1(1).অ্যারের মাধ্যমে যোগফল নির্ণয়।

```c
#include <stdio.h>

int main()
{
	int num[] = { 10, 20, 30, 40, 50 };
	int sum;

	sum = num[0] + num[1] + num[2] + num[3] + num[4];
	printf("The sum is = %d\n", sum);
}
```

```
Output:
The sum is = 150
```

1(2).অ্যারের মাধ্যমে কাঙ্ক্ষিত সংখ্যাটি প্রিন্ট।

```c
#include <stdio.h>

int main()
{
	int num[] = { 10, 20, 30, 40, 50 };
	int sum;

	sum = num[0] + num[1] + num[2] + num[3] + num[4];
	printf("The sum is = %d\n", sum);
	printf("I wanted to print number = %d\n", num[2]);
}
```

```
Output:
The sum is = 150
I wanted to print number = 30
```

2(1).অ্যারের মাধ্যমে যোগফল এবং এভারেজ নির্ণয়।

```c
#include <stdio.h>

int main()
{
	int num[5] = { 10, 20, 30, 40, 50 };
	int i, sum = 0;

	for (i = 0; i < 5; i++)
	{
		sum = sum + num[i];
	}
	printf("The sum is = %d\n", sum);
	printf("The average is = %.2f\n", (float)sum / 5);
}
```

```
Output:
The sum is = 150
The average is = 30.00
```

2(2).অ্যারের মাধ্যমে ইউজার হতে ইনপুট নিয়ে যোগফল এবং এভারেজ নির্ণয়।

```c
#include <stdio.h>

int main()
{
	int num[10];
	int n, i, sum = 0;
	printf("How many numbers = ");
	scanf("%d", &n);
	printf("\nEnter numbers = ");
	for (i = 0; i < n; i++)
	{
		scanf("%d", &num[i]);
	}
	for (i = 0; i < n; i++)
	{
		sum = sum + num[i];
	}
	printf("The sum is = %d\n", sum);
	printf("The average is = %.2f\n", (float)sum / n);
}
```

```
Output:
How many numbers = 5

Enter numbers = 10 20 30 40 50
The sum is = 150
The average is = 30.00
```

3(1) - অ্যারের মাধ্যমে সবচেয়ে বড় সংখ্যাটি নির্ণয়।

```c
#include <stdio.h>

int main()
{
	int num[] = { 2, 4, 5, 6, 1, 8, 9 };
	int i, position;
	int max = num[0];

	for (i = 1; i < 7; i++)
	{
		if (num[i] > max)
		{
			max = num[i];
			position = i;
		}
	}
	printf("The maximum number is = %d\n", max);
	printf("The position is = %d\n", position);
}
```

```
Output:
The maximum number is = 9
The position is = 6
```

3(2) - অ্যারের মাধ্যমে ইউজার হতে ইনপুট নিয়ে সবচেয়ে বড় সংখ্যাটি নির্ণয়।

```c
#include <stdio.h>

int main()
{
	int num[10], n, i, position;
	printf("How many numbers = ");
	scanf("%d", &n);
	printf("Please enter numbers = ");
	for (i = 0; i < n; i++)
	{
		scanf("%d", &num[i]);
	}

	int max = num[0];

	for (i = 1; i < n; i++)
	{
		if (num[i] > max)
		{
			max = num[i];
			position = i;
		}
	}
	printf("The maximum number is = %d\n", max);
	printf("The position of maximum number is = %d\n", position);
}
```

```
Output:
How many numbers = 5
Please enter numbers = 11 34 56 67 78
The maximum number is = 78
The position of maximum number is = 4
```

3(3). যদি বলতো সবচেয়ে ছোট সংখ্যাটি নির্নয় করো তাহলে শুধু এই লাইনটি চেঞ্জ করলেই হবেঃ `if (num[i] < max)`

4. Fibonacci series using array.

```c
#include <stdio.h>

int main()
{
	int n, i, num[100];
	printf("How many fibonacci numbers = ");
	scanf("%d", &n);

	num[0] = 0;
	num[1] = 1;

	for (i = 2; i < n; i++)
	{
		num[i] = num[i - 2] + num[i - 1];
	}

	for (i = 0; i < n; i++){
		printf("%d ", num[i]);
	}
}
```

```
Output:
How many fibonacci numbers = 7
0 1 1 2 3 5 8
```

5(1) - Linear search(লিনিয়ার সার্চ).

```c
#include <stdio.h>

int main()
{
	int num[] = { 4, 5, 6, 8, 9, 11, 12 };
	int value, position = 0, i;
	printf("Enter the value you want to search = ");
	scanf("%d", &value);

	for (i = 0; i < 7; i++)
	{
		if (value == num[i])
		{
			position = position + i;
			break;
		}
	}
	if (position == -1)
		printf("Value is not found\n");
	else
		printf("Value is found at position %d", position);
}
```

```
Output:
Enter the value you want to search = 11
Value is found at position 5
```

