統計分析法 第二回レポート

実行環境

python3.9.9

- pipenv

(これ以降のモジュールは`pipenv update`でダウンロードできます)

- pandas
- matplotlib
- scikit-learn

ファイルのエンコーディングについて

`output/pokemon.txt`、`output/seiseki.txt`については、**shift-jis**で読み込むことができたが、`output/baseball.tsv`については、**shift-jis**でエンコーディングしてもエラーが出たため、UTF-8でエンコーディングしている。

主成分分析の流れについて

主成分分析は`sklearn.decomposition.PCA`を用いて行った。

データについては、比例尺度を取り出した後、標準化して渡している。

また、固有値、寄与率はそれぞれ、`sklearn.decomposition.PCA.explained_variance`、`sklearn.decomposition.PCA.explained_variance_ratio`を用いて取得し、累積寄与率は、`numpy.cumsum()`を使って、計算した。

ソースコードをプログラム1に示す。

プログラム1：主成分分析を行うプログラムのソースコード:**src/pca.py**

```
"""
主成分分析を行う
"""
import matplotlib.pyplot as plt
import numpy as np
import pandas as pd
from sklearn.decomposition import PCA


def pc_analyze(data: pd.DataFrame, title: str):
    """
    主成分分析を行う

    Parameters
    ----------

    data : pandas.DataFrame
        主成分分析を行うデータ
    name : str
        画像に保存に使う名前
    """
    # 標準化
    data_std = data.iloc[:, :].apply(lambda x: (x-x.mean())/x.std(), axis=0)
    # 主成分分析を行う
    pca = PCA()
    pca.fit(data_std)
    feat = pca.transform(data_std)

    # 主成分得点を取得する
    score = pd.DataFrame(feat, columns=[f"PC{x+1}"
                                        for x in range(len(data_std.columns))])
    print(f"score:\n{score.head()}")
    # 主成分をcsvに書とめる
    score.to_csv(f'output/{title}_score.csv', index=True)

    # 固有値、寄与率、累積寄与率をまとめる
    state = pd.DataFrame([pca.explained_variance_, pca.explained_variance_ratio_, list(np.cumsum(
        pca.explained_variance_ratio_))],
        columns=[f"PC{i+1}" for i in range(len(data_std.columns))],
        index=['eigenvalue', 'contribution', 'contribution_sum']).T
    print(f"states:\n{state}")

    # 第一主成分、第二主成分でプロットする
    fig = plt.figure(figsize=(6, 6))
    plt.scatter(feat[:, 0], feat[:, 1], alpha=0.8, c=list(data.iloc[:, 0]))
    plt.grid()
    plt.xlabel("PC1")
    plt.ylabel("PC2")
    plt.title(f"{title}_distribute")
    plt.show()
    fig.savefig(f"output/{title}_distribute.png")

    # 固有ベクトルを取得する
    component = pd.DataFrame(pca.components_, index=[f"PC{x+1}"
                                                     for x in range(len(data_std.columns))],
                             columns=data.columns)
    print(f"component:\n{component.head()}")

    component.to_csv(f'output/{title}_component.csv', index=True)
    # 固有ベクトルの第一主成分、第二主成分の寄与度を見る
    fig = plt.figure(figsize=(6, 6))
    for x_axis, y_axis, name in zip(pca.components_[0], pca.components_[1], data.columns[1:]):
        plt.text(x_axis, y_axis, name)
    plt.scatter(pca.components_[0], pca.components_[1], alpha=0.8)

    plt.grid()
    plt.xlabel("PC1")
    plt.ylabel("PC2")
    plt.title(f"{title}_heatvector")
    plt.show()
    fig.savefig(f"output/{title}_heatvector.png")
```

中学生の成績データの分析

成績のデータはすべて比例尺度であるため、すべてのデータを主成分分析に用いた。

実行結果

ソースコード、固有値・寄与率・累積寄与率、主成分得点、固有ベクトルをそれぞれプログラム2、出力1、表1、表2に示す。

プログラム2：ソースコード:**seiseki_analize.py**

```
"""
seiseki.txtを主成分分析する
"""
import pandas as pd

from src.pca import pc_analyze
from src.read_data import read_file

if __name__ == "__main__":
    # ファイルの読み込み
    res = read_file('output/seiseki.txt', 'shift-jis')
    data = pd.DataFrame(res[1:], columns=res[0])
    # 欠損値が含まれる行を削除
    data = data.dropna(axis=0).astype('float64')
    print(f"data:\n{data.head()}")
    # 主成分分析を行う
    pc_analyze(data, 'score')
```

出力1：**seiseki_analize.py**の実行結果

```
$ pipenv run python3 seiseki_analize.py
data:
   kokugo  shakai  sugaku   rika  ongaku  bijutu  taiiku  gika  eigo
0    30.0    43.0    51.0  63.0    69.0    66.0    37.0  44.0  29.0
1    39.0    21.0    49.0  56.0    70.0    72.0    56.0  63.0  16.0
2    29.0    39.0    23.0  57.0    69.0    76.0    33.0  54.0   6.0
3    95.0    87.0    77.0  100.0   77.0    82.0    78.0  96.0  87.0
4    79.0    71.0    78.0  67.0    72.0    82.0    46.0  63.0  44.0
score:
        PC1       PC2       PC3  ...       PC7       PC8       PC9
0  0.056415  0.916879 -0.115763  ... -0.366566  0.271820 -0.091322
1 -0.147996 -0.809479  0.658867  ...  0.438794 -0.298384 -0.960319
2  0.540858  0.542761  0.963296  ... -0.341834 -0.590300  0.156104
3 -5.107249  0.228859  0.625819  ... -0.301719  0.242537  0.313485
4 -2.638544  0.661926  0.812114  ...  0.195361  0.287273 -0.632364

[5 rows x 9 columns]
states:
     eigenvalue  contribution  contribution_sum
PC1       6.006431      0.667381          0.667381
PC2       1.098185      0.122021          0.789402
PC3       0.498842      0.054538          0.843940
PC4       0.405976      0.045220          0.889159
PC5       0.300269      0.033352          0.922512
PC6       0.221459      0.024607          0.947128
PC7       0.182787      0.020316          0.967438
PC8       0.171195      0.019022          0.986460
PC9       0.121864      0.013540          1.000000
component:
          kokugo    shakai    sugaku  ...    taiiku      gika      eigo
PC1 -0.362839 -0.368578 -0.356895  ... -0.139248 -0.316726 -0.356949
PC2 -0.149422  0.147829  0.181437  ... -0.859298  0.148958  0.046618
PC3  0.073623 -0.961551 -0.399680  ... -0.888264  0.783859 -0.317273
PC4 -0.236643 -0.108524  0.029476  ... -0.284248 -0.293357 -0.354812
PC5 -0.301468 -0.086651 -0.861124  ...  0.268566  0.189814 -0.338372

[5 rows x 9 columns]
```

