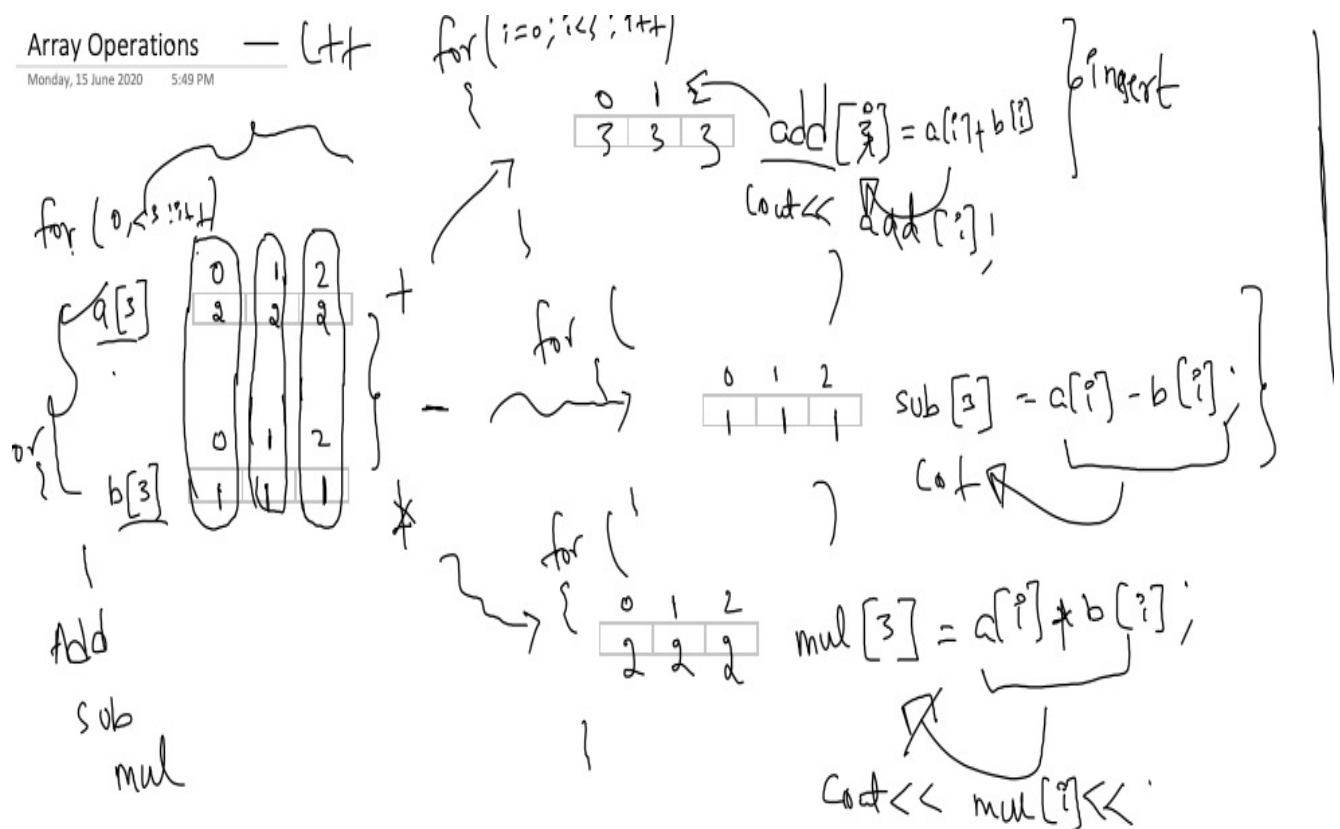
`int a[3] = {2,2,2}`

`int b[3] = {3,3,3}`



Array Operations

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CODE:

```
#include<iostream>
using namespace std;

int main()
{
    int a[3],b[3],add[3],sub[3],mul[3];
    cout<<"Enter values"<<endl;

    for(int i=0;i<3;i++)
    {
        cin>>a[i];
    }
    for(int i=0;i<3;i++)
    {
        cin>>b[i];
    }

    cout<<"Add, sub, mul are"<<endl;
    for(int i=0;i<3;i++)
    {
        add[i]=a[i]+b[i];
        cout<<add[i]<<" ";
    }
    cout<<endl;
    for(int i=0;i<3;i++)
    {
        sub[i]=a[i]-b[i];
        cout<<sub[i]<<" ";
    }
    cout<<endl;
    for(int i=0;i<3;i++)
    {
        mul[i]=a[i]*b[i];
        cout<<mul[i]<<" ";
    }
    cout<<endl;
}
```

