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6. ARRAYS

6.1. ABOUT ARRAYS. MAIN OPERATIONS

ARRAY — method to store and operate with multiple values in a memory area which has a single name

Main operations

Declaration (announcement)	Dim <name>(<number of values - 1>) As <type> Dim a(1) As Integer
Setting of values	<name>(<sequence number>) = <value> a(0)=2 a(1)=14 m=0 k=1 a(m)=2 a(k)=14
Reading of values	<name>(<sequence number>) b=a(0) d=sin(a(1)) Msgbox b+d+a(1)

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6.2. SETTING THE START OF NUMBERING

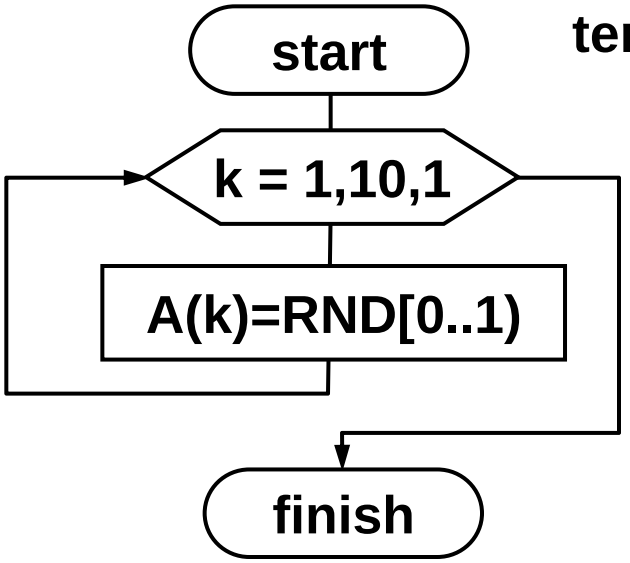
```
Option Base 1
Sub …
Dim <name_of_array>(<number of values>) As <type>
…
… <name_of_array>(1) …
…
```

setting of the initial sequence position

asking for a FIRST element

```
Option Base 1
Sub Prog_1()
Dim A(10) As Double
Dim k As Integer
For k = 1 To 10 Step 1
   A(k) = Rnd()
Next k
End Sub
```

Program which put ten random values into the array



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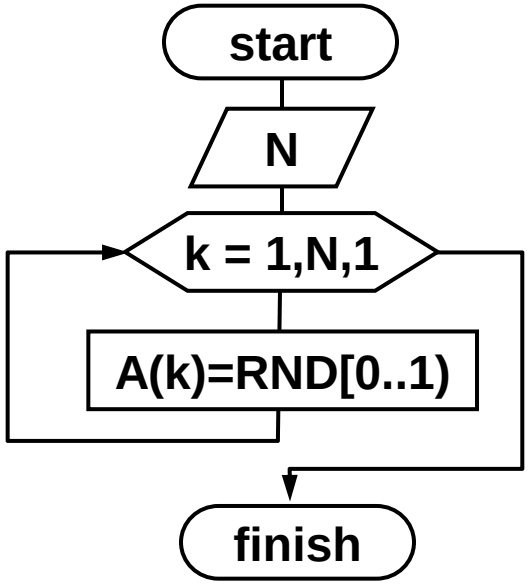
6.3. DYNAMIC SIZE DEFINITION

```
Dim <name_of_array>() As <type>
…
<size>=<value>
…
ReDim <name_of_array>(<size>)
```

```
Option Base 1
Sub Prog_2()
Dim A() As Double
Dim N As Integer, k As Integer
N = InputBox("Put the array size:")
ReDim A(N)
For k = 1 To N Step 1
   A(k) = Rnd()
Next k
End Sub
```

