**Problem 1: simple lists**

Note: L.index(x) will return the index of x within list L, or crash if x is not in the list.

nums = [100, 2, 3, 40, 99]

words = ["three", "two", "one"]

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Expression:** | **Value:** |  | **Expression:** | **Value:** |
| nums[-1] |  |  | words.index("two") | 1 |
| nums[1:3] |  |  | nums[words.index("two")] |  |
| words[1] |  |  | nums[:1] + words[:1] |  |
| words[1][1] |  |  | ",".join(words) |  |
| words[1][-2] \* nums[2] |  |  | (",".join(words))[4:7] |  |

**Problem 2: list in a list**

rows = [ ["x", "y", "name"], [3, 4, "Alice"], [9, 1, "Bob"], [-3, 4, "Cindy"] ]

header = rows[0]

data = rows[1:]

X = 0

Y = 1

NAME = 2

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Expression:** | **Value:** |  | **Expression:** | **Value:** |
| len(rows) |  |  | header.index("name") |  |
| len(data) |  |  | data[-1][header.index("name")] |  |
| len(header) |  |  | (data[0][X] + data[1][X] + data[2][X]) / 3 |  |
| rows[1][-1] |  |  | (data[-1][X] \*\* 2 + data[-1][Y] \*\* 2) \*\* 0.5 |  |
| data[1][-1] |  |  | min(data[0][NAME], data[1][NAME], data[2][NAME]) |  |

**Problem 3: CSV (without a header), borrowed from 538**

|  |  |  |  |
| --- | --- | --- | --- |
| Food Science | 24280 | 0.049188446 | 62000 |
| CS | 783292 | 0.049518657 | 78000 |
| Microbiology | 68885 | 0.050880749 | 60000 |
| Math | 432806 | 0.05293608 | 66000 |

rows = [ ["Food Science", "24000", "0.049188446", "62000"],

 ["CS", "783000", "0.049518657", "78000"],

 ["Microbiology", "70000", "0.050880749", "60000"],

 ["Math", "433000", "0.05293608", "66000"] ]

hd = ["major", "students", "unemployed", "salary"]

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Expression:** | **Value:** |  | **Expression:** | **Value:** |
| rows[1][0] |  |  | len(hd) == len(rows[1]) |  |
| rows[3][hd.index("students")] |  |  | rows[0][1] + rows[2][1] |  |

**Problem 4: CSV (with a header), borrowed from 538**

|  |  |  |  |
| --- | --- | --- | --- |
| **city** | **state** | **2014\_murders** | **2015\_murders** |
| Chicago | Illinois | 411 | 478 |
| Milwaukee | Wisconsin | 90 | 145 |
| Detroit | Michigan | 298 | 295 |

rows = [ ["city", "state", "y14", "y15"],

 ["Chicago", "Illinois", "411", "478"],

 ["Milwaukee", "Wisconsin", "90", "145"],

 ["Detroit", "Michigan", "298", "295"] ]

hd = rows[0]

rows = rows[1:]

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Expression:** | **Value:** |  | **Expression:** | **Value:** |
| rows[0][hd.index("city")] |  |  | rows[2][hd.index("y14")] < rows[2][hd.index("y15")] |  |
| rows[0][hd.index("y14")] |  |  | ", ".join(rows[-1][:2]) |  |