表1：主成分得点のすべてのデータ

	PC1	PC2	PC3	PC4	PC5	PC6	PC7	PC8	PC9
0	0.056414992080220925	0.9168698703924856	-0.11576332350747054	1.1889005496257328	0.8281764296964931	0.09661889663250677	-0.3665566249771964	0.2718199445256585	-0.09132190076529
1	-0.14790560034018696	-0.8094695266337561771	0.6598669126404902	1.1783436566872416	1.2369772227651771	0.6929629537292402	0.4387939225163251	-0.2093837639092668	-0.06031854769985207
2	0.5400499780439518	0.5427607239813568	0.9632958438503162	1.8470738917505805	1.2942395401294382	-0.048715219528065325	-0.3410341870002369?	-0.5003000819518492	0.15610445875631857
3	-5.107248884082295	0.2280591307515213	0.6258193632071424	-0.5800878722716775	0.2925739134527629?	-0.3688336668396847?	-0.3017185768620138	0.2425369761208878?	0.3134850169432?7
4	-2.6365435037?1749	0.6610255477?33851	0.8121144646941665?6	0.8797?7?1244262825	0.0466647202?346016	-0.4646765530?547677	0.1956?4617252681	0.2872729549?1340094	-0.6323639342841451
5	-1.6908046615?75072	-0.3256322357?75623	0.4929068290433?52	0.2884315617?099911	0.3013900315363419	-0.1963273008605522	0.1420326?5487?007	0.1036743415?040324	-0.1771687?043628293
6	1.0960559005684759	0.7108904937?68088	0.3245845652?178025	1.1057095245093898	0.1283428499601867?	0.4692088325236225	-0.0540829807?47236?	0.3493134?4496695	0.0653857884351881
7	-0.1163429580847?465	0.3236912932343036	1.2490033220209?33	0.0362865242411634?8	0.2654499660968054	-0.7021353320166016	-0.1009585325007984	0.7809085374455538	-0.1064887974502587?
8	2.2878983113?0555	0.4674963391?914812?6	1.1464359869961242	-0.0335219119028302?5	-0.1065596614382109?5	-0.4829275830266454	0.0785058050783537?	0.0204876510337?4282	0.6698012292525618
9	-1.2655917865519388	1.0913085937?30092	1.1736408060141281	0.2933399812636?016	0.1190764691104?782	-0.2756857783154145	-0.0671813095602?78	-0.6073772610161106	1.2103438442?8232
10	-0.3969521423137005	1.3766321603?5698	0.2730992974?090345	-0.2207784867308273	0.6519211451305447	0.3328805034592?35	0.7168803107?97736	1.5951116911973596	-0.1116084967975301?
11	-1.4125458617287754	1.3560635510511365	0.3626210890480446	-0.2234037829577?9948	0.4164175031851?79	-0.7127369?1917656?	0.3958992921701033	0.3957019936209?595	-0.0371104629152843?44
12	0.5912408445702652	0.5614872276?27345	0.5224714472441814	0.5822845378884368	-0.5152824890360362	-0.0665470636?792852	-0.2220032292?537772	0.3162454479489465	0.3982168794687349
13	2.5690417761554443	0.4574227846581?384	0.7306950152039749	-0.424435074075332?6	0.2226364871450465	0.2482267790413443	-0.4160995541841635	0.2893417131?13808	-0.0712965118244963?4
14	-2.7052842598?140	0.4409388664488643	1.1690954687626902	-0.1343644870628197?8	0.1675303415849?536	0.0969373835053452?	0.1318513663801?626	0.1404?1165634532?	0.5551594?7425496?3
15	4.0817?88821?85655	2.8312853655?58?16	-0.?7530123233?1?44	-0.2942045307029618?4	0.8713746?0985661?8	-0.0853855277?97?808	0.3419635?1553359?7	-0.4680057849686?56	0.0?7946669?1682?04
16	2.2?1633?1958041?48	1.2863525478?53457	1.2769825551?3158801	0.2941072571?741287	-0.6864573897?587617	0.0571047?09?233?14	0.1?1?33?2583?415872	-0.1486?2?90?495568	-0.1471484885955?05
17	-3.0413369627?170452	0.7225460839?81069	-0.5285497383614989	0.?1736256?5115145	0.911369?1326?896	1.2036231?604?5048	0.1307242813?1?7?53	-0.4195?0863?77?54?57	0.3348670839?898307
18	4.536738025231075	0.7630257258?8969?	-0.3071836980276?05	0.8103029?795164?4	-0.0467880985942?522	0.2?1?85?1?5?18?4666	-0.?45536202867641	-0.4473?88801?91?09	0.3?5?8?03308361?375
19	1.9601307?2?3885067	1.2895469990?190028	0.3282?3495?555567	-0.2195?502873?191?72	-0.1?43862853034?144	-0.8?7?2?3?46?590842	-0.5?2?55?56?42?7?546	0.3?7664?8?854?1?16	-0.1912?9649?76?2?44
20	-1.918113559501823?	1.4529482981666597	-0.4073?82831918?81	-0.3578405363220074	-0.0?2007?3?819984?599	-0.6?5?8?506338?2?58	-0.6?9?2?3964?82?836	0.2?25?1?2?80?2?51534	-0.2?5?75?9?7?83?976
21	-2.0?9?2?7?3?88?633	1.191405?29?7?03	0.?4?1?7?0?2?2?0?8?04	0.0?9?0?4?0?2?2?0?2?6?165	-0.?85?9?3?68?0?6?2?4?52	0.4?8?6?9?2?1?2?6?7?05	0.3?7?5?2?0?4?9?2?8?1?9?23	-0.3?4?9?7?6?6?4?3?4?05	-0.2?6?0?7?4?7?9?9?4?58
22	-4.1?6?5?2?9?8?5?1?8?4?594	1.5?3?6?7?2?3?0?0?2?6?48	0.5?4?9?3?3?8?6?3?3?7?35	-0.9?1?2?4?0?7?1?5?8?49	-0.1?7?4?6?4?2?3?3?1?6?3?6?38	0.0?5?9?9?7?8?4?5?5?8?5?912	-0.1?9?2?5?8?3?1?4?6?8?2?119	0.2?7?3?9?8?6?7?8?1?6?3?916	-0.2?3?9?2?5?5?7?8?2?8?3?2?6
23	3.0?8?0?2?6?4?8?7?5?5?4?1?27	0.8?0?6?3?9?8?7?6?1?5?392	0.?1?0?3?4?7?9?1?4?5?4?7?2?9?8?77	0.3?4?0?4?7?9?6?3?2?1?2?5?47	-0.5?3?0?1?6?9?3?8?8?4?0?3?34	-0.8?5?2?4?2?4?9?1?6?6?5?69	0.6?2?4?3?0?2?6?8?4?2?7?0?5?4	-0.1?3?1?0?4?5?7?4?0?1?9?8?53	0.1?7?6?0?1?6?9?2?1?8?6?4?16
24	1.6?7?3?6?6?4?7?8?2?08	1.1?4?5?8?3?6?5?9?1?4?1?7?43	1.2?4?9?7?6?0?4?2?6?3?5?72	-0.3?0?8?4?0?2?3?6?9?9?0?96	-0.5?5?3?5?4?0?7?1?6?3?7?225	0.2?6?9?0?5?0?1?0?5?5?1?3?663	0.8?7?9?4?1?0?8?6?3?5?0?2?132	0.0?5?2?5?1?7?1?7?1?9?7?7?16	0.3?9?3?2?6?5?3?5?8?8?2?491
