

```

>
> # A tic-tac-toe pattern
>
> TT := Array(1..9, 1..9, 0);

```

$$TT := \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$

(1)

```

> for i from 1 to 9 do
  for j from 1 to 9 do
    row := ceil( $\frac{i}{3}$ );
    col := ceil( $\frac{j}{3}$ );
    if frac( $\frac{(row + col)}{2}$ ) = 0 then TT[i, j] := _;
    else TT[i, j] := 0;
    end if;
  end do;
end do;
> TT

```

$$\begin{bmatrix} - & - & - & 0 & 0 & 0 & - & - & - \\ - & - & - & 0 & 0 & 0 & - & - & - \\ - & - & - & 0 & 0 & 0 & - & - & - \\ 0 & 0 & 0 & - & - & - & 0 & 0 & 0 \\ 0 & 0 & 0 & - & - & - & 0 & 0 & 0 \\ 0 & 0 & 0 & - & - & - & 0 & 0 & 0 \\ - & - & - & 0 & 0 & 0 & - & - & - \\ - & - & - & 0 & 0 & 0 & - & - & - \\ - & - & - & 0 & 0 & 0 & - & - & - \end{bmatrix}$$

(2)

```

>
> # Accessing subarrays and array elements
>
> TT[2, 4]

```

0

(3)

```
> TT(13);
```

0 (4)

```
> TT(12);
```

- (5)

```
> T := TT[1..7, 1..5]
```

(6)

$$T := \begin{bmatrix} 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$

```
> # Not all arrays are displayed on screen  
> C := Array(2..3, 2..3, 0);  
C := Array(2..3, 2..3, { }, datatype = anything, storage = rectangular, order = Fortran_order) (7)
```

```
> print(C);  
Array(2..3, 2..3, { }, datatype = anything, storage = rectangular, order = Fortran_order) (8)
```

```
> C[2, 2]; C[2, 3];
```

0 (9)

0

```
> C[3, 2]; C[3, 3];
```

0 (10)

0

```
>  
> # A band matrix or array  
>  
> AA := Array(1..10, 1..10, 0);
```

(11)

$$AA := \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$

```
> for i from 1 to 10 do  
  for j from 1 to 10 do
```

```
if abs(i - j) ≤ 2 then AA[i, j] := 1; end if;  
end do;  
end do;
```

```
> AA
```

```
1 1 1 0 0 0 0 0 0 0  
1 1 1 1 0 0 0 0 0 0  
1 1 1 1 1 0 0 0 0 0  
0 1 1 1 1 1 0 0 0 0  
0 0 1 1 1 1 1 0 0 0  
0 0 0 1 1 1 1 1 0 0  
0 0 0 0 1 1 1 1 1 0  
0 0 0 0 0 1 1 1 1 1  
0 0 0 0 0 0 1 1 1 1  
0 0 0 0 0 0 0 1 1 1
```

(12)

```
⌋  
⌋  
⌋  
⌋  
⌋
```