2-Dimensional arrays in C++

2D Representation

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NE
 $f(r)$
 $f(c)$

$a[2][2]$

$b[2][2]$

$c[0] \ c[1]$

$r[0]$
 $r[1]$

first subscript

second subscript

$arr[r][c]$

$for(r)$
 $for(c)$

$add[2][2]$

$sub[2][2]$

$mul[2][2]$

$for(r=0; r<3; r++)$
 $\{$
 $for(c=0; c<3; c++)$
 $\{$
 $c[r] = a[r][c]$
 $\}$
 $\}$

$(0,0)=1$
 $(0,1)=2$
 $(1,0)=3$
 $(1,1)=4$
 r/c

	0	1	2	
0	(0,0)	(0,1)	(0,2)	Column Index
1	(1,0)	(1,1)	(1,2)	
2	(2,0)	(2,1)	(2,2)	

Row Index

Single dimension array

```
int myarr[5];
```

Two dimension array

```
int myarr[5][5]; //rows & columns
```

```
int array_type1[5][5]; //declare 2D array
```

INITIALIZATION OF ARRAY

```
int array_type2[2][2] = { 1, 2, 3, 4 };
```

```
//(0,0)=1, (0,1)=2, (1,0)=3, (1,1)=4
```

```
int array_type3[3][3] = {{1,1,1},{2,2,2},{3,3,3}};
```

	0	1
0	1	2
1	3	4

	0	1	2
0	1	2	3
1	4	5	6
2	7	8	9

$\{1, 2, 3, 4\}$

$(0,0)$ $(0,1)$ $(0,2)$ $(0,3)$
 $(1,0)$ $(1,1)$ $(1,2)$ $(1,3)$
 $(2,0)$ $(2,1)$ $(2,2)$ $(2,3)$

CODE:

```
#include<iostream>
using namespace std;

int main()
{

// perform addition

int a[3][3], b[2][2], add[2][2], sub[2][2], mul[2][2];

cout<<"enter the values for array a"<<endl;
for(int i=0;i<3;i++)
{
    for(int j=0;j<3;j++)
    {
        cin>>a[i][j];
    }
    cout<<endl;
}

cout<<"enter the values for array b"<<endl;
for(int i=0;i<2;i++)
{
    for(int j=0;j<2;j++)
    {
        cin>>b[i][j];
    }
    cout<<endl;
}

for(int i=0;i<2;i++)
{
    for(int j=0;j<2;j++)
    {
        add[i][j]=a[i][j]+b[i][j];
    }
    cout<<endl;
}
for(int i=0;i<2;i++)
{
    for(int j=0;j<2;j++)
    {
        sub[i][j]=a[i][j]-b[i][j];
    }
    cout<<endl;
}

for(int i=0;i<2;i++)
{
```

```
        for(int j=0;j<2;j++)
        {
            mul[i][j]=a[i][j]*b[i][j];
        }
        cout<<endl;
    }
}
```

```
cout<<"addition is"<<endl;
for(int i=0;i<2;i++)
{
    for(int j=0;j<2;j++)
    {
        cout<<add[i][j]<<" ";
    }
    cout<<endl;
}
```

```
cout<<"subtraction is"<<endl;
for(int i=0;i<2;i++)
{
    for(int j=0;j<2;j++)
    {
        cout<<sub[i][j]<<" ";
    }
    cout<<endl;
}
```

```
cout<<"multiplication is"<<endl;
for(int i=0;i<2;i++)
{
    for(int j=0;j<2;j++)
    {
        cout<<mul[i][j]<<" ";
    }
    cout<<endl;
}
return 0;
}
```