Double Dimensional Integer Array

Syntax

```
int <array_name> [ int ][ int ];
```

Row size

Col size

Ex:

```
int arr[3][4];
```

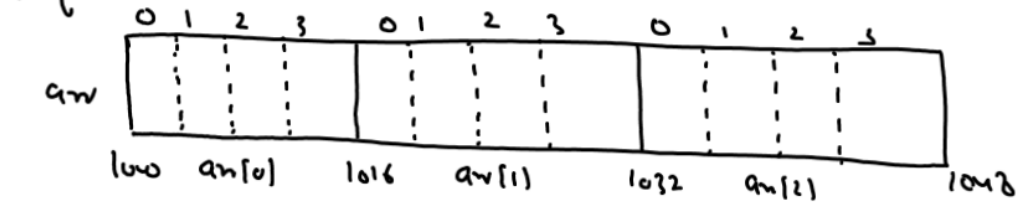
Memory Repr of a 2D Array

```
int arr[3][4];
```

Logical Diag

	0	1	2	3
0	1000	1004	1008	1012
1	1016	1020	1024	1028
2	1032	1036	1040	1044

Physical Diagram

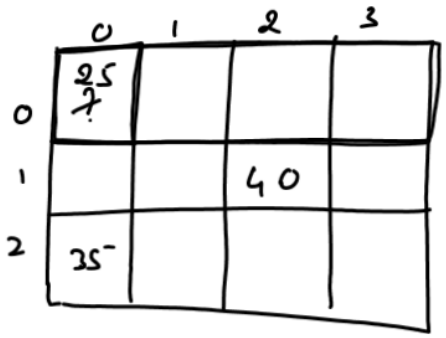


Accessing 2D Array

```
int arr[3][4];
```

Syntax:

```
<arr_name>[row ind][col ind]= value;
```




```
X arr[0]=25;
  arr[0][0]=25;
  arr[1][2]=40;
  arr[2][0]=35;
```

WAP to create a 2D integer array of 3*4 size , accept input from the user in it and finally display all array values in MATRIX STYLE.

```
int main()
{
  int arr[3][4];
  int i,j;
  for(i=0;i<3;i++)
  {
    for(j=0;j<4;j++)
    {
      printf("Enter no:");
      scanf("%d",&arr[i][j]);
    }
  }
  for(i=0;i<3;i++)
  {
    for(j=0;j<4;j++)
        printf("%d ",arr[i][j]);
    printf("\n");
  }
return 0;
}
```


```
15 40 31 25
52 29 45 62
10 18 27 12
```

WAP to create a 2D integer array of 3*4 size , accept input from the user in it and finally display the SUM and AVERAGE of all elements of the array

```
int main()
{
  int arr[3][4];
  int i,j,sum=0;
  for(i=0;i<3;i++)
  {
    for(j=0;j<4;j++)
    {
      printf("Enter no:");
      scanf("%d",&arr[i][j]);
      sum=sum+arr[i][j];
    }
  }
printf("Sum is %d",sum);
printf("\nAvg is %f",(float)sum/(i*j));
return 0;
}
```

WAP to create a 2D integer array of 3*3 size , accept input from the user in it and finally display the SUM of its DIAGONAL elements only

Soln 1

```
int main()
{
  int arr[3][3];
  int i,j,sum=0;
  for(i=0;i<3;i++)
  {
    for(j=0;j<3;j++)
    {
      printf("Enter no:");
      scanf("%d",&arr[i][j]);
      if(i==j)
        sum=sum+arr[i][j];
    }
  }
printf("Sum is %d",sum);
return 0;
}
```

i=0

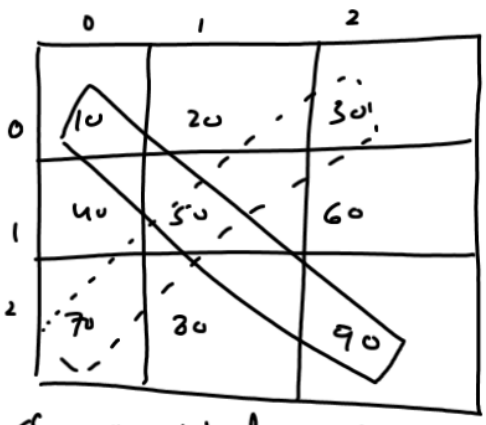
j=0+1 2 3

Sum = 0+10 = 10

i = 0 1

j = 0 1

Sum = 10+50 = 60



Sum of right diagonal

```
if(i+j==2)
  Sum=Sum+arr[i][j];
```

Soln 2

```
int main()
{
   int arr[3][3];
   int i,j,sum=0;
   for(i=0;i<3;i++)
   {
     for(j=0;j<3;j++)
     {
        printf("Enter no:");
        scanf("%d",&arr[i][j]);
     }
    sum=sum+arr[i][i];
  }
printf("Sum is %d",sum);
return 0;
}
```