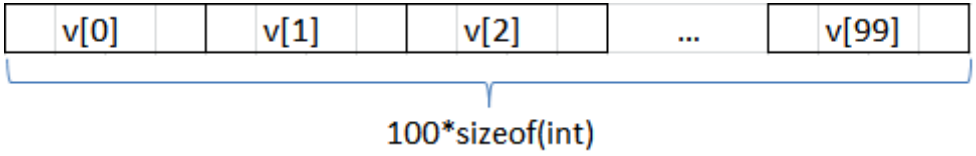
Laboratorul 11

* vectori 1D şi 2D (reprezentare în memorie şi metode de acces la un element)
* tablouri şi pointeri

Instructiunea **LEA dest, source** (load efective address)

Vector 1D

int v[100]; //static
sau
int v = (int*)malloc(100*sizeof(int)); //dinamic*



Accesarea elementelor

```
v[i]=5;
*(v+i)=5;
*((int*)((unsigned)v+sizeof(int)*i))=5;

_asm{
   LEA edi, v
   MOV ecx, i
   MOV dword ptr [edi+4*ecx],5
}
```

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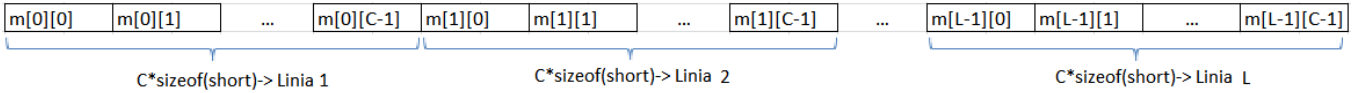
Matrice statica

```
#define L 100
#define C 50
short m[L][C];
```



Accesarea elementelor

```
m[i][j] = 5;
*(((short*)m[i])+j)=5;
*((short*)m + i*C+j)=5;
*((short*)((unsigned)m + i*C*sizeof(short)+j*sizeof(short)))=5;

_asm{
   LEA edi,m
   mov eax,C
   mov ebx,i
   mov ecx,j
   mul ebx
   add eax,ecx
   shl eax,1
   add edi,eax
   mov word ptr [edi],5
}
```

Transmiterea matricei ca parametru unei functii

```
#include <stdio.h>
#include <malloc.h>
#define L 10
#define C 20


int f(int m[][C]){
 //returnarea lui m[0][0]
```

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```
 _asm{
 mov eax,[ebp+8]
 mov eax,[eax]
 }
}
void main()
{
 int m[L][C];
 m[0][0]=1024000;
 int x = f(m);//vectorii si matricele se transmit prin referinta
 printf("%d\n",x); // se afiseaza 1024000
}
```

Matrice dinamica

