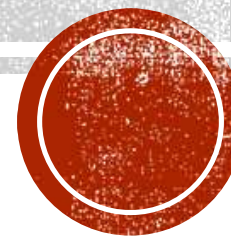


NUMPY BASICS



FIRST STEP DATA SCIENCE



PYTHON LIST VS NUMPY

Why should I use Numpy when I have List?

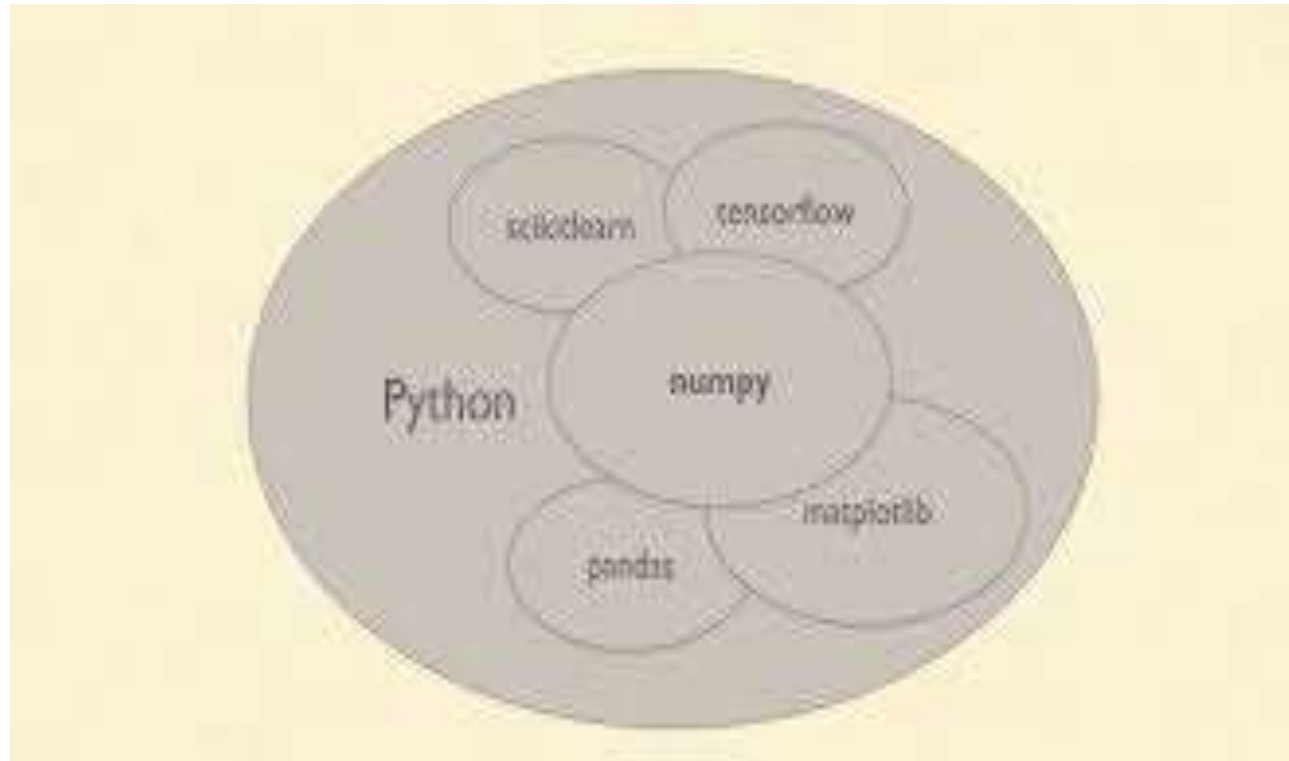
Advantages of Numpy over List

- Less Memory
- Fast
- Convenient

The diagram illustrates the advantages of Numpy over Python Lists. It features a cartoon man on the left with a speech bubble asking, "Why should I use Numpy when I have List?". To the right, a dark oval contains the text "Advantages of Numpy over List". Below this, a blue banner lists three advantages: "Less Memory", "Fast", and "Convenient". Each advantage is accompanied by an icon in a rounded square: a pair of scissors cutting a banknote for "Less Memory", a lightning bolt for "Fast", and a rocking chair for "Convenient".