5(2) - Linear search from the user.

```c
#include <stdio.h>

int main()
{
	int num[5];
	int value, position = 0, i, n;
	printf("Enter number = ");
	scanf("%d", &n);
	for (i = 0; i < n; i++)
	{
		scanf("%d", &num[i]);
	}
	printf("Enter the value you want to search = ");
	scanf("%d", &value);

	for (i = 0; i < n; i++)
	{
		if (value == num[i])
		{
			position = position + i;
			break;
		}
	}
	if (position == -1)
		printf("Value is not found\n");
	else
		printf("Value is found at position %d", position);
}
```

```
Output:
Enter number = 5
10 20 30 40 50
Enter the value you want to search = 20
Value is found at position 1
```

5(3) - Binary search(বাইনারি সার্চ).

```c
#include <stdio.h>

int main()
{
	int num[] = { 1,4,6,8,9,11,14,15,20,25,33,83,87,97,99,100 };
	int value = 97;
	int lowindex = 0;
	int highindex = 15;
	int midindex;

	while (lowindex <= highindex)
	{
		midindex = (lowindex + highindex) / 2;
		if (value == num[midindex])
		{
			break;
		}
		else if (value > num[midindex])
		{
			lowindex = midindex + 1;
		}
		else
		{
			highindex = midindex - 1;
		}
	}
	if (lowindex > highindex)
		printf("%d is not in the number\n", value);
	else
		printf("Value is found at position = %d\n", midindex);
}
```

```
Output:
Value is found at position = 13
```

5(4) - Binary search from the user.

```c
#include <stdio.h>

int main()
{
	int num[5], i, n;
	printf("Enter number = ");
	scanf("%d", &n);
	for (i = 0; i < n; i++)
	{
		scanf("%d", &num[i]);
	}
	int value;
	printf("Enter the value you want to search = ");
	scanf("%d", &value);
	int lowindex = 0;
	int highindex = n;
	int midindex;

	while (lowindex <= highindex)
	{
		midindex = (lowindex + highindex) / 2;
		if (value == num[midindex])
		{
			break;
		}
		else if (value > num[midindex])
		{
			lowindex = midindex + 1;
		}
		else
		{
			highindex = midindex - 1;
		}
	}
	if (lowindex > highindex)
		printf("%d is not in the number\n", value);
	else
		printf("Value is found at position = %d\n", midindex);
}
```

Output:

```
Enter number = 5 12 23 34 45 56

Enter the value you want to search = 34
Value is found at position = 2
```

6(1).Array - 1 এর উপাদান গুলো Array - 2 এ কপি করা।

```c
#include <stdio.h>

int main()
{
	int num1[5] = { 10, 20, 30, 40, 50 };
	int num2[5], i;
	printf("num1 = ");
	for (i = 0; i < 5; i++)
	{
		printf("%d  ", num1[i]);
	}

	//copy started.
	for (i = 0; i < 5; i++)
	{
		num2[i] = num1[i];
	}

	printf("\n\nnum2 = ");
	for (i = 0; i < 5; i++)
	{
		printf("%d  ", num2[i]);
	}
}
```

```
Output:
num1 = 10  20  30  40  50

num2 = 10  20  30  40  50
```

6(2).Array - 1 এর উপাদান গুলো Array - 2 এ কপি করা।(ইউজার হতে ইনপুট নিয়ে)

```c
#include <stdio.h>

int main()
{
	int num1[10];
	int num2[10], i, n;
	printf("How many numbers = ");
	scanf("%d", &n);
	printf("Please enter numbers = ");
	for (i = 0; i < n; i++)
	{
		scanf("%d", &num1[i]);
	}

	printf("num1 = ");
	for (i = 0; i < n; i++)
	{
		printf("%d  ", num1[i]);
	}

	//copy started.
	for (i = 0; i < n; i++)
	{
		num2[i] = num1[i];
	}

	printf("num2 = ");
	for (i = 0; i < n; i++)
	{
		printf("%d  ", num2[i]);
	}
}
```

```
Output:
How many numbers = 5
Please enter numbers = 12 23 34 45 56
num1 = 12  23  34  45  56
num2 = 12  23  34  45  56
```

7(1) - 2D অ্যারের মাধ্যমে রো এবং কলাম প্রিন্ট করা।

```c
#include <stdio.h>

int main()
{
	int A[3][4] = { {1, 2, 3, 4}, {2, 3, 4, 5}, {3, 4, 5, 6} };
	int i, j; /*i means row and j means column*/

	for (i = 0; i < 3; i++)
	{
		for (j = 0; j < 4; j++)
		{
			printf("%d  ", A[i][j]); //2 space.
		}
		printf("\n");
	}
}
```

```
Output:
1  2  3  4
2  3  4  5
3  4  5  6
```

