LABORATORY WORK № 6

ARRAYS

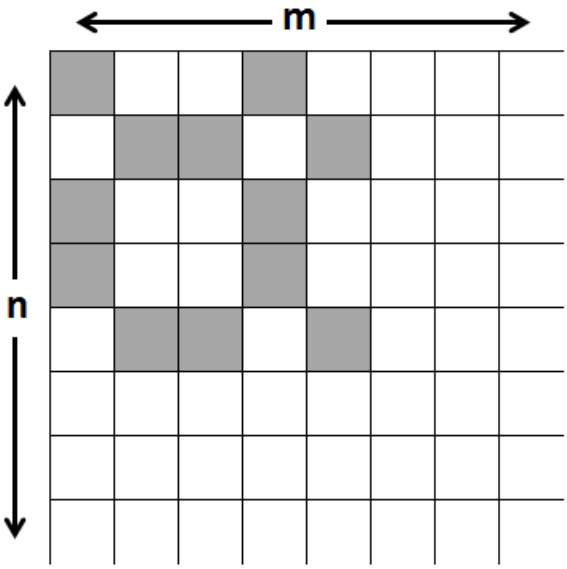
Summary

Processing of large volumes of similar data in Visual Basic (VB).

Example

1. Fill the date (numbers) into rectangle array which has size: n (rows) × m (columns).

2) Write algorithm and appropriate VB(A)-program for calculating of sum of all array elements located on places according to scheme (use only shaded cells).



Solving

Let's give names for appropriate variables:

n – size of array according to rows;

m – size of array according to columns;

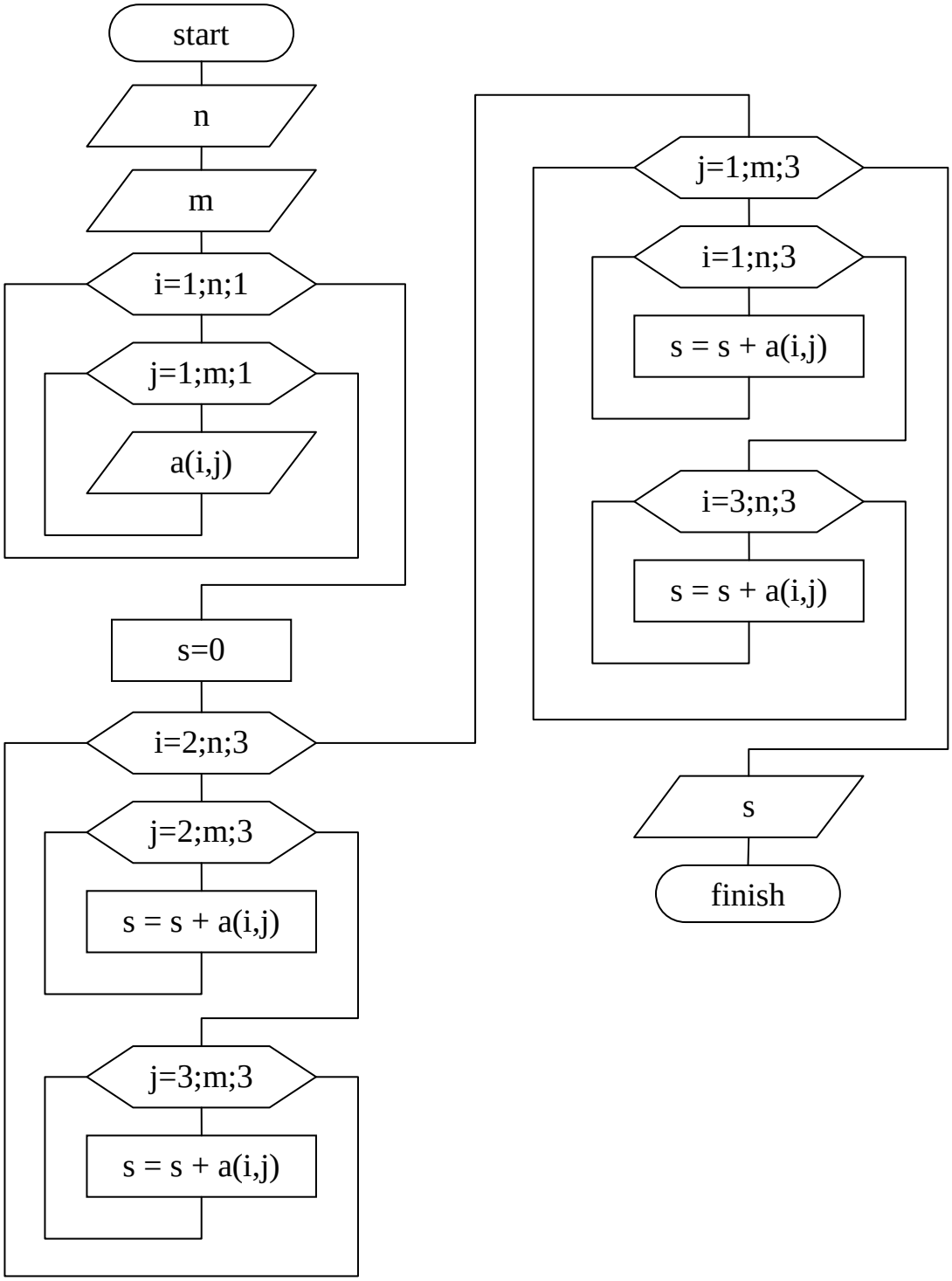
i – counter for rows;

