Lab-List

Data We Want to Organize

You are given a dataset as below represented as a list. You should organize them in the required data structure in following tasks.

```
SIZE = 48
```

```
names = ['STU' + str(i) for i in range(100,100+SIZE)]
names
```

```
['STU100',
 'STU101',
 'STU102',
 'STU103',
 'STU104',
 'STU105',
 'STU106',
 'STU107',
 'STU108',
 'STU109',
 'STU110',
 'STU111',
 'STU112',
 'STU113',
 'STU114',
 'STU115',
 'STU116',
 'STU117',
 'STU118',
 'STU119',
 'STU120',
 'STU121',
 'STU122',
 'STU123',
 'STU124',
 'STU125',
 'STU126',
 'STU127',
 'STU128',
 'STU129',
 'STU130',
 'STU131',
 'STU132',
 'STU133',
 'STU134',
 'STU135',
 'STU136',
 'STU137',
 'STU138',
 'STU139',
 'STU140',
 'STU141',
 'STU142',
 'STU143',
 'STU144',
 'STU145',
 'STU146',
 'STU147']
```

```
import random

scores1 = [ random.randint(60, 100) for i in range(SIZE)]
scores1
```

```
[89,
 85,
 60,
 63,
 82,
 71,
 98,
 89,
 62,
 82,
 84,
 71,
 68,
 66,
 94,
 72,
 62,
 70,
 79,
 76,
 71,
 61,
 72,
 81,
 96,
 96,
 63,
 80,
 75,
 84,
 73,
 89,
 66,
 64,
 71,
 80,
 74,
 91,
 98,
 88,
 95,
 62,
 63,
 63,
 95,
 97,
 60,
 98]
```

List

Task: Create a grade book `gradebook` as a list, in which each element is a list and the first item is the name (from the `names` data), and second item is the score (from the `scores1` data).

```
gradebook = [[name,score] for name,score in zip(names, scores1)]
gradebook
```

```
[['STU100', 89],
 ['STU101', 85],
 ['STU102', 60],
 ['STU103', 63],
 ['STU104', 82],
 ['STU105', 71],
 ['STU106', 98],
 ['STU107', 89],
 ['STU108', 62],
 ['STU109', 82],
 ['STU110', 84],
 ['STU111', 71],
 ['STU112', 68],
 ['STU113', 66],
 ['STU114', 94],
 ['STU115', 72],
 ['STU116', 62],
 ['STU117', 70],
 ['STU118', 79],
 ['STU119', 76],
 ['STU120', 71],
 ['STU121', 61],
 ['STU122', 72],
 ['STU123', 81],
 ['STU124', 96],
 ['STU125', 96],
 ['STU126', 63],
 ['STU127', 80],
 ['STU128', 75],
 ['STU129', 84],
 ['STU130', 73],
 ['STU131', 89],
 ['STU132', 66],
 ['STU133', 64],
 ['STU134', 71],
 ['STU135', 80],
 ['STU136', 74],
 ['STU137', 91],
 ['STU138', 98],
 ['STU139', 88],
 ['STU140', 95],
 ['STU141', 62],
 ['STU142', 63],
 ['STU143', 63],
 ['STU144', 95],
 ['STU145', 97],
 ['STU146', 60],
 ['STU147', 98]]
```

Task: Create a subset of the `gradebook` as `gb1`, which contains first 25 elements of the `gradebook`

```
gb1 = gradebook[:25]
gb1
```

```
[['STU100', 89],
 ['STU101', 85],
 ['STU102', 60],
 ['STU103', 63],
 ['STU104', 82],
 ['STU105', 71],
 ['STU106', 98],
 ['STU107', 89],
 ['STU108', 62],
 ['STU109', 82],
 ['STU110', 84],
 ['STU111', 71],
 ['STU112', 68],
 ['STU113', 66],
 ['STU114', 94],
 ['STU115', 72],
 ['STU116', 62],
 ['STU117', 70],
 ['STU118', 79],
 ['STU119', 76],
 ['STU120', 71],
 ['STU121', 61],
 ['STU122', 72],
 ['STU123', 81],
 ['STU124', 96]]
```