7(2) - 2D অ্যারের মাধ্যমে রো এবং কলাম প্রিন্ট করা।(ইউজার হতে ইনপুট নিয়ে)

```c
#include <stdio.h>

int main()
{
	int A[10][10];
	int i, j, row, column;
	printf("Enter row and columns = ");
	scanf("%d %d", &row, &column);

	printf("\n");
	for (i = 0; i < row; i++)
	{
		for (j = 0; j < column; j++)
		{
			printf("A[%d][%d] = ", i, j);
			scanf("%d", &A[i][j]);
		}
		printf("\n");
	}

	printf("The matrix is = \n");
	for (i = 0; i < row; i++)
	{
		for (j = 0; j < column; j++)
		{
			printf("%d  ", A[i][j]); //2 space.
		}
		printf("\n");
	}
}
```

```
Output:
Enter rowand columns = 3 3

A[0][0] = 2
A[0][1] = 3
A[0][2] = 4

A[1][0] = 5
A[1][1] = 6
A[1][2] = 7

A[2][0] = 7
A[2][1] = 8
A[2][2] = 9

The matrix is =
2  3  4
5  6  7
7  8  9
```

8. Array - র সাহায্যে simple matrix তৈরি করা।

```c
#include <stdio.h>

int main()
{
	int A[10][10], B[10][10];
	int i, j, row, column;

	printf("Enter row and columns for A matrix = ");
	scanf("%d %d", &row, &column);

	printf("\n");
	for (i = 0; i < row; i++)
	{
		for (j = 0; j < column; j++)
		{
			printf("A[%d][%d] = ", i, j);
			scanf("%d", &A[i][j]);
		}
		printf("\n");
	}

	printf("The element of A matrix is = \n");
	for (i = 0; i < row; i++)
	{
		for (j = 0; j < column; j++)
		{
			printf("%d  ", A[i][j]); //2 space.
		}
		printf("\n");
	}


	printf("\nEnter row and columns for B matrix = ");
	scanf("%d %d", &row, &column);

	printf("\n");
	for (i = 0; i < row; i++)
	{
		for (j = 0; j < column; j++)
		{
			printf("B[%d][%d] = ", i, j);
			scanf("%d", &B[i][j]);
		}
		printf("\n");
	}

	printf("The element of B matrix is = \n");
	for (i = 0; i < row; i++)
	{
		for (j = 0; j < column; j++)
		{
			printf("%d  ", B[i][j]); //2 space.
		}
		printf("\n");
	}
}
```

```
Output:
Enter row and columns for A matrix = 2 2

A[0][0] = 3
A[0][1] = 4

A[1][0] = 6
A[1][1] = 7

The element of A matrix is =
3  4
6  7

Enter row and columns for B matrix = 2 3

B[0][0] = 5
B[0][1] = 6
B[0][2] = 7

B[1][0] = 8
B[1][1] = 9
B[1][2] = 1

The element of B matrix is =
5  6  7
8  9  1
```

9(1).দুটি ম্যাটিক্স এর যোগ।

```c
#include <stdio.h>

int main()
{
	int A[10][10], B[10][10], C[10][10];
	int i, j, row, column;
	printf("Enter row and columns for A matrix = ");
	scanf("%d %d", &row, &column);
	printf("\n");
	for (i = 0; i < row; i++)
	{
		for (j = 0; j < column; j++) {
			printf("A[%d][%d] = ", i, j);
			scanf("%d", &A[i][j]);
		}
		printf("\n");
	}

	printf("The element of A matrix is = \n");
	for (i = 0; i < row; i++)
	{
		for (j = 0; j < column; j++) {
			printf("%d  ", A[i][j]); //2 space.
		}
		printf("\n");
	}

	printf("\nEnter row and columns for B matrix = ");
	scanf("%d %d", &row, &column);
	printf("\n");
	for (i = 0; i < row; i++)
	{
		for (j = 0; j < column; j++) {
			printf("B[%d][%d] = ", i, j);
			scanf("%d", &B[i][j]);
		}
		printf("\n");
	}

	printf("The element of B matrix is = \n");
	for (i = 0; i < row; i++)
	{
		for (j = 0; j < column; j++) {
			printf("%d  ", B[i][j]); //2 space.
		}
		printf("\n");
	}
	printf("\nThe sum of A + B = \n");
	for (i = 0; i < row; i++)
	{
		for (j = 0; j < column; j++){
			printf("%2d  ", C[i][j] = A[i][j] + B[i][j]);
		}
		printf("\n");
	}
}
```

```
Output:
Enter rowand columns for A matrix = 2 2

A[0][0] = 2
A[0][1] = 3

A[1][0] = 4
A[1][1] = 5

The element of A matrix is =
2  3
4  5

Enter row and columns for B matrix = 2 2

B[0][0] = 6
B[0][1] = 7

B[1][0] = 8
B[1][1] = 9

The element of B matrix is =
6  7
8  9

The sum of A + B =
 8  10
12  14
```