25	-2.7?9?8?2?3?4?8?7?2?0?4?63	0.7?1?3?6?5?0?3?9?6?7?037	0.2?5?2?3?1?5?4?7?8?6?7?367	0.0?9?9?0?4?2?9?7?4?7?0?0?4?683	-0.6?8?2?6?2?4?5?4?9?0?6?493	-0.2?1?2?8?9?5?9?2?6?3?6?165	-0.1?6?5?7?9?4?5?8?7?7?7?58	-0.5?5?7?9?7?0?6?9?0?4?919	0.3?7?2?1?9?5?3?5?1?0?6?495
26	-0.4?6?1?3?6?7?9?6?3?7?94?325	1.3?4?1?9?8?5?6?8?9?3?1?591	-0.3?1?8?1?3?1?3?8?0?5?5?1?335	0.5?6?4?1?6?7?1?8?9?5?7?235	-0.8?6?2?3?4?0?7?0?9?4?8?7?677	-0.4?8?2?2?3?6?4?1?2?6?7?4?803	-0.0?1?1?8?1?8?2?1?5?1?9?8?342	0.4?1?0?2?5?2?4?2?3?7?3?14	-0.2?8?2?3?8?1?2?5?7?3?084
27	-2.0?6?1?4?0?7?1?8?2?6?4?11	0.9?6?0?0?3?4?1?5?0?6?4?0?702	-0.8?1?5?8?2?5?7?0?5?8?3?732	0.0?6?5?2?3?9?1?5?1?9?1?6?127	0.6?2?1?7?7?4?8?9?1?3?1?81	0.2?4?1?5?4?8?5?1?4?2?5?0?4?937	-0.6?8?3?6?9?7?3?7?7?0?6?925	0.3?7?3?5?6?9?1?8?9?2?2?063	0.1?9?8?5?5?6?2?9?9?7?6?233
28	-0.4?2?6?3?7?7?1?2?5?7?8?64	1.0?1?2?3?6?6?1?0?8?6?2?57	-1.1?7?8?4?9?3?4?7?6?8?9?2?55	-0.1?3?6?8?7?8?1?1?6?5?7?0?6?15	1.3?4?3?9?0?1?4?8?7?0?2?71	-0.1?5?0?2?3?6?9?2?8?2?0?5?754	0.4?8?2?5?9?9?1?8?2?1?1?566	-0.3?2?4?1?5?9?1?0?4?8?7?2?183	-0.0?7?5?1?9?6?0?3?2?5?3?761
29	1.6?5?4?9?8?5?6?1?2?5?187	1.0?0?3?7?4?1?0?8?1?4?0?3?793	-0.0?0?3?3?0?9?5?2?4?4?4?8?4?1?03	0.8?2?1?7?6?4?1?1?6?4?9?7?066	0.7?6?8?4?8?1?2?0?2?7?5?88	-0.0?7?2?4?0?9?7?0?3?7?9?3?8?669	0.5?9?7?5?5?7?1?0?2?8?5?3?043	0.0?5?6?2?3?7?6?2?4?1?9?7?565	0.3?2?5?1?9?2?8?9?6?4?507
30	2.709?8?0?6?5?1?0?3?75	0.9?3?8?5?5?1?7?3?0?2?7?066	-1.2?4?1?0?5?8?1?1?0?9?6?5?092	-0.1?9?1?7?0?1?9?5?0?0?6?898	0.2?3?7?8?5?7?9?5?2?3?9?955	-0.5?7?2?0?0?8?6?9?7?9?8?978	-0.1?2?1?3?7?1?5?5?9?8?7?382	-0.1?3?1?0?4?5?7?4?0?1?9?853	0.1?7?6?0?1?6?9?2?1?8?6?4?16
31	0.1?8?2?6?7?3?9?8?5?2?69	1.0?7?4?6?3?8?9?0?5?5?0?1?28	-0.6?8?2?1?0?8?5?6?3?2?0?0?12	0.2?5?8?7?4?5?7?9?6?7?8?67	0.3?4?2?8?7?4?1?2?1?1?6?1?666	-0.3?4?1?9?6?3?0?4?0?8?9?2?5?467	-0.9?0?4?8?6?0?2?0?8?7?2?9?398	0.0?3?8?9?2?9?4?5?6?9?5?1?2?882	0.3?2?7?3?2?5?0?1?8?3?8?7?648
32	-0.6?5?6?2?6?6?8?4?1?3?0?5?75	1.0?1?2?8?0?4?8?0?5?3?9?3?29	0.3?8?6?0?9?9?6?3?3?1?8?5?43	0.6?7?5?5?9?2?7?0?9?9?8?2?43	0.4?6?0?2?6?9?7?8?7?3?1?538	0.0?7?3?6?8?2?3?0?9?7?4?8?357	0.0?9?2?4?8?8?5?4?3?5?5?9?314	0.2?1?4?6?2?6?3?4?7?1?4?5?213	0.1?2?5?1?6?5?3?3?3?7?2?7?051
33	1.0?8?7?6?9?3?6?5?8?4?41?072	0.6?4?4?1?7?6?9?1?1?7?8?912	-0.4?8?6?9?5?1?2?2?8?9?1?2?2?67	0.6?8?4?6?5?3?3?4?5?8?6?3?938	-0.2?5?0?3?3?9?4?8?1?4?2?0?8	0.6?3?7?7?8?2?7?1?4?3?2?9?65	0.3?2?8?5?7?8?5?4?0?5?1?0?103	0.6?1?7?8?9?4?0?1?7?3?0?8?44	-0.3?9?2?0?3?1?1?2?8?6?3?4?9?147
34	2.9?3?4?5?3?7?9?5?4?9?9?85?7	1.3?0?5?7?5?2?1?7?5?5?7?4	1.3?6?4?2?7?2?6?8?1?2?7?66	-0.2?6?1?0?4?3?4?4?7?5?3?6?75	-0.0?4?7?0?7?2?3?2?1?2?9?1?0?685	0.0?9?2?6?1?2?1?8?0?4?5?8?3?413	0.0?5?8?8?8?2?5?5?2?5?8?4?78	0.0?1?0?4?1?7?3?9?1?8?5?1?0?726	-0.2?3?1?7?4?9?6?7?0?1?0?1?916
35	-0.4?2?1?5?3?8?6?5?1?695	0.3?4?0?5?6?8?0?1?5?4?7?015	-0.2?7?6?5?1?8?2?6?9?1?5?9?354	0.5?7?8?2?6?9?3?1?9?6?94	-0.4?2?3?2?6?3?7?9?5?8?2?43	1.4?7?3?2?4?9?5?8?8?0?8?24	-0.3?0?2?3?2?6?6?1?5?8?2?2?0?347	-0.1?3?6?8?4?9?8?2?6?7?1?913	0.2?1?2?8?9?9?3?2?1?3?1?92?12
36	-1.9?7?9?0?3?1?6?3?5?5?0?82	1.5?5?9?7?6?0?3?5?2?4?9?3?04	-1.0?3?0?2?6?8?8?0?4?2?1?7?97	-0.9?6?1?4?7?5?8?0?7?8?4?734	-0.8?0?3?2?2?2?3?4?5?2?8?35	-0.2?8?5?4?4?1?8?2?0?6?6?7?953	0.3?5?4?9?5?5?9?7?6?0?8?975	0.8?6?2?5?1?7?0?0?9?4?066	-0.0?8?5?7?8?3?5?6?9?5?4?152
37	-2.3?2?8?4?1?6?8?9?7?0?1?675	-0.0?5?1?6?8?2?4?9?2?3?0?6?181	-0.4?5?4?6?8?8?2?9?2?7?8?6?1?534	0.8?2?5?7?2?4?9?6?0?1?2?345	-0.1?5?9?3?0?8?2?9?7?8?9?93	0.5?3?5?2?8?0?6?3?1?5?0?279	-0.1?2?8?1?0?6?5?4?4?0?7?9?03	-0.1?4?9?0?3?0?9?9?4?6?2?6?268	0.2?1?3?1?2?7?4?0?1?8?5?0?973
38	-5.2?1?0?4?3?2?8?5?5?7?4?0?511	1.3?2?6?3?5?4?1?8?3?6?1?45	0.3?4?7?4?9?5?6?5?9?4?2?6?143	-0.3?3?5?8?3?5?5?5?2?8?6?8?35	0.7?2?0?7?6?4?4?2?2?6?8?75	-0.1?8?0?2?7?5?0?5?2?7?4?9?874	-0.2?9?2?6?7?7?5?0?0?9?3?2?506	-0.1?0?7?1?8?7?5?0?3?7?875	-0.1?3?0?4?9?0?7?3?9?7?0?9?342
39	-1.2?9?1?7?8?4?3?6?0?6?4?25	0.5?0?7?3?6?7?8?2?5?0?9?8?691	-0.8?1?3?2?3?4?5?7?9?9?8?54	-0.4?1?2?8?9?1?6?5?8?6?7?8?992	-0.1?8?8?1?9?9?7?2?5?1?1?583	-0.2?8?5?1?1?3?8?2?9?7?0?5?06	0.6?7?1?8?3?9?3?6?1?7?33	-0.8?1?7?0?5?9?8?7?3?9?6?34	0.2?6?0?5?1?2?7?3?4?9?5?3?9?237
40	3.8?6?2?6?1?0?4?2?6?4?6?3?73	1.2?3?5?1?6?3?0?4?0?9?1?3?64	-0.1?2?7?0?5?8?1?0?9?9?7?4?3?06	0.5?8?0?1?6?6?5?4?0?7?4?3?06	-0.2?7?3?2?8?0?3?8?9?2?3?43	0.1?7?8?1?9?4?3?5?0?4?7?1?534	-0.5?1?4?8?0?5?3?3?2?5?6?1?58	0.0?9?2?7?0?2?3?5?3?1?75?462	-0.0?7?9?2?4?0?1?7?8?7?5?16?592
41	0.5?1?6?3?2?1?9?5?6?2?3?3	0.9?5?9?6?7?2?3?6?8?1?9?5?67	0.2?8?2?5?5?7?6?6?8?1?9?5?67	1.1?6?5?9?5?2?9?9?1?4?8?86	-0.0?8?3?2?3?1?0?8?6?5?6?3?83	-0.6?4?0?1?4?3?4?3?5?5?68	0.5?4?0?7?8?4?2?3?9?8?2?439	-0.2?4?6?4?2?0?4?0?5?7?843	0.4?6?4?0?5?1?0?8?6?3?1?412
42	-3.9?8?1?1?5?4?7?8?2?4?1?991	2.3?1?2?7?3?5?6?8?1?4?3	-0.3?6?9?1?2?2?1?0?8?1?4?7?6?29	0.1?1?4?6?9?2?8?5?7?7?0?4?78	-0.7?0?2?3?8?4?9?0?5?3?1?4?0?74	0.1?6?0?5?4?8?8?0?9?7?5?1?16	0.4?7?6?9?0?2?3?3?4?1?2?8?6?14	-0.8?6?8?7?1?6?5?5?7?5?7?23	0.3?5?1?9?0?5?0?8?8?1?0?2?6?3?15
43	3.0?6?0?4?1?6?6?1?3?0?4	0.3?2?6?5?0?3?9?5?1?5?2?7?04	0.0?0?1?4?3?1?0?6?0?0?3?8?5?4?5?5	1.8?8?7?8?0?4?9?3?1?5?3?46	-1.2?3?5?0?7?4?4?3?9?8?2?3?34	0.1?6?0?7?7?9?9?8?1?7?4?6?0?2?33	-0.4?2?6?4?1?1?7?4?8?7?3?2?16	0.3?5?7?2?7?4?3?8?0?8?2?6?65	-0.0?4?9?2?5?1?4?9?8?5?7?2?35?654