j – counter for columns;

s – sum of the numbers (values from the array elements);

a(i;j) – array element (intersection of i-row and j-column).

Algorithm for solving this task:



Program for this algorithm:

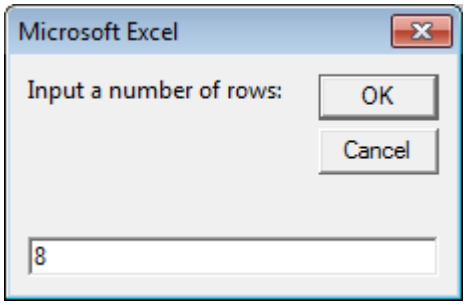
```
Option Base 1
'Setting the start value for array counter to 1 instead of 0
Sub lab_6()
'Beginning of the program with name 'lab_6'
```

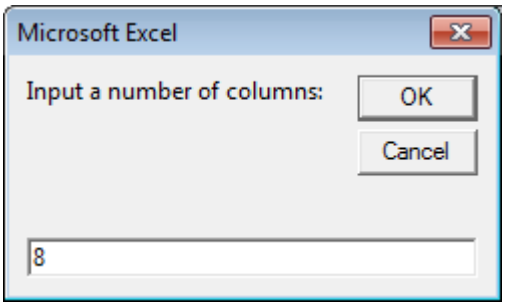
```
Dim n As Integer
Dim m As Integer
Dim i As Integer
Dim j As Integer
Dim s As Double
'Declaration of necessary variables
Dim a() As Double
'Declaration of the array with name 'a' (size is unknown)
n = InputBox("Input a number of rows:")
m = InputBox("Input a number of columns:")
'Inputting values for array size
ReDim a(n, m)
'Setting the size of two-dimensional array
For i = 1 To n Step 1
For j = 1 To m Step 1
a(i, j) = InputBox("Input element (" & i & "," & j & ")")
'Inputting values into the array (for each element)
Next j
Next i
s = 0
'Setting of start value for sum
For i = 2 To n Step 3
For j = 2 To m Step 3
s = s + a(i, j)
Next j
For j = 3 To m Step 3
s = s + a(i, j)
Next j
Next i
```

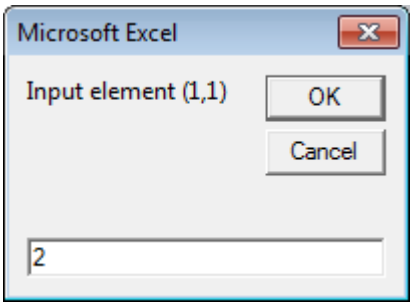
```
'Sum calculation for each third row (starting with the second one)
For j = 1 To m Step 3
For i = 1 To n Step 3
s = s + a(i, j)
Next i
For i = 3 To n Step 3
s = s + a(i, j)
Next i
Next j
'Sum calculation for each third column (starting with the first one)
MsgBox "Sum of elements = " & s
'Result value (for sum) reporting
End Sub
'Finishing of the program
```