9(2). দুটি ম্যাটিক্স এর বিয়োগ।(পুরোটাই সেম, শুধু লাষ্টে + এর পরিবর্তে – হবে)

10(1) - দুটি ম্যাট্রিক্স এর গুণন।

```c
#include <stdio.h>

int main()
{
	int first[10][10], second[10][10];
	int r1, c1, r2, c2, i, j;

	printf("Enter rows and columns for first matrix = ");
	scanf("%d %d", &r1, &c1);
	printf("Enter rows and columns for second matrix = ");
	scanf("%d %d", &r2, &c2);

	while (c1 != r2)
	{
		printf("\nError!Column of first matrix is not equal to row of second matrix\n");
		printf("\nEnter rows and columns for first matrix = ");
		scanf("%d %d", &r1, &c1);
		printf("Enter rows and columns for second matrix = ");
		scanf("%d %d", &r2, &c2);
	}

	printf("\nEnter element for first matrix = \n");
	for (i = 0; i < r1; i++)
	{
		for (j = 0; j < c1; j++) {
			printf("First[%d][%d] = ", i, j);
			scanf("%d", &first[i][j]);
		}
	}
	printf("\nFirst matrix is = \n");
	for (i = 0; i < r1; i++)
	{
		for (j = 0; j < c1; j++) {
			printf("%d  ", first[i][j]);
		}
		printf("\n");
	}

	printf("\nEnter element for second matrix = \n");
	for (i = 0; i < r2; i++)
	{
		for (j = 0; j < c2; j++) {
			printf("Second[%d][%d] = ", i, j);
			scanf("%d", &second[i][j]);
		}
	}
	printf("\nSecond matrix is = \n");
	for (i = 0; i < r2; i++)
	{
		for (j = 0; j < c2; j++)
		{
			printf("%d  ", second[i][j]);
		}
		printf("\n");
	}
}
```

```
Output:
Enter rowsand columns for first matrix = 2 2
Enter rows and columns for second matrix = 2 2

Enter element for first matrix =
First[0][0] = 3
First[0][1] = 4
First[1][0] = 5
First[1][1] = 6

First matrix is =
3  4
5  6

Enter element for second matrix =
Second[0][0] = 7
Second[0][1] = 8
Second[1][0] = 9
Second[1][1] = 2

Second matrix is =
7  8
9  2
```

10(2) - দুটি ম্যাট্রিক্স এর গুণন এবং গুণফল নির্ণয়।

```c
#include <stdio.h>

int main()
{
	int first[10][10], second[10][10], result[10][10];
	int r1, c1, r2, c2, i, j, k, sum = 0;

	printf("Enter rows and columns for first matrix = ");
	scanf("%d %d", &r1, &c1);
	printf("Enter rows and columns for second matrix = ");
	scanf("%d %d", &r2, &c2);

	while (c1 != r2)
	{
		printf("\nError....Column of first matrix is not equal to row of second
matrix\n");
		printf("\nEnter rows and columns for first matrix = ");
		scanf("%d %d", &r1, &c1);
		printf("Enter rows and columns for second matrix = ");
		scanf("%d %d", &r2, &c2);
	}

	printf("\nEnter element for first matrix = \n");
	for (i = 0; i < r1; i++)
	{
		for (j = 0; j < c1; j++)
		{
			printf("First[%d][%d] = ", i, j);
			scanf("%d", &first[i][j]);
		}
	}
	printf("\nFirst matrix is = \n");
	for (i = 0; i < r1; i++)
	{
		for (j = 0; j < c1; j++)
		{
			printf("%d  ", first[i][j]);
		}
		printf("\n");
	}

	printf("\nEnter element for second matrix = \n");
	for (i = 0; i < r2; i++)
	{
		for (j = 0; j < c2; j++)
		{
			printf("Second[%d][%d] = ", i, j);
			scanf("%d", &second[i][j]);
		}
	}
```

```
        printf("\nSecond matrix is = \n");
        for (i = 0; i < r2; i++)
        {
                for (j = 0; j < c2; j++)
                {
                        printf("%d  ", second[i][j]);
                }
                printf("\n");
        }

        for (i = 0; i < r1; i++)
        {
                for (j = 0; j < c2; j++)
                {
                        for (k = 0; k < c1; k++)
                        {
                                sum = sum + first[i][k] * second[k][j];
                        }
                        result[i][j] = sum;
                        sum = 0;
                }
        }
        printf("\nResult matrix = \n");
        for (i = 0; i < r1; i++)
        {
                for (j = 0; j < c2; j++)
                {
                        printf("%d  ", result[i][j]);
                }
                printf("\n");
        }
}
```

```
Output:
Enter rowsand columns for first matrix = 2 2
Enter rows and columns for second matrix = 3 2

Error....Column of first matrix is not equal to row of second matrix

Enter rows and columns for first matrix = 2 2
Enter rows and columns for second matrix = 2 2

Enter element for first matrix =
First[0][0] = 4
First[0][1] = 5
First[1][0] = 6
First[1][1] = 7

First matrix is =
4  5
6  7

Enter element for second matrix =
Second[0][0] = 1
Second[0][1] = 2
Second[1][0] = 3
Second[1][1] = 4

Second matrix is =
1  2
3  4

Result matrix =
19  28
27  40
```

