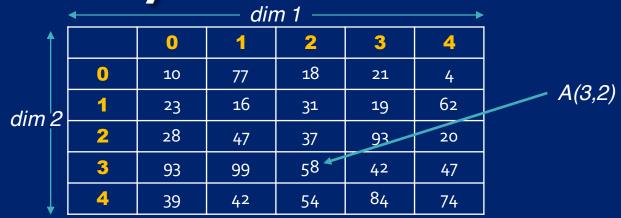


After this video you will be able to

- Describe how arrays can serve as a data model
- Explain why images can be modeled as vector arrays
- Specify a set of operations on scalar and vector arrays

Array as a Data Model



Array → Indexed relation

- Table representation
 - Number of columns = number of dimensions + 1
 - Number of tuples = size of dimension 1 X
 size of dimension 2 X ...

Arrays of Vectors

	0	1	2	3	4
0	(10,	(77,	(18,	(21,	(4,
	200,	182,	310,	231,	217,
	68)	83)	56)	78)	75)
1	(23,	(16,	(31,	(19,	(62,
	193,	301,	290,	253,	383,
	35)	74)	84)	49)	49)
2	(28,	(47,	(37,	(93,	(20,
	174,	168,	341,	236,	386,
	56)	90)	57)	83)	50)
3	(93,	(99,	(58,	(42,	(47,
	348,	192,	293,	294,	432,
	67)	79)	82)	74)	45)
4	(39,	(42,	(54,	(84,	(74,
	168,	203,	326,	388,	392,
	90)	75)	53)	94)	44)

A(3,2)

Operations on Array of Vectors

- dim(A) number of dimensions of A
- size(A, dim) size of a specific dimension
- A(i, j) value of the element at the (i.j)-th cell
- A(i, j)[k] value of the k-th element of the cell at A(i, j)
- length(A(i, j)) vector-length of the vector at the (i, j)-th cell
- distance(A(i, j), A(k,l), f) vector distance between the values of two cells given the distance function f

	0	1	
0	(10, 200, 68)	(77, 182, 83)	
1	(23, 193, 35)	(16, 301, 74)	

A(1,1)[2] A(1,1)