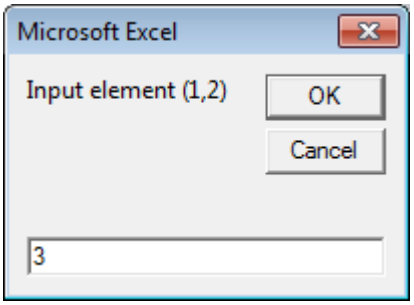
Results:

i \ j	1	2	3	4	5	6	7	8
1	2	3	4	5	7	9	0	4
2	3	6	8	1	9	3	2	3
3	5	8	7	2	5	1	7	9
4	3	4	7	2	9	1	3	6
5	2	1	7	2	8	3	8	5
6	6	8	5	9	2	5	3	1
7	4	7	3	2	1	9	0	5
8	7	2	8	4	3	1	5	2

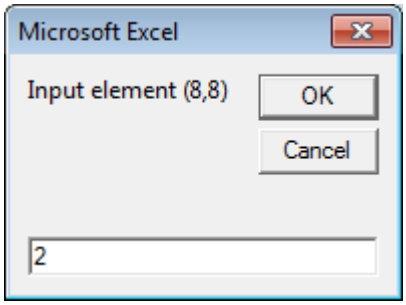

Microsoft Excel
Input a number of rows:
OK
Cancel
8

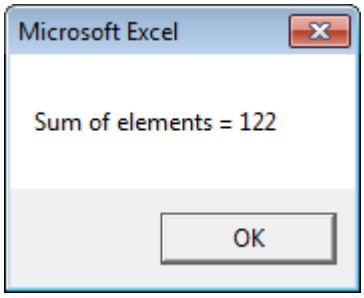

Microsoft Excel
Input a number of columns:
OK
Cancel
8


Microsoft Excel
Input element (1,1)
OK
Cancel
2


Microsoft Excel
Input element (1,2)
OK
Cancel
3

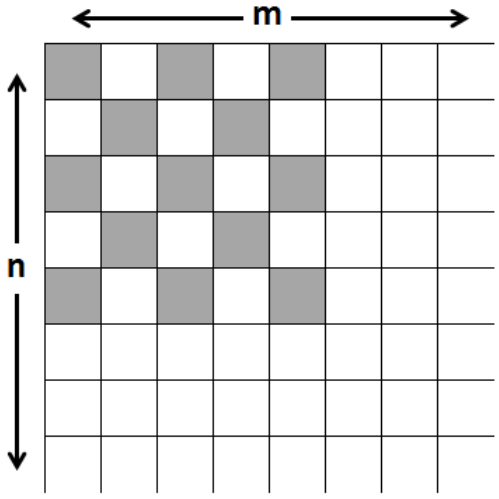
. . .


Microsoft Excel
Input element (8,8)
OK
Cancel
2

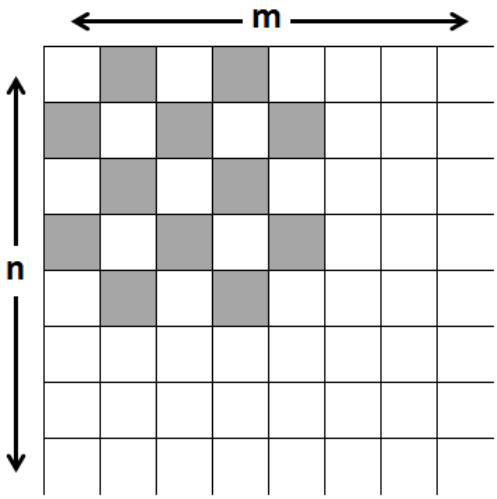
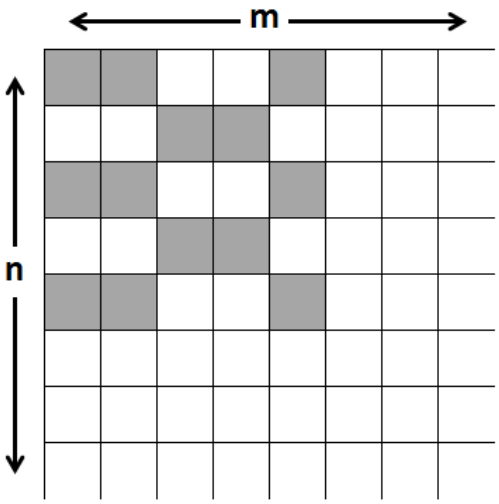