11. Transpose Matrix(ট্রান্সপোস ম্যাটিক্স)

```c
#include <stdio.h>

int main()
{
	int A[10][10], transpose[10][10];
	int i, j, row, col;
	printf("Enter row and columns = ");
	scanf("%d %d", &row, &col);

	printf("\nPlease enter numbers:\n");
	for (i = 0; i < row; i++)
	{
		for (j = 0; j < col; j++)
		{
			printf("A[%d][%d] = ", i, j);
			scanf("%d", &A[i][j]);
		}
		printf("\n");
	}
	printf("\nEntered matrix = \n");
	for (i = 0; i < row; i++)
	{
		for (j = 0; j < col; j++)
		{
			printf("%d  ", A[i][j]); //2 space.
		}
		printf("\n");
	}
	//now transpose the matrix.
	for (i = 0; i < row; i++)
	{
		for (j = 0; j < col; j++)
		{
			transpose[i][j] = A[j][i];
		}
	}

	printf("\nTranspose matrix = \n");
	for (i = 0; i < row; i++)
	{
		for (j = 0; j < col; j++)
		{
			printf("%d  ", transpose[i][j]); //2 space.
		}
		printf("\n");
	}
}
```

```
Output:
Enter rowand columns = 2 2

Please enter numbers :
A[0][0] = 4
A[0][1] = 5

A[1][0] = 6
A[1][1] = 7


Entered matrix =
4  5
6  7

Transpose matrix =
4  6
5  7
```

12. Diagnal element এর যোগফল নির্ণয়।

```c
#include <stdio.h>

int main()
{
	int A[10][10];
	int i, j, row, col, sum = 0;
	printf("Enter row and columns = ");
	scanf("%d %d", &row, &col);

	printf("\nPlease enter numbers:\n");
	for (i = 0; i < row; i++)
	{
		for (j = 0; j < col; j++)
		{
			printf("A[%d][%d] = ", i, j);
			scanf("%d", &A[i][j]);
		}
		printf("\n");
	}
	printf("\nEntered matrix = \n");
	for (i = 0; i < row; i++)
	{
		for (j = 0; j < col; j++)
		{
			printf("%d  ", A[i][j]);
		}
		printf("\n");
	}

	printf("\nDiagonal Elements = \n");
	for (i = 0; i < row; i++)
	{
		for (j = 0; j < col; j++)
		{
			if (i == j)
			{
				printf("%d  ", A[i][j]);
				sum = sum + A[i][j];
			}
		}
	}
	printf("\nSum of diagonal element is = %d\n", sum);
}
```

```
Output:
Enter rowand columns = 3 3

Please enter numbers :
A[0][0] = 1
A[0][1] = 2
A[0][2] = 3

A[1][0] = 4
A[1][1] = 5
A[1][2] = 6

A[2][0] = 7
A[2][1] = 8
A[2][2] = 9


Entered matrix =
1  2  3
4  5  6
7  8  9

Diagonal Elements =
1  5  9
Sum of diagonal element is = 15
```

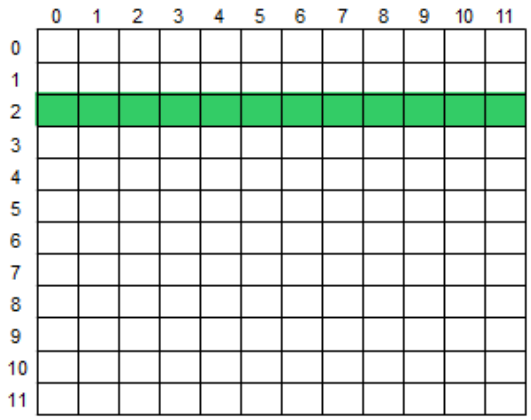
13. Sum of upper and lower triangle element.

```c
#include <stdio.h>

int main()
{
	int A[10][10];
	int i, j, row, col, uppersum = 0, lowersum = 0;
	printf("Enter row and columns = ");
	scanf("%d %d", &row, &col);

	printf("\nPlease enter numbers:\n");
	for (i = 0; i < row; i++)
	{
		for (j = 0; j < col; j++)
		{
			printf("A[%d][%d] = ", i, j);
			scanf("%d", &A[i][j]);
		}
		printf("\n");
	}
	printf("\nEntered matrix = \n");
	for (i = 0; i < row; i++)
	{
		for (j = 0; j < col; j++)
		{
			printf("%d  ", A[i][j]);
		}
		printf("\n");
	}

	for (i = 0; i < row; i++)
	{
		for (j = 0; j < col; j++)
		{
			if (i > j)
				lowersum = lowersum + A[i][j];
			else if (j > i)
				uppersum = uppersum + A[i][j];
		}
	}
	printf("\n\nSum of lower triangle element = %d\n", lowersum);
	printf("\n\nSum of upper triangle element = %d\n", uppersum);
}
```

```
Output:
Enter rowand columns = 3 3

Please enter numbers :
A[0][0] = 1
A[0][1] = 2
A[0][2] = 3

A[1][0] = 4
A[1][1] = 5
A[1][2] = 6

A[2][0] = 7
A[2][1] = 8
A[2][2] = 9


Entered matrix =
1  2  3
4  5  6
7  8  9


Sum of lower triangle element = 19


Sum of upper triangle element = 11
```

