

Data Types and Procedural Statements

Multidimensional Arrays

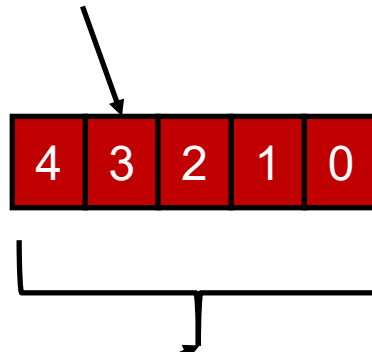
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Packed Array of Scalars

```
bit      my_bit;  
byte     my_byte;  
bit [4:0] my_5_bit_vector; // packed array of 5 bits
```

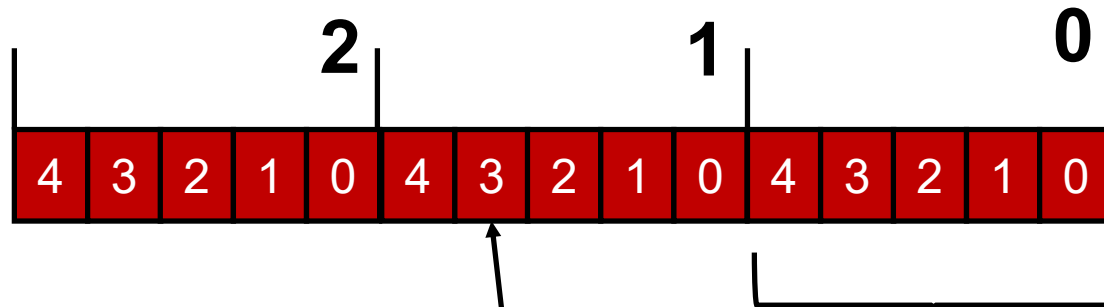
```
my_bit = my_5_bit_vector[3];
```



```
my_byte = my_5_bit_vector,
```

Multidimensional Packed Array of Scalars

```
bit my_bit;  
byte my_byte;  
bit [2:0][4:0] my_3x5_bit_vector; // packed array of 3 x 5 bits
```



```
my_bit = my_3x5_bit_vector [1][3];
```

```
my_byte = my_3x5_bit_vector[0];
```

Index order rule: "Left to right"

Unpacked Array

```
byte  my_byte;  
byte  my_unpacked_byte_array [0:3]; // unpacked array of 4 bytes
```

```
my_byte = my_unpacked_byte_array[1];
```



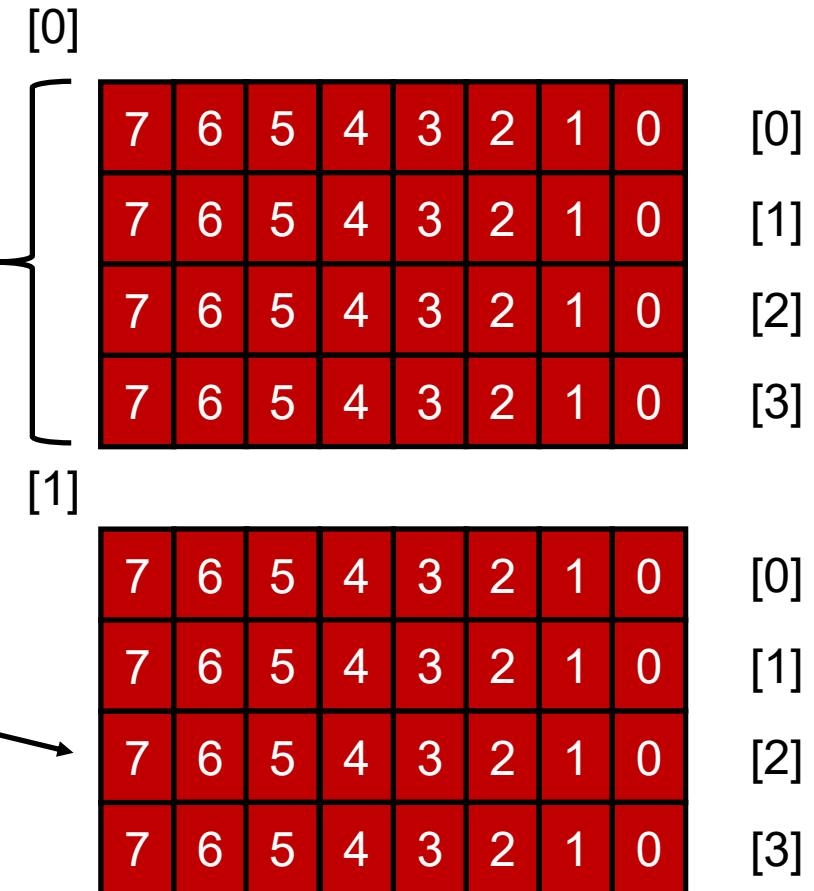
7	6	5	4	3	2	1	0	[0]
7	6	5	4	3	2	1	0	[1]
7	6	5	4	3	2	1	0	[2]
7	6	5	4	3	2	1	0	[3]

Multidimensional Unpacked Array

```
byte  my_byte;  
byte  my_unpacked_byte_array [4];  
byte  my_2d_unpacked_byte_array [2][4];  
  
my_unpacked_byte_array =  
    my_2d_unpacked_byte_array[0];
```

```
my_byte = my_2d_unpacked_byte_array[1][2];
```