Task

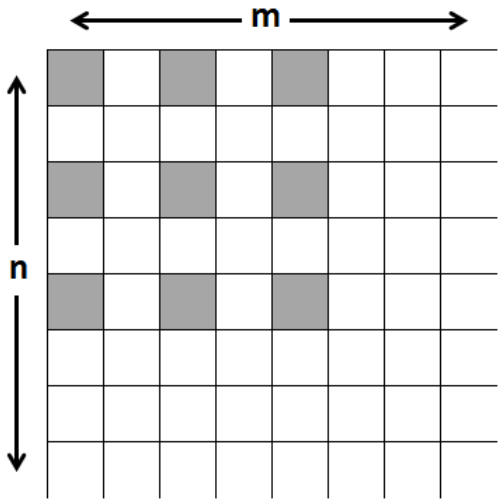
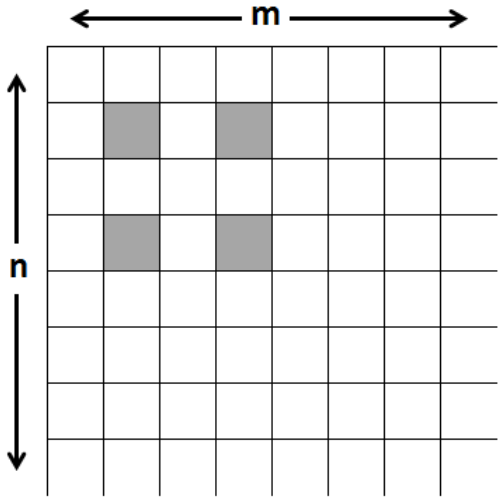
Variants

Variant №	Description
1	2
1	1. Fill the date (numbers) into rectangle array which has size: n (rows) × m (columns). 2) Write algorithm and appropriate VB(A)-program for calculating of sum of all array elements located on places according to scheme (use only shaded cells). 

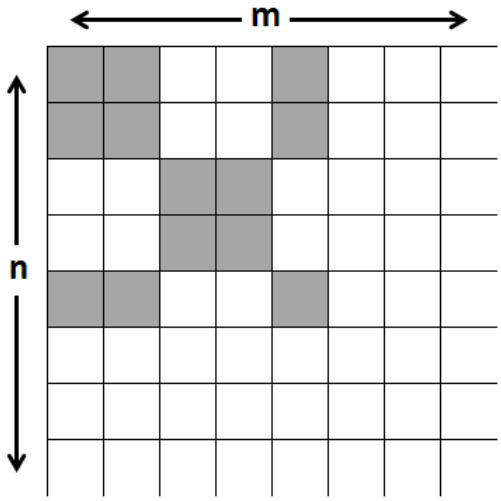
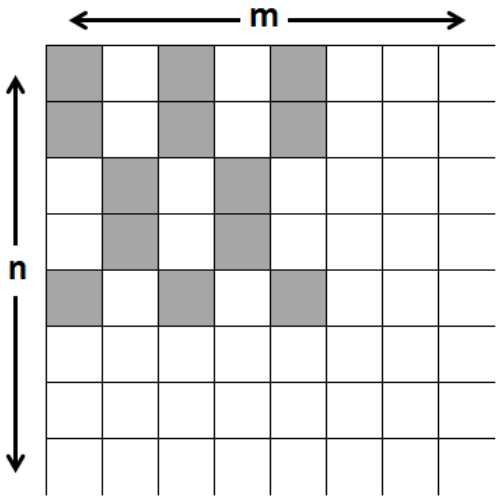
Continuation of the table

1	2
2	1. Fill the date (numbers) into rectangle array which has size: n (rows) × m (columns). 2) Write algorithm and appropriate VB(A)-program for calculating of sum of all array elements located on places according to scheme (use only shaded cells). 
3	1. Fill the date (numbers) into rectangle array which has size: n (rows) × m (columns). 2) Write algorithm and appropriate VB(A)-program for calculating of sum of all array elements located on places according to scheme (use only shaded cells). 