NUMPY WITH OTHER LIBRARIES IN DATA SCIENCE

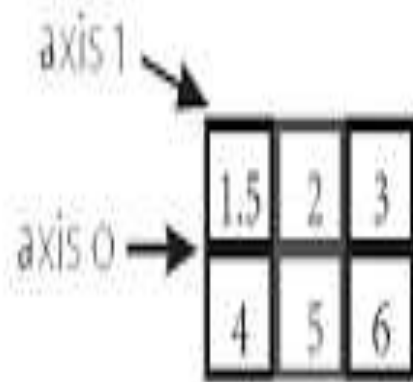


ARRAYS

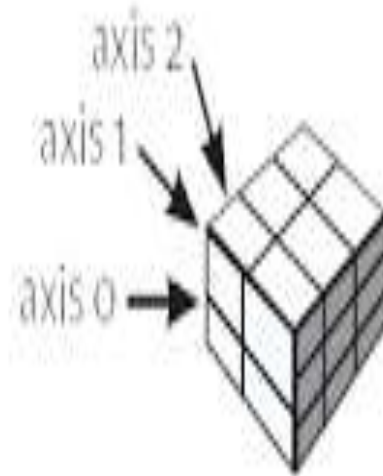
1D array



2D array



3D array

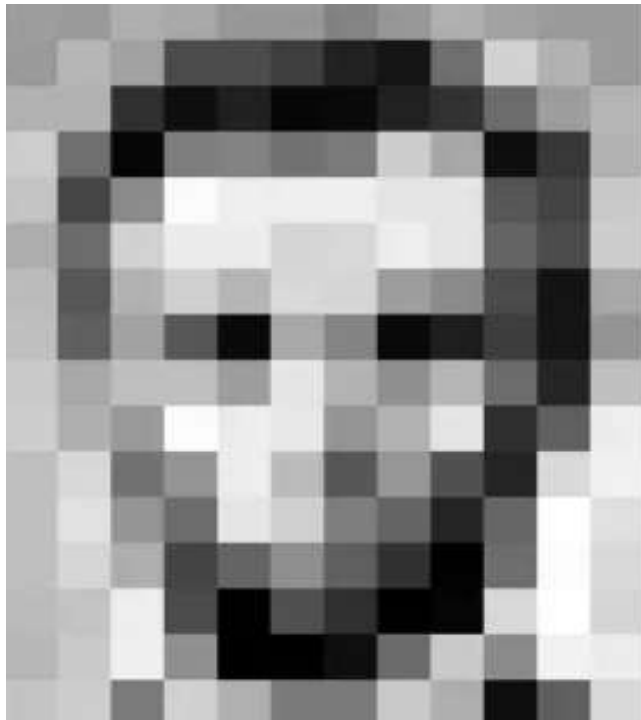


ARRAY EXAMPLE

		axis 1		
		0	1	2
axis 0	0	0, 0	0, 1	0, 2
	1	1, 0	1, 1	1, 2
	2	2, 0	2, 1	2, 2



GRAYSCALE IMAGE TO ARRAY

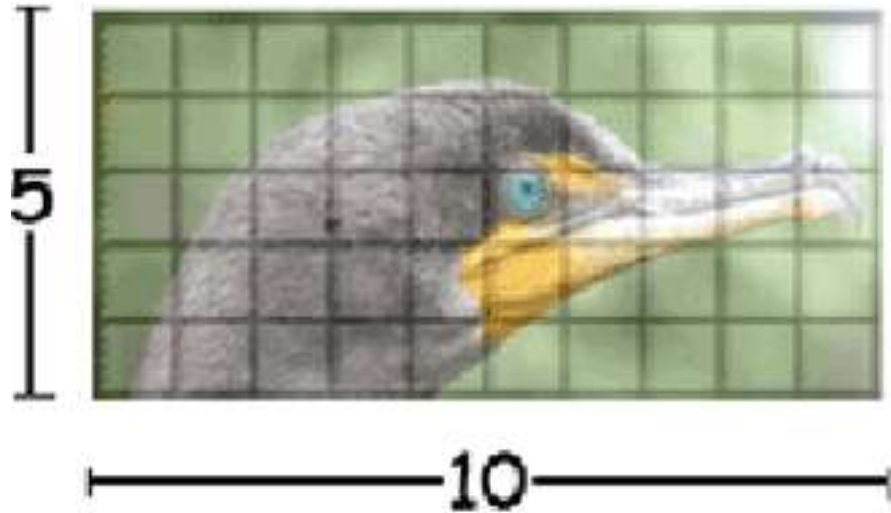


157	153	174	168	150	152	129	151	172	161	155	156			
155	182	163	74	75	62	33	17	110	210	180	154			
180	180	50	14	34	6	10	33	48	106	159	181			
206	109	5	124	131	111	120	204	166	15	56	180			
194	68	137	251	237	239	239	228	227	87	71	201			
172	105	207	233	233	214	220	239	228	98	74	206			
188	88	179	209	185	215	211	158	139	75	20	169			
189	97	165	84	10	168	134	11	31	62	22	148			
199	168	191	193	158	227	178	143	182	106	36	190			
205	174	155	252	236	231	149	178	228	43	95	234			
190	216	116	149	236	187	86	150	79	38	218	241			
190	224	147	108	227	210	127	102	36	101	255	224			
190	214	173	66	103	143	96	50	2	109	249	215			
187	196	235	75	1	81	47	0	6	217	255	211			
183	202	237	145	0	0	12	108	200	138	243	236			
195	206	123	207	177	121	123	200	175	13	96	218			