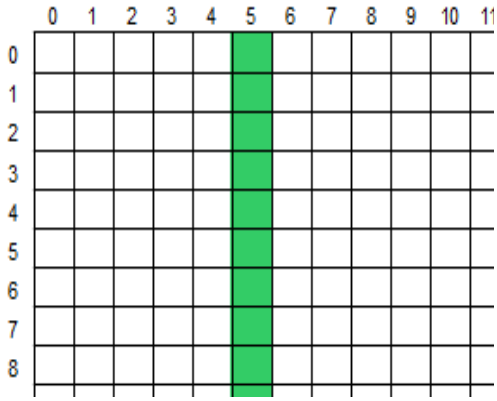
14 – Line in Array.

```c
#include <stdio.h>

int main()
{
    double N[12][12], sum = 0;
    int i, j, k = 2;
    char ch[2];
    scanf("%d %s", &k, &ch);

    for (i = 0; i < 12; i++)
    {
        for (j = 0; j < 12; j++)
        {
            scanf("%lf", &N[i][j]);
        }
    }
    for (j = 0; j < 12; j++)
    {
        sum = sum + N[k][j];
    }
    if (ch[0] == 'S')
        printf("%.1lf\n", sum);
    else if (ch[0] == 'M')
        printf("%.1lf\n", sum / 12);

    return 0;
}
```



অর্থাৎ আমি ১৪৪ টা সংখ্যা ইনপুট নিবো। তারপর রো ২ এর মধ্যে যে সংখ্যাগুলো থাকবে সেগুলোর যোগফল(S হলে) বা এভারেজ(M হলে) বের করবো।

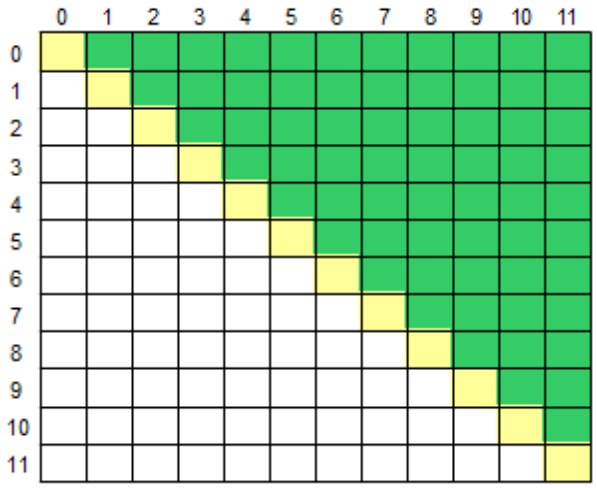
15- Column in Array.




```c
#include <stdio.h>

int main()
{
    double N[12][12], sum = 0;
    int i, j, k = 5;
    char ch[2];
    scanf("%d %s", &k, &ch);

    for (i = 0; i < 12; i++)
    {
        for (j = 0; j < 12; j++)
        {
            scanf("%lf", &N[i][j]);
        }
    }
    for (i = 0; i < 12; i++)
    {
        sum = sum + N[i][k];
    }
    if (ch[0] == 'S')
        printf("%.1lf\n", sum);
    else if (ch[0] == 'M')
        printf("%.1lf\n", sum / 12);

    return 0;
}
```

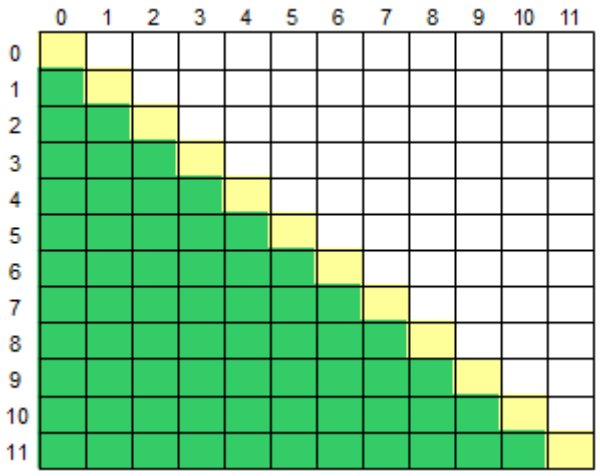
16 – Above the Main Diagonal.

```c
#include <stdio.h>

int main()
{
    double N[12][12], sum = 0;
    char c[2];
    scanf("%s", &c);
    int i, j;

    for (i = 0; i < 12; i++)
    {
        for (j = 0; j < 12; j++)
        {
            scanf("%lf", &N[i][j]);
        }
    }
    for (i = 0; i < 12; i++)
    {
        for (j = 0; j < 12; j++)
        {
            if (j > i)
            {
                sum = sum + N[i][j];
            }
        }
    }
    if (c[0] == 'S')
        printf("%.1lf\n", sum);
    else
        printf("%.1lf\n", sum / 66.0);

    return 0;
}
```