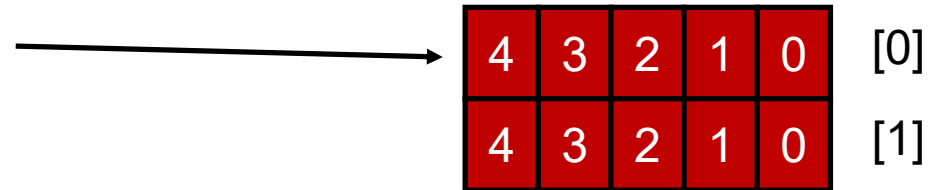
Index order rule: **“Left to right”**



Unpacked Array of Packed Array of Scalars

```
bit          my_bit;  
byte         my_byte;  
bit [4:0]    my_2d_5_bit_vector [2];
```

```
my_byte = my_2d_5_bit_vector[0];
```



```
my_bit = my_2d_5_bit_vector [1][3];
```



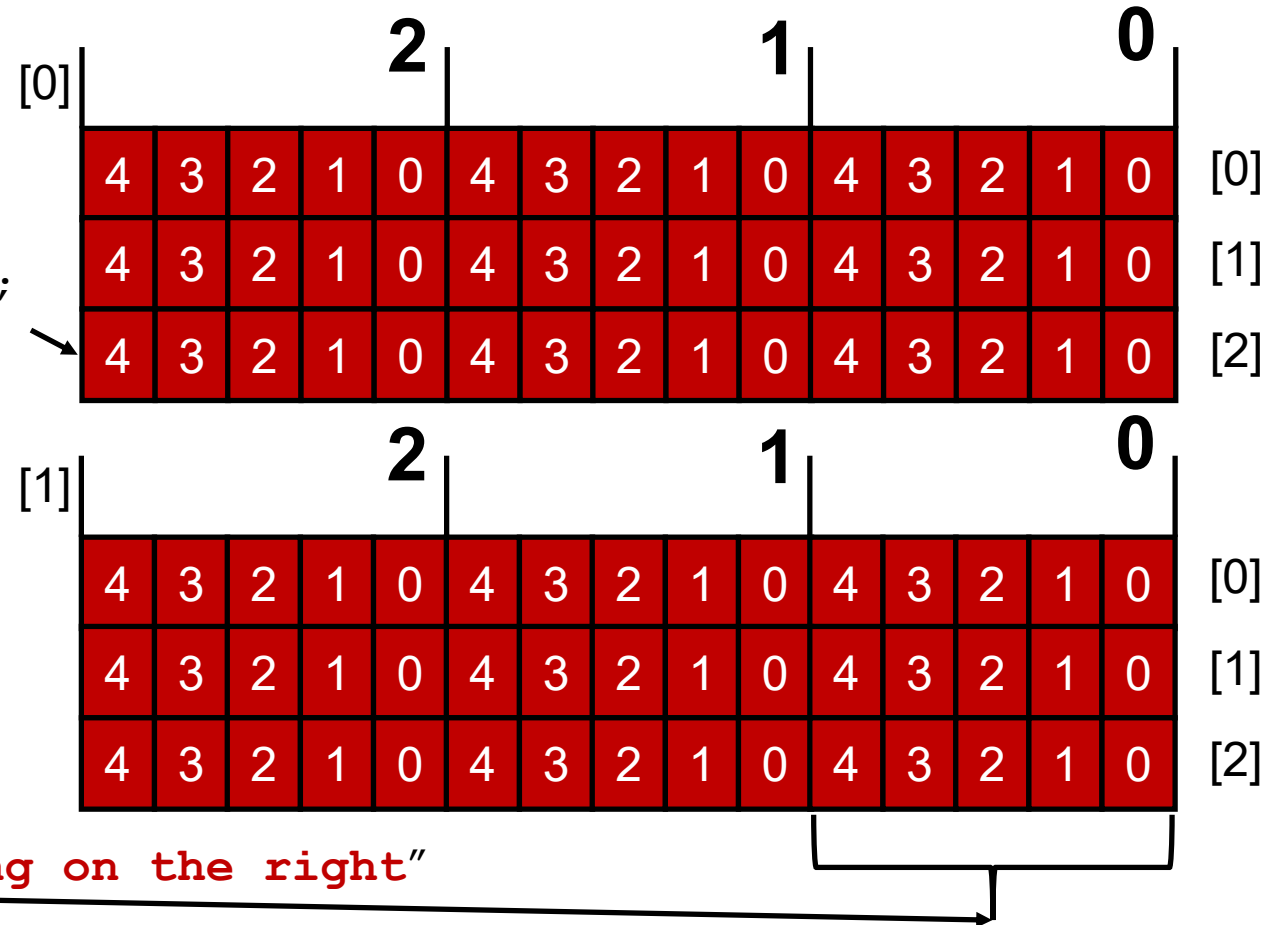
Index order rule: **"Left to right, starting on the right"**

Multidimensional Packed Array of Scalars

```
byte my_byte;  
bit [14:0] my_15_bit_vector;  
bit [2:0][4:0] my_2d_3x5_bit_vector [2][3];  
  
my_15_bit_vector = my_2d_3x5_bit_vector[0][2];
```

```
my_byte = my_2d_3x5_bit_vector [1][2][0];
```

Index order rule: "Left to right, starting on the right"



Index Order Rule

```
bit [d][e][f] my_array [a][b][c];
```

```
my_array[a];
```

```
my_array[a][b];
```

```
my_array[a][b][c];
```

```
my_array[a][b][c][d];
```

```
my_array[a][b][c][d][e];
```

```
my_array[a][b][c][d][e][f];
```



Left to Right
Starting on the
Right