Program which put appropriate number of random values into the array



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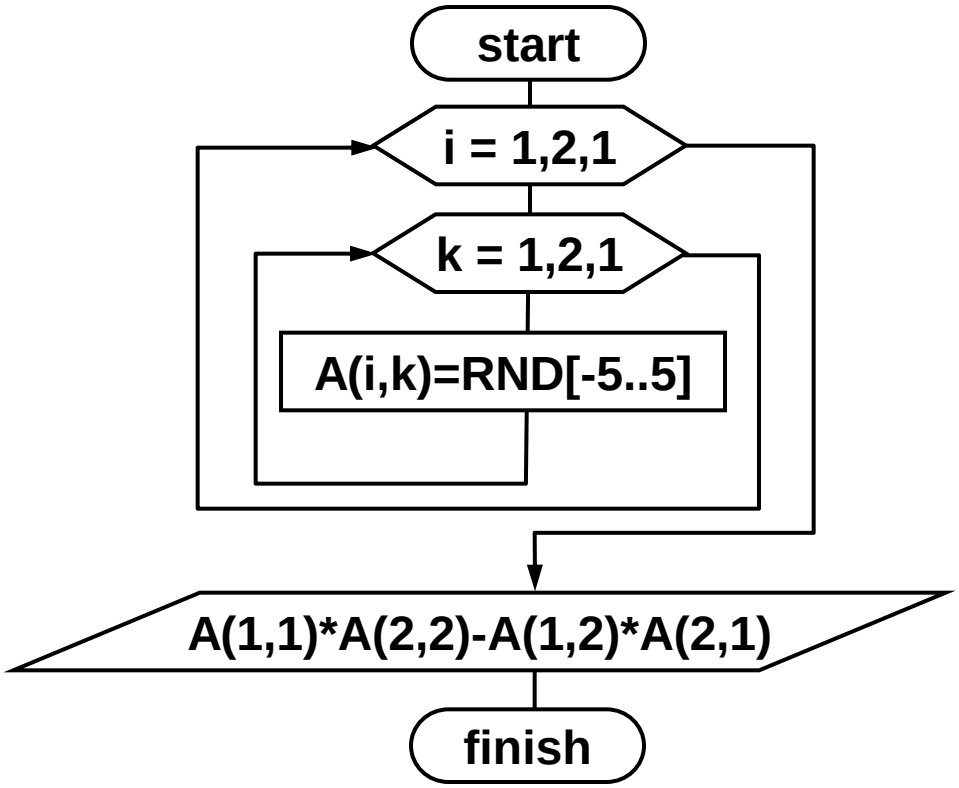
6.4. MULTIDIMENSIONAL ARRAYS

Dim <name_of_array> (size 1, size 2, …) As <type>

```
Option Base 1
Sub Prog_3()
Dim A(2, 2) As Integer
Dim i As Integer
Dim k As Integer
For i = 1 To 2 Step 1
   For k = 1 To 2 Step 1
      A(i, k) = Rnd() * 10 - 5
   Next k
Next i
MsgBox "Determinant = " & _
A(1, 1) * A(2, 2) - A(1, 2) * A(2, 1)
End Sub
```

Program to calculate determinant for a matrix which consists of 2x2 elements (random values from -5 to +5)