	PC1	PC2	PC3	PC4	PC5	PC6	PC7	PC8	PC9
44	-3.360067478184844	0.8162192926287464	-0.4309604315595803	-0.055750494946041829	0.30447042221039167	-1.0523111516566145	-0.1423261429888492	0.3882205829151152	-0.07344271198284024
45	0.5647067401860213	0.4224480644494623	0.06359056004874844	0.81575341784586522	-0.8737996063174297	0.4744344236887908	-0.4154202425788623	-0.0598671610778140456	-0.22046549924575265
46	1.9424308887104393	1.5011576732028549	1.1935215288299062	-0.43202503131831543	-0.08886456606866374	0.04578038234711496	0.39475545753551104	0.6169319976152808	-0.03148293334025466
47	-4.061437233955031	1.7403918183266762	-0.6700032737231517	-0.23362199752458013	0.19050005850932	0.4114676542715695	-0.1866150444458161432	-0.05203915130013365	0.22929964352878926
48	-2.1654759080264927	0.5296427565316817	-0.2223531952028782	0.82276876215810169	-0.6977883654140031	-0.3472963250887193	0.3533203657914768	0.6760629948428445	-0.12837521895091157
49	-4.501149910662044	0.2205867017306975	-0.2959168602457438	-0.07565538839848058	0.44331553601002116	-0.514736045534734	-0.1714521862446572	0.3464203763056966	0.06877278653509906
50	-0.6942859478693609	-0.1089074733023827	0.4868729937136339	1.2377385734696822	-0.5836524688257639	0.040520658388088587	0.7649000161528795	0.0362653878074192	-0.04953366680071554
51	-3.220085576145595	0.9758408362562143	0.3731437108780545	0.6655473331483565	-0.5293040606728601	-0.738893218297772	0.3124697701540685	-0.4096725474608303	0.30178179269592626
52	2.4401540032886917	1.1054602265633447	-0.2089439088782932	-0.05186873933676349	-0.16540289574311534	-2.2908205668706993	0.5708053253599444	-0.1532536694721278	0.19483763655652889
53	4.149841101165614	0.5010783780851551	-1.1508363349011896	0.13615254308211146	-0.2110331857367916	-0.6017858538236904	-0.1623414497893193	-0.4091139036117244	0.08833108315522471
54	1.2324502315004453	0.1109907916721284	0.7569711686755511	-0.3406202733026691116	0.23003189940199284	-0.0007944060785748	-0.1827619076594528	0.2072403185387494	-0.07016761549894612
55	0.9710830460276149	0.0394891222492196	2.1265945002080613	-0.2607184596142192	1.0270251312142809	0.6361623647724018	0.5552251809847325	0.0009394963989696644	-0.23247523931748956
56	0.9243769832242299	0.3660846905372407B3	-0.4380498193938335	2.2317518741549858	0.21154608749091696	0.12330205546975932	0.2485118380597048	0.1552350251120079	0.23090033393295782
57	4.323065600882307	1.3711843773378007	-0.7877444051378811	-0.4083299472373484	-0.3860244413859777	-0.5982942883063379	0.3830216605090202	0.0932134342223504	0.11378452810775371
58	-4.044003411201626	0.6025015295840277	0.2759864709448563	0.04969323448120496	0.3913197867652819	-0.6962740432677981	-0.4556475898047255	-1.3098376484899178	0.39485152698220415
59	-4.617050162271447	0.7345155846939301	-0.4827681066080245	1.0046158526998696	-0.3936622151315907	0.2707683194141639	-0.4477677429845268	-0.1647501632385995	0.30414702896342636
60	-0.019894335702291977	1.0704793371549093	-1.6486630882153155	-1.1655941939836407	-0.8389288681540949	0.8259198855322736	1.1099281995401238	-0.6833005790564616	0.07151595842036951
61	-1.3281832235785958	0.8418448529042845	-0.7555882043483126	-1.1030740012629605	-0.7114988047778902	0.7972094677003	0.6599568030749119	-0.0430311042729863	0.25695513458741304
62	-2.726645178597935	1.1941167706485614	-0.8089576676373513	0.29590120710625756	0.19576942641822396	0.5114843952154041	0.2431499295408494	-0.0982129685346488	0.08536001129077501
63	-1.9330206029646335	1.4661792318814624	0.3088508098562701	0.6725246935905	0.2586563755255824	0.4060128665736663	-0.1402871927995553	0.6231386235280424	0.17280388013833636
64	0.7062995845756201	1.4707425775100858	-0.0699787723727129	-0.9368097294642507	-1.3388418581720734	0.5273060768373296	0.1709941234061897	-0.5012468892909501	-0.05954479078320165
65	0.2250636834653417	0.6867264026552281	-0.4663757619107922	0.1808558042786165	-0.7273079207160862	-0.0841769605777702	0.4644628863453778	-0.2855205493234293	0.33823113565373364
66	2.9991193868901913	0.6084254989224581	-1.170975607516815	0.3832901300462099	0.4926886948771477	-0.0631907299670695S	0.2565953602408439	-0.1492103333054012	-0.5964767823099592
67	-2.845175662588757	0.6724193887063436	0.5749102629237546	-0.13017758419828T3	-0.6490317713421374	0.08957648559936908	-0.333350710574678	0.9999208010274523Z	0.23434169834354646
68	-1.3588772816153436	2.1891535606106594	0.5946782789224436	-1.2539762649749Z7	-1.0278633431340325	-0.5468125467549445	-0.5182884957604663	-0.6071292919045795	0.30059181611922296
69	-0.8521242795193298	0.6658303058254851	0.0829314227170546	0.06690033343035248	-0.5393508727805022	0.5078564718221924	-0.5208866782833559	-0.7049440971426175	0.14399734435809844
70	3.672284227768963	1.5933276921511021	-0.5709495891216958	0.28654357652558424	0.24850305085549398	-0.0427995391032136	-0.4341904758135747J3	0.1499020573029168	-0.6428883187754774
71	2.0618439508639578	1.3719899595127294	0.9615993372373253	-0.8249234353198536	0.5018721153215212	-0.0468228900743293Y5	-0.3088107205166086	-0.3965587746914267	0.14683223663017053
72	2.5615555502749964	1.2102668560080907	0.4655579913420856K	0.6043271713316918	-0.3454543541124042T	0.08850804286967887	-0.2260791849686195	0.0567847788698934Y	-0.16815945326823975
73	2.8470351111452525	1.6751340778029288	0.9821764142494379	-0.6009186036959080	-0.078743552320355S63	-0.018359245445926252	0.3765963043521864	-0.0865642874860075	-0.20307658197332J21
74	-3.3503518297324146	2.0598259503326624	-0.7893871414609828	-0.9323318974098632	0.22770321860937744	-0.3467055410408264	-0.5228593804751454	0.1189494968033568	-0.11239936521174431
75	2.9138460812665494	1.177188345204435G	-0.5119688527548268	1.0394041145440687	0.3981083118095106	-0.0442322438935152T	-0.5735478643521998	-0.3236145615080919	-0.21203433766742785
76	-0.3523728902170576A	0.6184502906300023	1.3941907514463865	0.3365514693024093	0.04033206301944991	-0.1122805632044653	0.4263641528676235	-0.1467013077033568	0.06402288337691101
77	0.6087237735231834	0.8640500444584868	-0.2992751494842478	-0.01979698284594293	-0.3620893722304128	0.3616133923455896	-0.6882611725337036	-1.1827843181519868	-0.4792858082545140A
78	1.9214596348862638	1.3730510947063508	-0.0408667959391950T	0.2982913461950714	-0.2529353533531595	-0.3111367575910565	0.1899754442086319S	-0.4551145651112828J	-0.33913440719631666
79	-0.2022318040335411S	-1.9505329722864875	0.2801140909123952	0.1846447544519928S	-0.8882451362500D25	-0.4802411087411B8	0.0669415489983324Z	0.4714184118008558G	0.2768137735952203
80	1.5376371861631788	-1.6624750464734914	-0.3708368997402934	0.4713524071111499	0.31466925728894S7	0.0864084084863345	-0.4612606275672918	0.7555918801826289	0.10066972860008875
81	1.0121518500405107	-0.4269015658105532	0.8984466660404232	-0.6366172880575441	-0.3184618130667514	0.1653094023654672	0.1599724072297481	0.1323654064219668	-0.11295813226119453
82	-0.5311054029988	-0.6472742932412505	-0.0305093572403240807	0.4747359572293513	-0.8872771818153135	0.0826074328400432J3	0.1070264729278800X	0.3151234964826678	-0.13599217319377463
83	0.0933413892938544I	-0.5275865593520733	0.3370502867409602S	0.8505779250285387	0.023983931769247607	-0.1310226212243450Z	0.5754347020992717	0.1352097926296695	-0.03684040097683764
84	1.3670228073334776	-0.8787127547564477	0.4608302835217973	-0.2602280430337894	0.24878724438533S1	0.3956089665249342	-0.3604134580832439	-0.3989767273487288	0.21390271127322576
85	2.1635337742881867	-0.9926128548527113	0.3893765067594554	-0.4817076398964244	-0.3065418673890702A	-0.6587272326234665	-0.6324744111243356	-0.3573044271108431	-0.3291579271618612J
86	0.9600701624760731	-1.2755734159026892	-0.4128699355074612K	0.5005984180732226	-0.0963905989933654	0.1465472965592542	0.2210641835000500T	0.2629959898329664J	0.18484143961040322
87	0.6153145579930686	-1.1069559939352516	-0.3673062205847615	0.4971006645365493K	-0.3754842481821069	-0.696949011026673	-0.6172361448141244	0.1061034000159551A	-0.6523536905124555S
88	-2.6267884133044963	-0.5295109887493770T	-0.0879375469920234	-0.0892152995767197I	-0.4164611360882E6	-0.1729246628404833B	0.0560489673762254A	0.2703623928011703	-0.16024029248386779
89	1.5400581018738304	-1.4227979912470716	-0.5194998921914618	0.7561939421114	-0.0368323566571787E	-0.6442164594950123	0.2254837664579909	0.1481536177564782Z	0.01398485506378977
90	-2.9635232806078182	-0.3284894640477196	0.0302359372403207	0.1439256972293513	-0.8872771818153135	0.0826074328400432J3	0.1070264729278800X	0.3151234964826678	-0.13599217319377463
91	-0.7065244797630056	-1.2492493092049227	1.5292978802014534	-0.6158253039671814	0.007905645640075126	0.1539119233849623	-0.1640905306105636Z	-0.0519746454952488T	0.03286428198219453G
92	0.0217449931525117	-1.4558408659926631	0.5943835932740789	0.5354117938243104	0.6949918416497945	-1.0947222288421Z3	-0.1831190647120881	-0.3237358570116002	0.27026064820224B4
93	-1.0724445864296Z	-1.4105709898671248	-0.5836931003122271	0.5466591322768346	-0.3082120099425671	-0.3955500451952172	0.5798354011145724	0.2038742758737474	0.13455291911385I6
94	-2.5009954960527305	-1.7416198572413515	-0.5996603754563558	1.4785425258828343	-0.0277408879296173Z	-0.4702925178587045	0.3525153415223117	-0.1772156091536453B	0.26401801227502253
95	-0.7464207602578177	-0.9850866577199773	1.4772839733425511	-0.3145287573834575	-0.2906273091629995	-0.3468723717308734	-0.0162149116442061G3	-0.5360884933885909	-0.6289559231853064
96	-3.5536901465767134	-0.9172907849206033	-0.5588199255631719	-0.1085238455112726J	-0.3490559349008497	-0.8512918439900008	-0.2485427512575504	0.7861446357750439	0.19655017481132177
97	1.2533692688064135	-1.0296348108614513	-0.5677671678698024	0.4342964761225735S	-0.2515659705258987	0.5544187090742934	-0.8472079051892393	0.1332860577024613	0.10281184841976802
98	2.0504588478301555	-1.4634674982590423	0.4803964614670534	-0.4088720294063462K	-0.4729313149870662	0.2499654102802668	-0.1886743991493801T	0.5344927967790488	-0.2644162696032583T
99	-0.1066286407326092K	-1.1606556673658816	0.4009825618252355	-0.4510419232429425	-0.0109177201956214666	-0.0832464973796247	0.1973377048350885	0.1185382085317106G	-0.2563150892244293G
100	-3.273802227495129	-0.5906846121510656	-0.2471838812191238	-0.4048231489869813	0.3416536266959125	-0.0665360284816972E	-0.2961380318924Z	-0.2140098351184400A	-0.7622301497315438
101	1.6681228416332723	-1.3953572996123167	0.0557882070553673J	0.0051407352626756Z1	-0.5167316194664099	0.1454362826804810J	0.2540384711946084	-0.3480381576239044	-0.167113051775608
102	2.3500444691413404	-0.8828148191007444	-0.0446443718949814B	0.2554340371035381	0.1460587358681678	0.021710894587501153	0.1918765216906810J	0.1815516893096154	-0.2322240100550468A
103	2.2993149976264514	-1.1263759895169483	-0.3300777988497634	-0.1638215379940674J	0.03590455675870685	0.4947156256537687S	-0.1863005541941440A	-0.1555095752352895S	1.111174893221814
104	2.8921408000804147	-1.0788187413943857	-0.7497730825164997	-0.0851919961210763	-0.8881915896426247	0.8735931967021524	-0.9209088649426258	0.1329734663845707	0.03554270658126952E