Task: Create a subset of the `gradebook` as `gb2`, in which student name always ends with an even number

```
gb2 = [v for v in gradebook if int(v[0][-1]) %2 == 0]
gb2
```

```
[['STU100', 89],
 ['STU102', 60],
 ['STU104', 82],
 ['STU106', 98],
 ['STU108', 62],
 ['STU110', 84],
 ['STU112', 68],
 ['STU114', 94],
 ['STU116', 62],
 ['STU118', 79],
 ['STU120', 71],
 ['STU122', 72],
 ['STU124', 96],
 ['STU126', 63],
 ['STU128', 75],
 ['STU130', 73],
 ['STU132', 66],
 ['STU134', 71],
 ['STU136', 74],
 ['STU138', 98],
 ['STU140', 95],
 ['STU142', 63],
 ['STU144', 95],
 ['STU146', 60]]
```

Task: Create a subset of the `gradebook` as `gb3`, in which student score always above 80

```
gb3 = [v for v in gradebook if v[1] > 80]
gb3
```

```
[['STU100', 89],
 ['STU101', 85],
 ['STU104', 82],
 ['STU106', 98],
 ['STU107', 89],
 ['STU109', 82],
 ['STU110', 84],
 ['STU114', 94],
 ['STU123', 81],
 ['STU124', 96],
 ['STU125', 96],
 ['STU129', 84],
 ['STU131', 89],
 ['STU137', 91],
 ['STU138', 98],
 ['STU139', 88],
 ['STU140', 95],
 ['STU144', 95],
 ['STU145', 97],
 ['STU147', 98]]
```

Task: Create a subset of the `gradebook` as `gb4`, in which student scores are below the average score

```
total = 0
for s in scores1:
  total += s
avg = total / len(scores1)
gb4 = [v for v in gradebook if v[1] < avg]
gb4
```

```
     [['STU102', 60],
      ['STU103', 63],
      ['STU105', 71],
      ['STU108', 62],
      ['STU111', 71],
      ['STU112', 68],
      ['STU113', 66],
      ['STU115', 72],
      ['STU116', 62],
      ['STU117', 70],
      ['STU119', 76],
      ['STU120', 71],
      ['STU121', 61],
      ['STU122', 72],
      ['STU126', 63],
      ['STU128', 75],
      ['STU130', 73],
      ['STU132', 66],
      ['STU133', 64],
      ['STU134', 71],
      ['STU136', 74],
      ['STU141', 62],
      ['STU142', 63],
      ['STU143', 63],
      ['STU146', 60]]
```

Task: Update the `gradebook` so the scores are converted to letter grade: >=90 is A, >=80 is B, etc.

```
def g2l(score):
    letters = ['F','F','F','F','F','F','D','C','B','A']
    return letters[score//10]

gradebook = [[v[0],g2l(v[1])] for v in gradebook]
gradebook
```

```
[['STU100', 'A'],
 ['STU101', 'C'],
 ['STU102', 'D'],
 ['STU103', 'D'],
 ['STU104', 'C'],
 ['STU105', 'D'],
 ['STU106', 'C'],
 ['STU107', 'D'],
 ['STU108', 'C'],
 ['STU109', 'D'],
 ['STU110', 'C'],
 ['STU111', 'D'],
 ['STU112', 'D'],
 ['STU113', 'B'],
 ['STU114', 'B'],
 ['STU115', 'A'],
 ['STU116', 'C'],
 ['STU117', 'B'],
 ['STU118', 'C'],
 ['STU119', 'B'],
 ['STU120', 'B'],
 ['STU121', 'C'],
 ['STU122', 'D'],
 ['STU123', 'B'],
 ['STU124', 'B'],
 ['STU125', 'A'],
 ['STU126', 'A'],
 ['STU127', 'B'],
 ['STU128', 'C'],
 ['STU129', 'D'],
 ['STU130', 'D'],
 ['STU131', 'B'],
 ['STU132', 'D'],
 ['STU133', 'D'],
 ['STU134', 'C'],
 ['STU135', 'D'],
 ['STU136', 'B'],
 ['STU137', 'C'],
 ['STU138', 'D'],
 ['STU139', 'A'],
 ['STU140', 'D'],
 ['STU141', 'D'],
 ['STU142', 'D'],
 ['STU143', 'B'],
 ['STU144', 'D'],
 ['STU145', 'D'],
 ['STU146', 'B'],
 ['STU147', 'C']]
```

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