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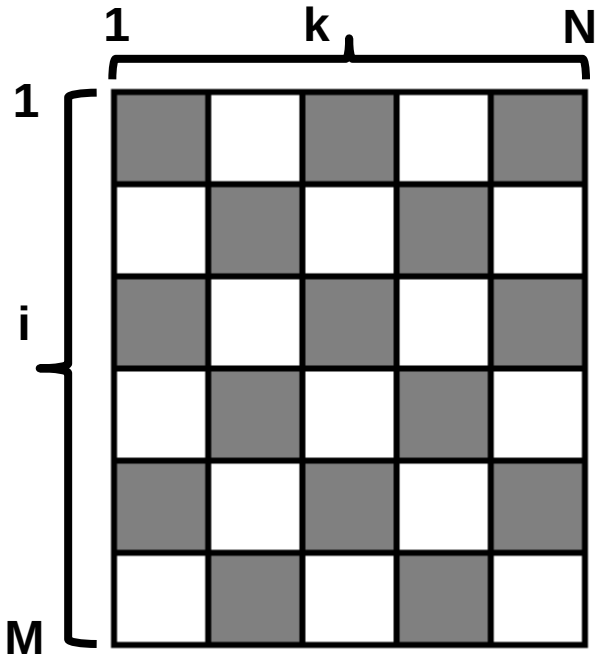
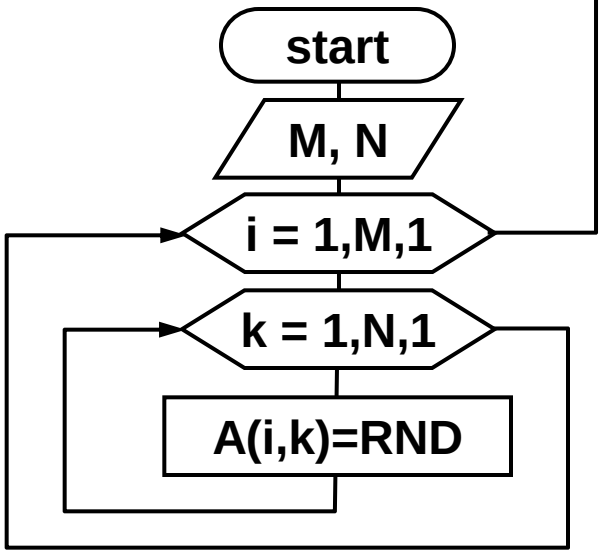
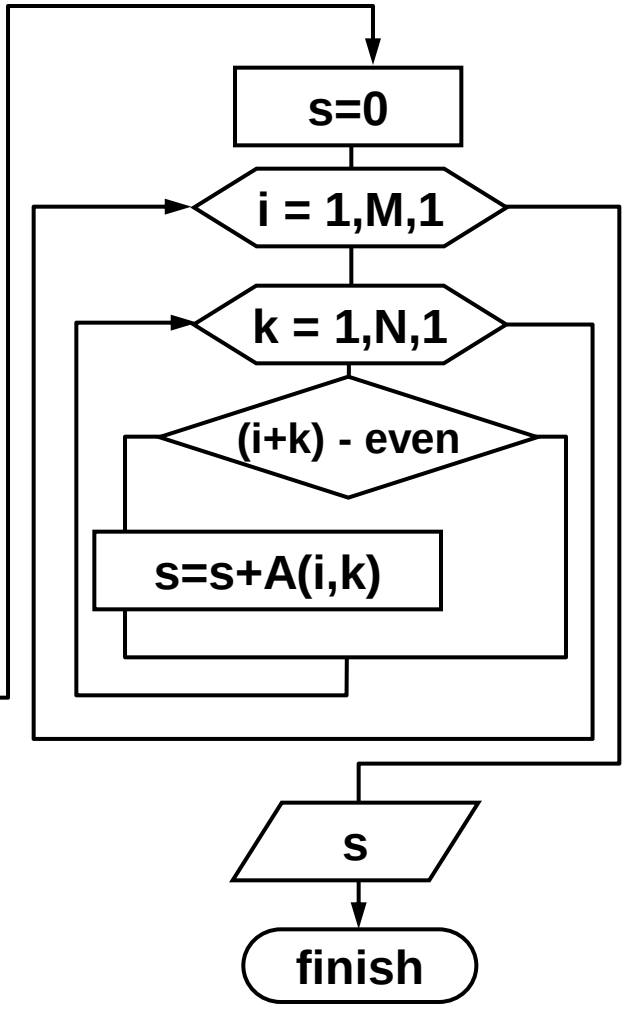
6.5. Practice



Calculate sum of all numbers from 'black' cells of MxN matrix






```
Option Base 1
Sub Prog_4()
Dim A() As Double, s As Double
Dim M As Integer, N As Integer
Dim i As Integer, k As Integer
M = InputBox("Put size1:")
N = InputBox("Put size2:")
ReDim A(M,N)
For i = 1 To M Step 1
For k=1 To N Step 1
A(i,k) = Rnd()
Next k
Next i
s=0
For i = 1 To M Step 1
For k=1 To N Step 1
If (i+k) Mod 2 = 0 Then
s=s+A(i,k)
end If
Next k
Next i
MsgBox "sum = " & s
End Sub
```