105	-0.1583343988302658Z	-0.7567546106218831	-1.5409612852503793	-0.9404504815486696	0.2015532699878959	-0.1901892662598284	0.3940395038599421	-0.1202671488778535Z	-0.9470959794105005
106	-2.562014960585725G	-0.9091778029149668F	1.2387330790731748	-1.0687470754819B5	-0.3795517009351725A	0.3880713085794242	-0.4037654787246523	0.5071660454335561	0.3734947000579988
107	4.162684197731969	-0.4606776842903974	-0.3717352200884214	-0.6997608715629062	0.2072281239823377	-0.1311894244138131B	-0.2569174129578623	0.3488965105391574J	0.47062146226013084
108	1.8333505293637276	-1.6421718222271541	0.2383554793232065J	-0.3351394587764186	-0.6838408600324046	0.1828345253969094	-0.0061278584543339835	0.2976249481661499	-0.6036812649373186876
109	-0.1961849339935207A	0.6525838373126132T	-0.8898830301145734	-0.6203391493714224	1.2321259008769954	0.7620709904024877	0.4803370044942I	0.4443711202794534S	-0.3252775440238871
110	-3.6909460972368346	-0.9040215377999B9	-0.9873561893918051	0.8315292936447922H	-0.4392995395642823	0.3643286674381848	0.0382559591532077E	-0.3860323789113933	0.9211832661175075
111	-0.9556453303137722A	-0.3947396237743932	0.7136240093364268	-0.5267283941849161	1.4600552331786781	-0.4269018851849042	0.2198785705838985	0.1407315045423935	0.4553237165084365K
112	0.1186364980819503A	-0.3865414168089600H	-1.1732717521520282	-1.0479585336333087	-0.8123944410230369	1.1961838823502802	-0.1277391295410226Z	0.0835535705707753	0.45735360239951517
113	3.8855500174460196	-0.1504422679520144	0.0903337788733096	-1.2452105857794957	0.3343337731169367	-0.3198121300355296E	0.1223771229762167S	-0.0157840245043837D2	-0.11340320484261261
114	-2.2365632085622322	-1.2575829926286916	0.9909233743724081	0.5160724573170286	-1.0630287941472O7	0.0855843302118461B	-0.1628717878393911T	-0.7648392077490278	-0.21869561509956282
115	-4.3105274651314O1	-0.4539770248193013E	-0.1183198555702975K	-0.2399688935675128	0.4818217376427494	-0.6080093558847872	-0.2376312311190273T	0.0434273115896734	-0.40832291425147
116	-2.3961428182652886	-1.1472550379082933	0.1464172560475296T	-0.1406630113772714	0.1844340079349107	0.1132268788435474Z	-0.3388977431189741J	0.1037172331738170S	-0.16769947025810985
117	-1.6723256493710321	-1.0372303413732118	0.6653817482593642	-1.2319688716637671	0.1752993814776993	0.1421190871464635	-0.4879366497534679	-0.2901110517031683	0.04219375526238B
118	2.0278615856069874	-0.6548142167130847	0.1143443484904816I	-0.1986973547888543	1.1069308573784524	0.9438222077113A9	0.5047082570321418	-0.2096439519624784M	-0.2861878610459675
119	-0.4591151395177375	-1.1397039649066885	1.7353093865182643	0.1833229106252575	0.3282168228178063	1.0319477271817175	-0.4279456514380967	-0.1817630753602877	-0.1737145011994874B
120	0.4366778124873138J	-0.9460917417685373	0.1851203287876075	0.2392854244533904	-0.2936987507733613	0.6115162951273O4	-0.1950078412497222	0.5044814369805384	-0.10043843011896492
121	-1.7424077362519164	-0.3488487943500908	-0.4742853631498954	-0.6894917659592546	-0.4268916801603254	-0.0023809003563246727	-0.2591326897533452	-0.0176677648197518Z	0.12130234854777854
122	-1.5754834116634815	-1.3082329218893777	0.3952768488117992I3	0.2904388466498283	0.8766422517606491	-0.3287886442440941	-0.9670345439382243	0.4349012885871966	0.17691112191446384
123	0.2390150104567957	-1.2930460726444	-0.6073316152819878	0.2376355146131633A	0.3172892266457199	-0.4572558863850095	0.2428363042885201B	-0.3919262427459337	-0.6299840783028879
124	4.862307127000511	0.3455590654098198	-0.6830493985568064	-0.6904563171298377	0.4712230539870865	-0.2733399805222253	-0.5928131105613751	-0.0141061074565838437	0.19348667928208782
125	1.5160967847068917	-1.1801680553393937	-0.7123444998729552	-0.4132460511347527	-0.3056185535954666	-0.1224463159459372	-0.2929843320715975	-0.0341068310966438464	-0.12173850581490131
126	-0.4945156285727067	-1.5115109413393854	0.4024231047490794I	0.6235849364752059	-0.4683229417511638S	-0.4127343740305838J	-0.0876109001318126R	0.2085189335645976A	0.18597073926545743
127	-2.293510888293421	-0.9070788738371993	-1.0113768028168382	-0.0416232390381769J	0.5084492265857413	0.1867986535739124	0.2592376946885973	-0.0465218916220972S	0.5511639885581721
128	-2.3830804962632497	-0.3021104757217952	-0.4187774312733596	0.7182892470514095	0.1792349676786336T	0.5870345137936082	-0.1034554000247207	-0.3730942914851861A	-0.5115490454540066
129	0.8123368478743531	-2.2437625493177I6	-0.9301019316321187	0.4387041255766420I	0.0712315902732529	-1.1585918369095727	0.0265172719706991O3	-0.4390870686167638	0.21718233145539523
130	-3.3885056415559123	-0.9418776462108I	0.5610499339296E	0.4101875657489585A	-0.4705865375013285	0.1109728462392751T	0.4964782754274398	-0.1480069962315069	-0.7918810555692399
131	-0.2535547867944936	-0.9339313278497T	-0.6625397947338291	0.1438548950503904	1.0638223961176G	0.6891356915218747	-0.2586534140852743T	0.0231422481852829J	0.08368518855142272
132	-2.108794752237581	-0.8342530410550073	-0.3448078016213024	0.5730644264739303	-0.2918285207233954	-0.5644289169768931	-0.1756467068805841Z	-0.5550632910316481	0.5709208139309798
133	-1.9054385300443	0.5074521933727667	-0.9568323582930866	-0.4933004805900142	0.7281583735848489	-0.1297501296652831B	-0.3987455875634651	-0.4843986856088599	-0.2278541364803147
134	3.7614753369190075	-0.7993058727400306	-0.3461586697439073S	-0.3859698787719453	0.4717230514445906	-0.1999199904847396	-0.2770782909155257G	0.0645452335171241T	0.41002347587932B2
135	-1.709552289005592	-0.3418672480866314W	0.5339575890233391	-0.3385099783276512G	0.4606125940774465	0.3318571236976537	0.0763035366200016I	0.1393903901840918	0.45360335299028S3
136	0.9942292113154568	-0.8006076192616821	0.7396142292845012	0.3366920766482636	-0.0207959947613S532	-0.0457791692867676R	0.4365960723682715T	-0.4011027674186302	-0.2034324426518108T
137	1.1306381561193728	-0.7318162450277044	-0.1786082407452223B	-0.3857792702967557	-0.6916627864216296	-0.0105174950680087	0.4875507203406824	0.9194211904027405	-0.16873132801987B3
138	-1.2374771891918N2	-1.3695781499139759	-0.4637172609187756	0.4198552735026552S	0.3853899310105826	-0.8841005694303980Z	0.0723414829379454G7	-0.0972577479453467	0.27427861238718704
139	3.1495602266118607	-0.2140234931892836	-0.0862511292740203A	-0.8830139071635I6	0.2947672735844144	-0.6129308734932268	-0.0723367895039718Z	-0.0538921519062E3555	0.5285516900775687
140	-2.3012068827125G4	-0.8326289196825034	0.6573126780161824	-0.3085084562771214	0.0775485502947391S	-0.3221570727462624K	-0.3919490554063726	-0.5130670535889613	-0.15998317275560056
141	0.7166630334163562	-1.1766693776349864	0.6129934167560723	0.4019194050590565	0.9217312869108625	0.2295461525955981	-0.3936259885647967S	0.2795687374195217	-0.3694713765457516S
142	1.4710948890983606	-0.1668995745816106	0.6789565277714152	0.6879506277714152	0.7566645737851243	0.0025241822407424583	0.1360292419177867	0.2030710745134388	0.32201891532926268
143	1.2302233672338427	-1.3359130547338516	-0.6751006154269139B	0.6532075274710326	-0.0181977779852281I9	-0.2090450146230864Z	0.7401904189236679	-0.0009760701328515904	-0.17609173236939756
144	-2.736123756046137	-1.0538602213328343	-1.1862906611697925	-0.533567961872139S	0.0273523004255008Z	0.5602701857108142	-0.3115483325070206	0.1442545233309423	-0.3918219955076477B
145	1.5978329982651907	-1.6532134101645546	-0.3843358991914480Z	0.0590570476418735T7	0.0254876901443278Z7	-0.2789019683111172	0.8699008350681063	-0.2325526895011662J3	-0.26250413576125525
146	3.139874127523542I	0.8810824821935248T	-0.4159484124430613	0.4408619929519666A	-0.3980144547585O1	0.3429679694477616	0.3011852217427509	0.3731994955975769	-0.3739822276015886
147	-2.4119176525717987	-0.7124919416878266	0.2642987328413416	-0.3135510612637924A	0.3144482692127319	-0.0978191269260196	-0.0115663226280645	-0.4576031423469078	-0.5359988367452239
148	0.1725277553151218	-0.4191664585106505	0.6892938345427337	-0.8778730725065890K	0.4861569731459364	0.6246720016605378	0.1014536984104628	0.0825106676098107	0.9379652337064616
149	0.9379652337064616	-1.9227331612075874	0.8965932065955717	-0.0226815960260764I7	-0.6036031492764059	0.4141194281309069G	0.4882945642732653	-0.1111760025713585T	-0.2216105951993754Z6
150	-2.8636053329697047	-0.7138600188252863	-0.5644189632026874	-0.1553875162837117	-0.1553275922708148	0.5799179005552T7	-0.1195532086392205Z	-0.3209057941155069	-0.2290289167183184O4
151	3.4937675749936559	-0.5942166475546286	-0.0995533536357199853	0.0152542028755330Z	0.0540975621841989J	0.1462120373418508T	-0.4857241776808955S	0.2121623587306146Z	0.29855307239208773
152	2.9308944638948802	-0.2696722295804987	-0.2009425527316866J	-0.4045181167932776	0.0153275695680582O9	-0.0141156234893958I	0.2950359628419604	0.5026359628419604	-0.010862554457136G7
153	3.3754763985395946	-0.6119340351446236	0.0600862283207957	0.1951015775491985	-0.5078784847954086	0.0875239842073142G	0.1486359442104219H	-0.1148371668402235	0.12368640553580526
154	-3.791725168494103	-0.5393563634715641	-0.0306538666629554J3	-0.1544277237434216	0.7770485061693237	0.3685958071218064	0.3050874646257356	-0.0012908083820264T	-0.5759852882480899
155	-4.734283243330427	-0.3169054183851714	-0.8583582854592032	-0.4082457168410125	0.7921457993961425	0.2067290636829952	0.5575560118549824	-0.1287272193386892	-0.19683286792999496
156	-0.5793123705776235	-1.2248307625671992	-0.2174703146594652	0.1247673009918785	-0.0267004493123835Z	0.8256342324020644	-0.0838308876663623T	-0.2951840848127719	-0.15094985200555536
157	-0.0790431256130650Z	-1.2058593680791243	-0.8745672426054695	-0.741061112999392	0.1505027553941289	-0.0008688309602060238	0.0996878259893708	-0.1045573851476495Z	0.6081265671693704
158	2.6635405263616887	-1.4212125961883447	-0.5881588924656066	-1.0699119520198O6	-0.0316342034783368	0.0546055557751385	0.1877779271358788	0.3275840146052268S	0.027328000928255
159	-0.8117753740048181	-0.9224957446236364	-0.3716533475592612	-0.5615253139840296	0.9449669765989897	0.2448250292788719	0.7770608977791837	0.5189082993523775	0.7154342579133802B
160	-0.1367620241915111	-0.8509481920889215	-0.3545227984524117	-0.0789164876775791	-0.5933073369846006	0.0265493142787405Z4	0.6134606985894837	-0.1006732845136071T	0.7869401094468971
161	-4.194304069000975	0.0961604789393134	-0.3458648929938659	-0.7753568738763893	0.6325157767426844	-0.0986460026156171	-0.2840610722916628	0.0211063892544464T3	0.06689031869576728
162	5.322406604609732	0.3082830234783072	-0.8591501254567772	-0.6644734864834887	0.4457266083485193	-0.0241372413974335S4	0.5905704976291467	-0.1613386408365645	-0.18758206757917798
163	1.5139523533947574	-0.7658184806818301	0.1379472101362838	-0.2258906043159477	-0.1167394923078592B	0.0245679717064935I	0.1014010428212826I	-0.3212838862137142	-0.3715763234805126
164	-0.4776656808395772	-1.2173448900877095	-0.2220989409286982S	-0.3880955108098648	0.0219751234534616S3	-0.0853185577684226	0.6748663815379817	-1.0233121606287057	-0.2169916876933231T
165	-3.219388865037494	-0.0647976033496275K	-1.3177997321442507	-0.0341630985404665S	-0.3805543390719302J3	0.0778901671205332	-1.0544337477736163	0.9072906676402	-0.26037918275858635