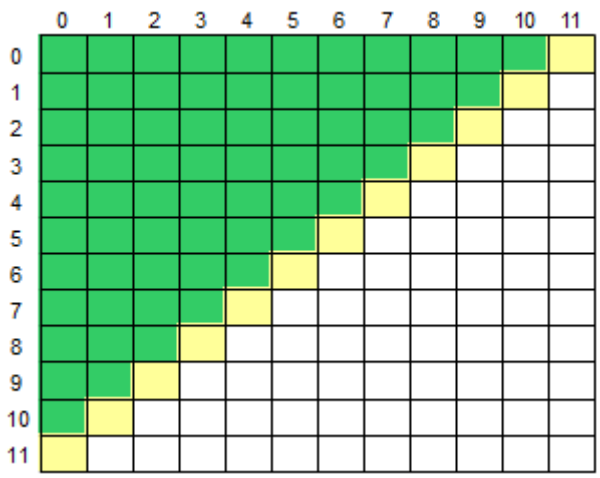
17 – Below the Main Diagonal.

```c
#include <stdio.h>

int main()
{
    double N[12][12], sum = 0;
    char c[2];
    scanf("%s", &c);
    int i, j;

    for (i = 0; i < 12; i++)
    {
        for (j = 0; j < 12; j++)
        {
            scanf("%lf", &N[i][j]);
        }
    }
    for (i = 0; i < 12; i++)
    {
        for (j = 0; j < 12; j++)
        {
            if (i > j)
            {
                sum = sum + N[i][j];
            }
        }
    }
    if (c[0] == 'S')
        printf("%.1lf\n", sum);
    else
        printf("%.1lf\n", sum / 66.0);

    return 0;
}
```



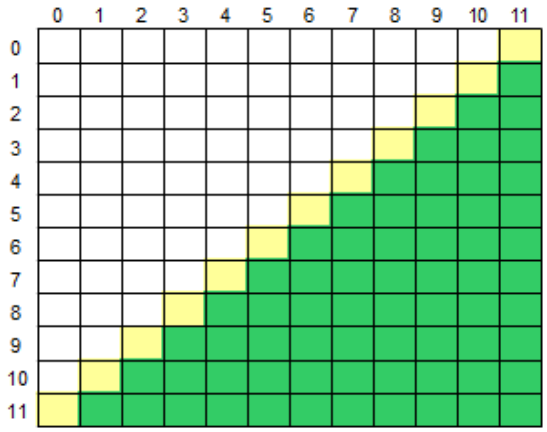
18 – Above the Secondary Diagonal.

```c
#include <stdio.h>

int main()
{
    double N[12][12], sum = 0;
    char c[2];
    scanf("%s", &c);
    int n = 1, i, j;

    for (i = 0; i < 12; i++)
    {
        for (j = 0; j < 12; j++)
        {
            scanf("%lf", &N[i][j]);
        }
    }
    for (i = 10; i >= 0; i--)
    {
        for (j = 0; j < n; j++)
        {
            sum = sum + N[i][j];
        }
        n++;
    }
    if (c[0] == 'S')
        printf("%.1lf\n", sum);
    else
        printf("%.1lf\n", sum / 66.0);

    return 0;
}
```

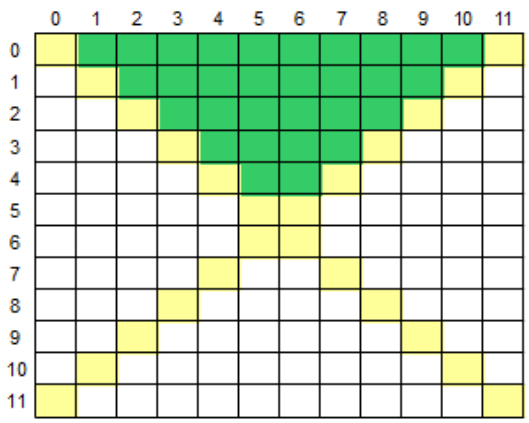


19 – Below the Secondary Diagonal.

```c
#include <stdio.h>
int main()
{
    double N[12][12], sum = 0;
    char c[2];
    scanf("%s", &c);
    int n = 11, i, j;

    for (i = 0; i < 12; i++)
    {
        for (j = 0; j < 12; j++)
        {
            scanf("%lf", &N[i][j]);
        }
    }
    for (i = 1; i < 12; i++)
    {
        for (j = n; j < 12; j++)
        {
            sum = sum + N[i][j];
        }
        n--;
    }
    if (c[0] == 'S')
        printf("%.1lf\n", sum);
    else
        printf("%.1lf\n", sum / 66.0);
    return 0;
}
```



