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The List Concept

Topic of Software Systems (TCS module 2)

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MODULE 1: LISTS IN PYTHON

0	This
1	is
2	an
3	example
4	of
5	a
6	list

- List = sequence of values (≈ ordered set)
  - Each value has a position: its index
  - Indexes start at 0
  - Length of the list = number of elements (= 7)
- Suppose the list to the left is called line
  - line[0] is the word "This", line[1] is the word "is" etc.
  - line[7] does not exist (index 7 is not *valid*)

LISTS ARE EVERYWHERE
INTUITIVELY

- List is a placeholder for (references to) things
- Things in a list have the same type
- Things in a list have a position
- Position of a thing in a list can change

Club		MP	W	D	L	GF	GA	GD	Pts	Last 5
1	Ajax	15	13	2	0	52	12	40	41	
2	AZ Alkmaar	15	11	2	2	35	8	27	35	
3	PSV Eindhoven	15	8	4	3	32	19	13	28	
4	Willem II	15	8	2	5	23	21	2	26	
5	Heracles	15	7	3	5	29	22	7	24	
6	Heerenveen	15	6	6	3	24	18	6	24	
7	Feyenoord	15	6	6	3	27	25	2	24	
8	Utrecht	15	7	2	6	28	22	6	23	
9	Vitesse	15	7	2	6	26	24	2	23	
10	Groningen	15	6	3	6	18	16	2	21	
11	Sparta	15	5	4	6	24	28	-4	19	
12	Twente	15	5	3	7	26	31	-5	18	
13	FC Emmen	15	4	3	8	18	30	-12	15	
14	Fortuna Sittard	15	4	3	8	20	35	-15	15	
15	Zwolle	15	4	1	10	22	34	-12	13	
16	VVV	15	4	0	11	14	39	-25	12	
17	Den Haag	15	3	2	10	17	30	-13	11	
18	RKC Waalwijk	15	2	2	11	16	37	-21	8	

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LISTS IN PROGRAMMING LANGUAGES

- Lists are finite

  - Have a length (= number of elements), which can be 0 ("empty list")

- Lists define a sequence

  - Elements in a list are in a certain order

  - Elements are numbered (indexed)

  - In Java, numbering starts with 0 ('offset')

    Easier to find elements in memory!

- Elements in a list are homogenous

  - From the same (reference) type (directly or indirectly)

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