表2：固有ベクトルのすべてのデータ

	kokugo	shakai	sugaku	rika	ongaku	bijutu	taiiku	gika	eigo
PC1	-0.362639118956995	-0.368569608251918B7	-0.3568951354768002	-0.3672255798196Z7	-0.3543091189579648	-0.3126779679448185	-0.1392481969158168	-0.3167262283732256	-0.3569489061380176
PC2	-0.1494220020550736	0.1470292896777129B	0.1814365474639136	0.2506855213942928	-0.0095079972507130J3	-0.3121676077228591A	-0.8529280400406439	0.1489575990412447	0.04661048631527054
PC3	0.0765226105560734	-0.0615513905819923B4	-0.3396804733616831	0.0082506380319886I8	-0.1996061282167748	0.2637825329495805	-0.0802630824202926S	0.7838688233150789	-0.3172730081874N9
PC4	-0.2364431601348928G	-0.1065241343973041S	0.0294757356405336602	0.0666442322758843A	0.3568797362380253	0.7122689043434813	-0.2842479273073O32	-0.2933574837695164	-0.3548116334650321
PC5	0.3014673299917653	-0.0866512073745842U5	-0.0611235892796106J	0.2623805252632994Y	0.6423917783771539	-0.4410247550741837	0.2685657885768178	0.1898136708306902B	-0.3383177711467408
PC6	-0.4940632129965445S	-0.5727449938412557	0.4088149544455555507	0.0388577448164535I6	-0.1319765447106731X	0.1363089653319697B	0.1066344527809397	0.2866488554024033S7	0.36088772628459327
PC7	0.6199914199433567	-0.5169872724227B8	0.4088977952613481	-0.1765069912820286	0.1194372961340553Z	-0.1247836303647347	-0.1275562754832922	0.0415003075221594496	-0.3196153034040788A
PC8	-0.1097027429237252I	0.2349429359552383I3	0.4461832070550193	0.3924652647255106	-0.4951329021782256	-0.0015998451034219812	0.2348500618997012B	-0.0618299162489327I	-0.5249019399709729S
PC9	0.2311603237172789A4	-0.4111562426346163B	-0.3774842204728557A	0.7363801786489S8	-0.1329273687533425	0.0034953122967084312	-0.0073483265973379S6	-0.2307491592217507	0.14645862846310666