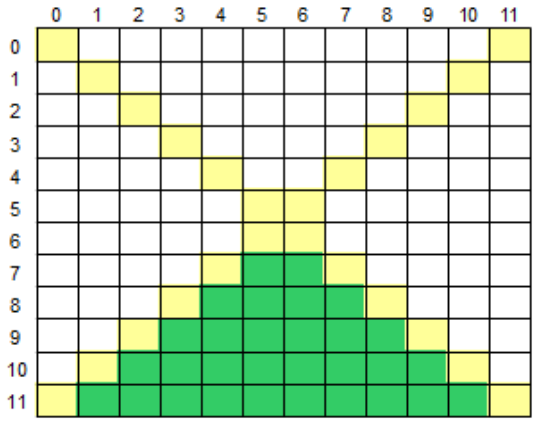
20 – Top Area.



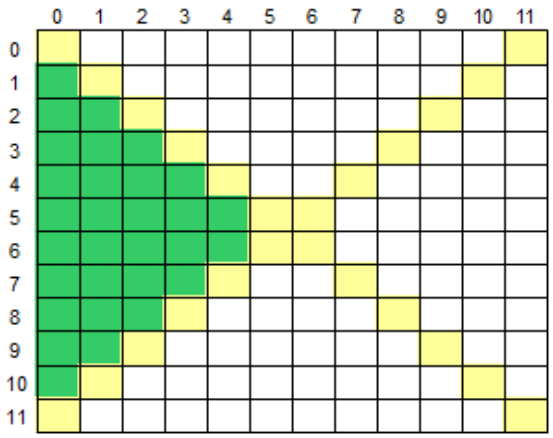

```c
#include <stdio.h>

int main()
{
    double M[12][12], sum = 0.0;
    char ch[2];
    scanf("%s", &ch);
    int n = 11, a = 1, i, j;

    for (i = 0; i < 12; i++)
    {
        for (j = 0; j < 12; j++)
        {
            scanf("%lf", &M[i][j]);
        }
    }
    for (i = 0; i < 5; i++)
    {
        for (j = a; j < n; j++)
        {
            sum = sum + M[i][j];
        }
        n--;
        a++;
    }
    if (ch[0] == 'S')
        printf("%.1lf\n", sum);
    else
        printf("%.1lf\n", sum / 30.0);

    return 0;
}
```

21 – Inferior Area.

```c
#include <stdio.h>

int main()
{
    double M[12][12], sum = 0.0;
    char ch[2];
    scanf("%s", &ch);
    int n = 11, a = 1, i, j;

    for (i = 0; i < 12; i++)
    {
        for (j = 0; j < 12; j++)
        {
            scanf("%lf", &M[i][j]);
        }
    }
    for (i = 11; i > 6; i--)
    {
        for (j = a; j < n; j++)
        {
            sum += M[i][j];
        }
        n--;
        a++;
    }
    if (ch[0] == 'S')
        printf("%.1lf\n", sum);
    else
        printf("%.1lf\n", sum / 30.0);

    return 0;
}
```



22 – Left Area.




```c
#include <stdio.h>

int main()
{
    double M[12][12], sum = 0.0;
    char ch[2];
    scanf("%s", &ch);
    int n = 11, a = 1, i, j;

    for (i = 0; i < 12; i++)
    {
        for (j = 0; j < 12; j++)
        {
            scanf("%lf", &M[i][j]);
        }
    }
    for (j = 0; j < 5; j++)
    {
        for (i = a; i < n; i++)
        {
            sum = sum + M[i][j];
        }
        n--;
        a++;
    }
    if (ch[0] == 'S')
        printf("%.1lf\n", sum);
    else
        printf("%.1lf\n", sum / 30.0);

    return 0;
}
```

23 – Right Area.

```c
#include <stdio.h>

int main()
{
    double N[12][12], sum = 0;
    char ch[2];
    int i, j, n = 1, m = 10;
    scanf("%s", ch);

    for (i = 0; i < 12; i++)
    {
        for (j = 0; j < 12; j++)
        {
            scanf("%lf", &N[i][j]);
        }
    }
    for (j = 11; j > 6; j--)
    {
        for (i = n; i <= m; i++)
        {
            sum = sum + N[i][j];
        }
        n++;
        m--;
    }
    if (ch[0] == 'S')
        printf("%.1lf\n", sum);
    else
        printf("%.1lf\n", sum / 30.0);

    return 0;
}
```