```
#define L 10
#define C 20

char** m;
m = (char**)malloc(L*sizeof(char*));
for(int idx=0;idx<L;idx++){
    m[idx] = (char*)malloc(C*sizeof(char));
}
```

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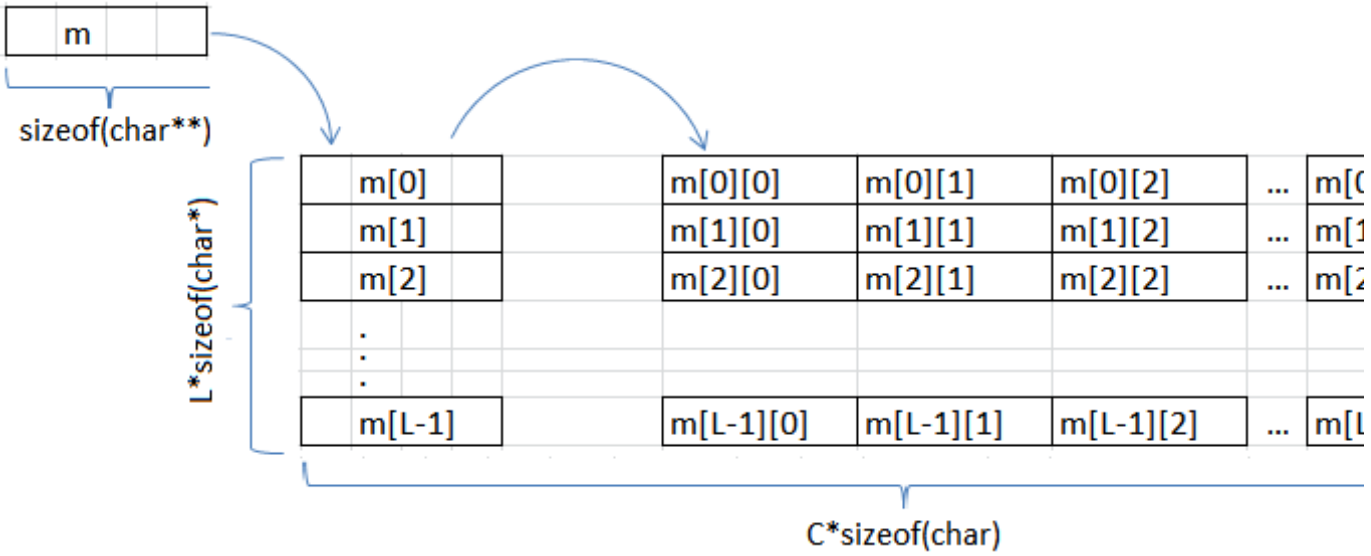

Accesarea elementelor

```
m[i][j]=5;
*(*(m+i)+j)=5;
*((char*)((unsigned)(*((char**)((unsigned)m+i*sizeof(char*))))+j*sizeof(char)))=5

_asm{
 mov edi,m
 mov ebx,i
 mov ecx,j
 mov edi,[edi+4*ebx]
 mov byte ptr [edi+ecx],5
}
```

Ex 1

```
#include <stdio.h>

//interschimbati valorile variabilelor a si b
void swap (int *a, int *b)
{
 _asm{
 //completati
```

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```
 }
}

void main()
{
 int a=2, b=3;
 swap(&a,&b);
 printf("%d %d", a, b);
}
```

Ex 2

```
#include <stdio.h>

//Calculati suma elementelor pare dintr-un vector.
int suma_pare_vector (int *, int )
{
 _asm
 {
 //completati
 }
}

void main()
{
 int v[5]={5,1,2,3,6};
 int *p=v;
 int s;

 _asm{
 //completati
 }

 printf("Suma: %d", s);
}
```

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EX 3

```
#include <stdio.h>
//Determinati numarul de vocale dintr-un sir de caractere
int lungime(char *)
{
 _asm{
 //completati
  }
}

void main()
{
 char *sir="Numarul de vocale";
 int l;

 _asm{
 //completati
  }

 printf("Numarul de vocale este: %d\n", l);
}
```

EX 4

```
#include <stdio.h>
//Construiti matricea unitate (1 pe diagonala, 0 in rest)
void matrice_unitate(int *, int )
{
 _asm{
 //completati
  }
}

void main()
{
 int n=5;
 int mat[5][5];
 int *p = mat[0];
```

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```
 _asm
 {
 //completati
 }

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

Ex 5

```
#include <stdio.h>
#include <malloc.h>
//Construiti matricea unitate (1 pe diagonala, 0 in rest)
void matrice_unitate(int **, int )
{
	_asm{
		//completati
	}
}

void main()
{
	int n=5,i;
	int **mat;
 mat = (int**)malloc(n*sizeof(int*));
	for(i=0;i<n;i++){
 mat[i] = (int*)malloc(n*sizeof(int));
	}

	_asm
	{
		//completati
	}

	for(int i=0; i<n; i++)
```

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

l11p1.txt (0k)	Alexandru Baetu, 24 ian. 2014, 04:37	v.1	
l11p2.txt (1k)	Alexandru Baetu, 24 ian. 2014, 05:47	v.1	
l11p3.txt (1k)	Alexandru Baetu, 24 ian. 2014, 05:08	v.1	
l11p4.txt (1k)	Alexandru Baetu, 24 ian. 2014, 05:45	v.1	
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