また、各生徒と各科目を第一・第二主成分でプロットしたものをそれぞれ図1、図2に示す。

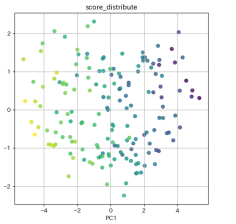

図1：各生徒の成績について第一・第二主成分でプロットしたもの

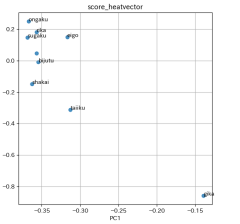

図2：各科目について第一・第二主成分でプロットしたもの

科目と主成分との関係を見ると、国語、数学、社会など、日頃の予習・復習が必要な科目の第一主成分の係数が大きく、理科・家庭、音楽など、単語の暗記が多く必要な科目の第二主成分の係数が大きくなっている。

そのことから、中学生のテストの成績を決める要素の第一主成分は日頃の演習、第二主成分は物覚えのよさだと考える。

プロ野球の個人成績の分析

打撃成績のデータには、名義尺度として、選手、チーム名、他の比例尺度に太く関係する変数として打席、試合、打数、盗打が含まれるため、それらのデータを降外して主成分分析を行った。

実行結果

ソースコード、固有値・寄与率・累積寄与率、主成分得点、固有ベクトルをそれぞれプログラム3、出力2、表3、表4に示す。

プログラム2：ソースコードbaseball_analize.py

```
"""
baseball.txtを主成分分析する
"""
import pandas as pd

from src.pca import pc_analyze
from src.read_data import read_file

if __name__ == "__main__":
    # ファイルの読み込み
    res = read_file('output/baseball.txt', 'UTF-8')
    data = pd.DataFrame(res[1:], columns=res[0])
    data = data.drop(columns=['選手', 'チーム', '打席', '試合', '打数', '盗打'], axis=1)
    # 欠損値が含まれる行を削除
    data = data.dropna(axis=0).astype('float64')
    print(f"data:\n{data.head()}")
    # 主成分分析を行う
    pc_analyze(data, 'baseball')
```

出力2：baseball_analize.pyの実行結果

```
$ pipenv run python3 baseball_analize.py
data:
     打率    得点     安打   二塁打   三塁打    本塁打  ...   故意四   死球    三振   併殺打   長打率    出塁率
0  0.258  42.0  123.0  24.0  2.0  13.0  ...   2.0  2.0  80.0  18.0  0.401  0.293
1  0.248  47.0  101.0  21.0  1.0  20.0  ...   5.0  1.0   89.0  11.0  0.451  0.328
2  0.234  42.0   96.0  18.0  1.0  21.0  ...   4.0  5.0  116.0  12.0  0.427  0.302
3  0.275  64.0  132.0  23.0  1.0  17.0  ...   9.0  8.0   56.0  15.0  0.433  0.333
4  0.258  55.0  115.0  18.0  1.0  22.0  ...   3.0  4.0   72.0  16.0  0.451  0.367

[5 rows x 18 columns]
score:
        PC1       PC2       PC3  ...      PC16      PC17      PC18
0 -0.875971 -2.101365  0.995824  ...  0.091389  0.044781  0.052915
1  0.162222 -2.475730  0.456208  ... -0.087854 -0.061537 -0.004547
2 -0.720338 -2.869543 -1.393736  ...  0.049439 -0.045725  0.045595
3  1.324713 -1.363621 -1.099740  ... -0.171327 -0.002819 -0.047061
4  1.255582 -1.873577 -0.189427  ... -0.132731 -0.009558  0.010578

[5 rows x 18 columns]
states:
       eigenvalue  contribution  contribution_sum
PC1     5.843945      0.324664          0.324664
PC2     3.529267      0.196070          0.520734
PC3     1.916198      0.106455          0.627189
PC4     1.287885      0.071570          0.698759
PC5     1.089686      0.060538          0.759332
PC6     0.961651      0.053692          0.884424
PC7     0.742838      0.041268          0.845692
PC8     0.598382      0.033243          0.878935
PC9     0.546412      0.030356          0.909292
PC10    0.469169      0.025965          0.934857
PC11    0.357147      0.019842          0.954698
PC12    0.267939      0.014835          0.969533
PC13    0.237133      0.013174          0.982708
PC14    0.161819      0.008990          0.991698
PC15    0.110896      0.006161          0.997858
PC16    0.033279      0.001849          0.999707
PC17    0.002890      0.000161          0.999868
PC18    0.002379      0.000132          1.000000
component:
          打率        得点        安打  ...      併殺打      長打率      出塁率
PC1  0.229009  0.264519  0.230586  ... -0.163286  0.378552  0.308549
PC2  0.393051  0.323718  0.316264  ... -0.237544  0.015644  0.189137
PC3 -0.330983  0.122401 -0.275300  ... -0.307686  0.133880 -0.051173
PC4 -0.195468 -0.006321 -0.186636  ...  0.026699 -0.262796  0.303824
PC5  0.213120 -0.120932 -0.152222  ... -0.401107  0.049583  0.360667

[5 rows x 18 columns]
```