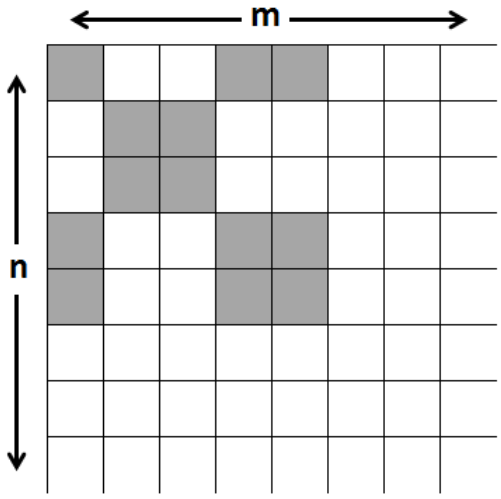
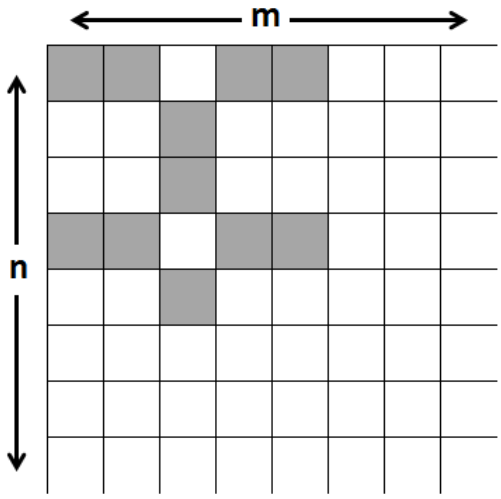
Continuation of the table

1	2
4	1. Fill the date (numbers) into rectangle array which has size: n (rows) × m (columns). 2) Write algorithm and appropriate VB(A)-program for calculating of sum of all array elements located on places according to scheme (use only shaded cells). 
5	1. Fill the date (numbers) into rectangle array which has size: n (rows) × m (columns). 2) Write algorithm and appropriate VB(A)-program for calculating of sum of all array elements located on places according to scheme (use only shaded cells). 

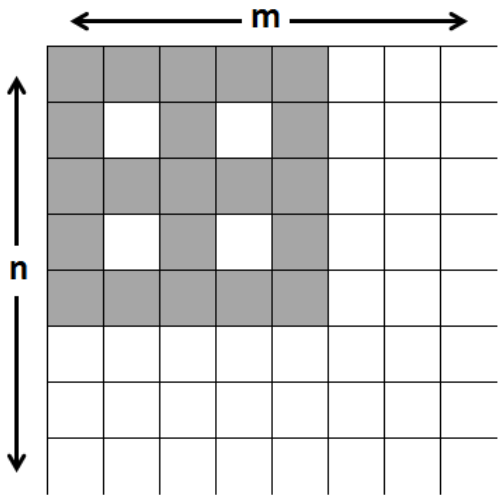
Continuation of the table

1	2
6	1. Fill the date (numbers) into rectangle array which has size: n (rows) × m (columns). 2) Write algorithm and appropriate VB(A)-program for calculating of sum of all array elements located on places according to scheme (use only shaded cells). 
7	1. Fill the date (numbers) into rectangle array which has size: n (rows) × m (columns). 2) Write algorithm and appropriate VB(A)-program for calculating of sum of all array elements located on places according to scheme (use only shaded cells). 

Continuation of the table

1	2
8	1. Fill the date (numbers) into rectangle array which has size: n (rows) × m (columns). 2) Write algorithm and appropriate VB(A)-program for calculating of sum of all array elements located on places according to scheme (use only shaded cells). 
9	1. Fill the date (numbers) into rectangle array which has size: n (rows) × m (columns). 2) Write algorithm and appropriate VB(A)-program for calculating of sum of all array elements located on places according to scheme (use only shaded cells). 

Completion of the table

1	2
10	1. Fill the date (numbers) into rectangle array which has size: n (rows) × m (columns). 2) Write algorithm and appropriate VB(A)-program for calculating of sum of all array elements located on places according to scheme (use only shaded cells). 

Report

1. Write work title with number, your name (first & last) and name of your group.
2. Your task.
3. Algorithm (block-scheme).
4. Program code (listing).
5. Program results (scheme of dialogs with input data and calculated values).