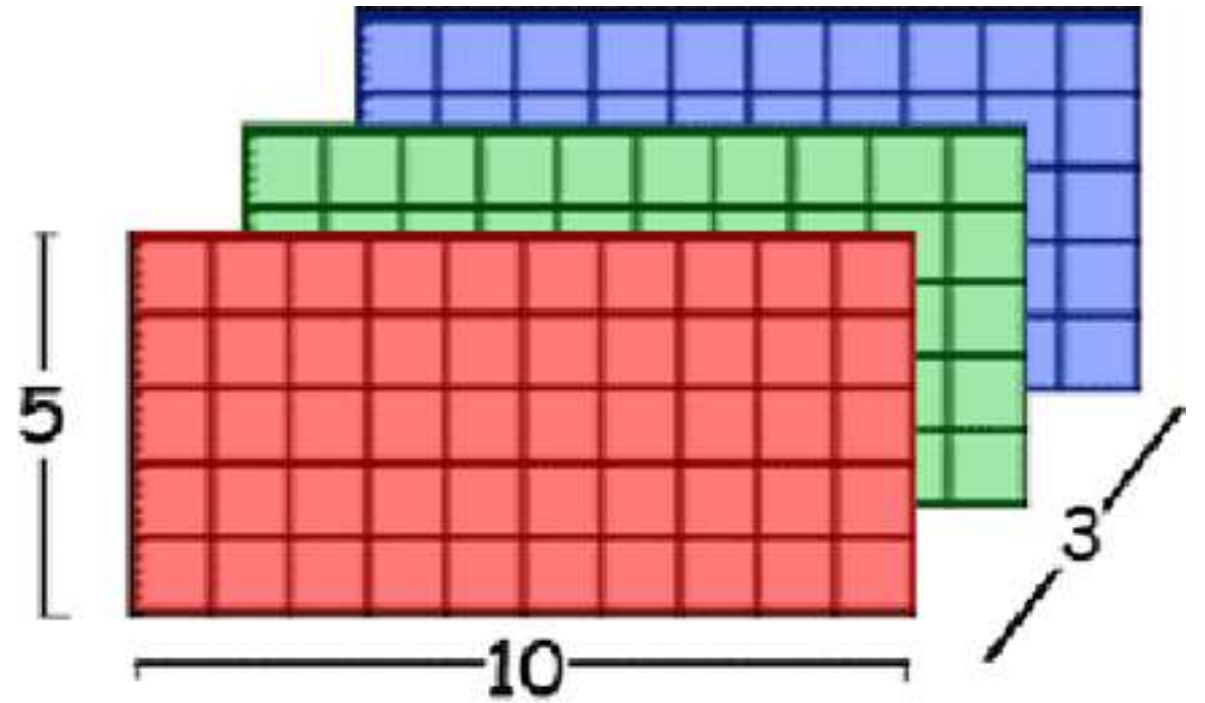
157	153	174	168	150	152	129	151	172	161	155	156			
155	182	163	74	75	62	33	17	110	210	180	154			
180	180	50	14	34	6	10	33	48	106	159	181			
206	109	5	124	131	111	120	204	166	15	56	180			
194	68	137	251	237	239	239	228	227	87	71	201			
172	105	207	233	233	214	220	239	228	98	74	206			
188	88	179	209	185	215	211	158	139	75	20	169			
189	97	165	84	10	168	134	11	31	62	22	148			
199	168	191	193	158	227	178	143	182	106	36	190			
205	174	155	252	236	231	149	178	228	43	95	234			
190	216	116	149	236	187	86	150	79	38	218	241			
190	224	147	108	227	210	127	102	36	101	255	224			
190	214	173	66	103	143	96	50	2	109	249	215			
187	196	235	75	1	81	47	0	6	217	255	211			
183	202	237	145	0	0	12	108	200	138	243	236			
195	206	123	207	177	121	123	200	175	13	96	218			



COLOR IMAGE ARRAY



Original Color Image



Matlab RGB Matrix