表3：主成分得点のすべてのデータ

	PC1	PC2	PC3	PC4	PC5	PC6	PC7	PC8	PC9	PC10	PC11	PC12	PC13	PC14	PC15	PC16	PC17	PC18
0	-0.875971236911919	-2.101365096831938	-1.145719314266795	-1.790793343458527	-0.795474895299455	-0.193223599621314	0.174404172675106	0.930055880000837	0.058219676775754	0.171961852709394	0.122124930814452	-0.195109477463737	-0.108436942539671	0.615378200732496	0.049602285239837	-0.091380495497789	0.044780738472084	0.052915255196488
1	0.162222051888868892	-2.475730426498959	0.456199951261134566	-0.553154000925169	0.852806153258585	-0.139058625893308	0.477769173011143945	0.547182567338859	-0.021533912396668284	0.064131720008951481	0.280908186177149874	-0.019403035591495571	-0.751837963545818	0.264437226139107715	-0.247927141324069557	-0.087854278930275336	-0.065136784815922	-0.004546779197511078
2	-0.720323659281288	-2.809542740309623	1.381735880141943	-1.449173063193937	-0.218087338817604	1.009500082480484	-0.017309980145553478	0.418323964489565	-0.236064611380583	0.230444956394041	0.016757946506220848	0.045090310873800214	-0.314489509556589877	0.099116358434346963	-0.010808899433439917	0.049438899053981	-0.045724605083828848	0.045694860871144851
3	1.124713177890164	-1.363620984565272	-1.099740432833078	-1.023881057652634	0.172764714533898386	2.188100221341598	1.536047576517645	0.694322733686938	0.411670315095442	-0.393015769479324434	-1.059255089798581	0.335438066510867727	-0.763924010843407	-0.188284637905091674	0.123586104340919558	-0.171126796785105303	-0.002818984818623545	-0.047061465574609394
4	1.255582257199282	-1.873576868899874	-0.189427177367267	0.303865596397414	0.542529884434973	0.805288891025285	-0.235898909771775557	0.234899815872209976	-0.785551192951851	1.334799762351154 5	0.302236678985742	-0.497603799587122 03	-0.314860231848745 7	0.436864723785424646	0.276152305927287 84	0.132731395954188434	-0.009549565109604688	0.010578036992764124
5	1.834171259246993	-1.437930123819549 2	2.546230022488745	0.252357712521891	-0.700018555184583232	1.341974236179194	-1.532851905016607 8	0.314625556269476	0.485776969415338 6	-0.514569705999108 6	-0.055206717814744088	-0.398925383654804 66	-0.013476751393847472	0.293038367357880 5	-0.339569447081764 61	0.089301497723510 47	-0.151786063717600 14	-0.016774626218883033
6	2.117747037921855 1	-2.670904884197024 7	0.320883184341366 04	0.244699271726026 32	-0.986714740830221 8	-0.935732341239723	1.190377992015492 7	-0.430503096322897 74	-0.245886051853354 6	-0.296269904097154 2	-0.367039968719431	0.041513443887303	0.072492314049923 18	-0.071232143220478 3	0.074069391736136 48	-0.072997832900358 26	-0.027006739351125 3	-0.050322276979466285
7	0.629423272316849	-2.293341991570294	-0.027567326413724 05	-0.677706299777104 6	-0.348140060851922 76	-0.486576660702992 13	0.683337698098354 4	-0.649274751861299	-0.617074032365261	0.016562612206147874	0.171267885653294 73	0.045081463536601 8	0.106444819538807 2	-0.266386862461798 3	0.421098274607196 07	-0.363378056050537 1	-0.052653691928552 2	0.036861730954878 38
8	1.262918878693843 4	2.578381840126150 2	-0.002303049876595 718	2.693076936486284	-1.382717187289064	-0.247251614919553 16	-0.601338852803298	-0.413163354198733 5	1.776724146729516	-0.825428390044370 2	-0.741208147790683 13	0.549295548234078	0.230473163350388	-0.267797129250261	-0.133632081986422 2	-0.242991160141554393	-0.038948801134601 73	0.075387928536798 9
9	-1.709036497906207	-0.596647202747278	-1.384158945600312 7	1.078886560797473 6	0.702277287091166	0.049955512809620795	-1.164903900577202 6	-0.867591544536637 89	0.949255536721388	0.269863191226857 6	-0.205353437003273 82	0.688065149906251	0.419455191158881 36	-0.011360119058712191	-0.269662901637413 23	-0.343074626400815 76	0.026674184727393168	-0.096321565360572
10	-0.978934145769378 9	-1.254994467504888	-0.835433179875223 42	2.067924737767587	0.399431926507890 67	-0.089015350185334 67	0.288315024864603 23	-0.102091134874573 8	0.592147292787127 1	-0.406631012370277 94	0.568167315745299 2	-0.337086970725822 67	-0.877703924229209 3	-0.256066442030296 9	0.347535957904387 7	0.027230164501846	-0.035911289145634 84	-0.078791398043045787
11	-1.088533952070576	1.670989640329802 2	-0.022082549905167 18	0.458688216169324	-0.020389601216001 328	0.944200776014023	2.779726898720435	-0.313996186475178 1	1.490958500431 28	-0.747196838937051	0.444919765607 1535	-0.848008901846505	0.945630805927 1331	1.161487220198363	0.110525440082566 23	0.122365674465835 03	-0.002807087442582874	-0.002597571737636229
12	0.353369262277216	-1.063624636866007	1.738216524470378	-0.350739037027104 35	1.564267900865267	-1.141389336926048 8	-1.209661735062833	-0.377007746422275	-0.600919350961569 8	0.386322173454242	0.300007479820713 24	0.023402295647200284	0.437101903210781 9	0.449903359451145	-0.127324626865729 68	0.299796081065729 06	-0.091718681310585 03	0.025151821646771 5
13	-4.079257479379779	0.046717176772069685	-0.157406363075697 22	0.005933896988353574 4	-0.383533148756309 5	0.799554667820636	0.285574625225269 16	-0.577384161098114 3	-1.309880337575337	-0.665474175019079 9	-0.222940421288973 34	0.233391989434914 7	0.082403948518286 31	-0.426212939738106 6	-0.066582899570587 91	0.115191849066532	0.107082399675324 3	0.037252079196994 06
14	-0.449241703247963 25	-2.060963380190229	3.376914387289217	-2.238076847829752	-0.047416535096335537	-0.729172364772738	-0.188104253013680 72	0.075045533728055 37	0.878515036985789	-1.247098045056216	0.074235504648242	-0.201933963137255	0.250150392004018 23	-0.412975613886505 67	-0.078246813536421 61	0.001530946252987 607	0.085806206586633 5	0.075387928536798 9
15	2.694866002713904	0.640485378529104 1	-1.737176664710992	-0.364287371959628 6	-0.473489178327777	-0.509553776175909 59	-1.012520014663826	0.134179112463048 1	0.200800442720666 72	0.375820715210 69	0.235877965135673	-0.210991390539525 1	0.186097487486181 82	-0.369346133242163 37	0.522733498368579 1	0.182495914669376	0.007847561191884 33	-0.006183038240379085
16	3.347481380982906 3	0.207614959096640 57	-0.029229935108995 2	-0.337502453566678 7	0.329431926507890 67	-0.089015350185334 67	0.288315024864603 23	-0.102091134874573 8	0.592147292787127 1	-0.406631012370277 94	0.568167315745299 2	-0.337086970725822 67	-0.877703924229209 3	-0.256066442030296 9	0.347535957904387 7	0.027230164501846	-0.035911289145634 84	-0.078791398043045787
17	-2.277997093693097	-1.727405103537563	0.197222578409632 1	0.152779302038096 84	0.874970387069852	-0.203765103466055 8	-0.664030923376088 6	-0.266232110964194	-0.183189941655183	-0.815887595511372 6	-0.521401295323616 9	-0.721585225688306 4	-0.576797392435184 4	0.125414726408103 78	0.421785859594481 37	-0.011614171191688e-05	0.029705779796973587	0.025466062684752218
18	1.260152993410599 6	0.613149200513545 5	-1.514373121382019 3	0.356558939053654	0.685768534399442	-0.524653857436179 5	-0.285189438753000 57	-0.572957707828923	-0.650376925765331	-0.474833984701510 6	0.088153105242193 64	0.653023547891540 4	0.435895856561856	0.430856469758222 67	0.124240253346510 05	-0.385404768014335 04	-0.034534418549790983	0.017941781493273574
19	0.360160499895461	-0.839815290978293 1	0.644513884912228 2	-0.589631990567537 2	1.181594955160442	-0.455823405496214 3	-0.547363051520676 8	0.006611497533499348	0.414582452066487	-0.167429831356682	-0.044186970580654 47	0.188330917038706 67	-0.418534893994183 75	-0.142205924545195 2	-0.096334971437928 2	0.402619726925493 1	0.011416982447430722	-0.029341404243788013
20	-0.336830869600732	3.337030141954426	3.092824203546266	-1.248768092405738	-0.879608345776405 7	0.878908345179647 5	-0.201155576345164 84	0.340737899640634	-0.926336824968226	-0.437139729702162 14	1.376823824202424	-0.454676751823516 47	0.983434631852155 2	-0.177615026620817 07	0.521159082528 01	-0.247238784411514 23	-0.016623932337454222	0.025569787414295354
21	0.577450501175808	-1.934824530630937	-0.689598466485807	-0.005412644544844779	-1.386014187380195 9	-1.500111440259381	0.380739576279657 7	0.115147652002783 15	-0.370364938118899 4	-0.444070724726975 5	0.145888289160473	0.018776661180526712	-0.117193038307062 9	0.321788405662721	-0.581005075851832	0.133410248533004 33	-0.010095571458753533	-0.019438959795629637
22	-1.516017322138054 8	2.709857241424215	-0.725116980028618 8	-0.762478404570883 7	1.411114533468298	-0.167342082093217 05	1.675496962851141	1.283855725022436 3	-0.539979835561865	-0.290296327301629 3	-0.582883312315045	0.060486048645687 82	-0.279989538408935	-0.726232137154378 8	0.742076338864119 5	0.143944919037532 5	-0.113653144562939332	0.020030397141606215
23	-1.428616095848078 2	1.159268664458916 6	-0.790607832443012	0.009849682487596953	-2.363847526868148	2.546484723391919	0.276013361488283 76	-0.668876771125664 58	-0.584722216422354	0.852472312573915 8	0.623354893900704	0.021496437550258093	-0.436183661718688 5	-0.201327124872336 92	0.612384733438483 3	0.062792865719465 38	-0.034968087538512 81	0.010784368191514347
24	2.211309838716699	-0.873926791033795	-2.463588971788825	-0.685892664289902	-0.154981455225651	-0.417658550945434	-0.170518888287447 1	-0.028240376726138793	0.646774178515506	-0.234986554676705203	0.157945757941554 7	-0.262152100251868	0.069702788636053	0.031025640781179543	0.212300875097237	-0.053299953536601 676	-0.019034899519769423	-0.009534899519769423
25	-2.623812425988119	1.497006921985165	-1.795984854661676	-0.755188851448324 1	-0.596747521034324 3	0.784350077787163 7	-1.113563620505811	-0.375394950244254	-0.311332779248832 05	1.008897112972247 5	0.438120757480377	-0.602805548506445	0.615912200875502 5	-0.159878635101479 43	-0.170740778429359 74	0.009881851731382053	0.042798823094857084	-0.042798823094857084
26	-4.055802239670291	0.513202694362723	0.423777741493555	0.617555703444331	1.241486316071099 5	0.209845174480098 8	-0.469908331412219 8	-1.305430473633474	-0.339402142742852	0.507315322016909	0.396514781483814	-0.508813717883435	-0.848826468012053 3	-0.580152365775210 2	-0.099429766051800032	-0.200039737244655	0.044773789558109 3	-0.045174262716820 03
27	3.200658639232137 7	-0.628868943207699	1.857446298259883 8	1.366065334141677	-0.921203560180273 8	-1.410220872218678	-0.219952515884520 18	-1.429488951604522	-1.169363512437940 7	0.117074604408304	0.372064565675828	-0.693069667378745	0.052694068450096644	0.130990979688025 75	0.088275116140831 86	-0.074702668240641604	0.028735225401036623	0.028178275845431
28	-0.827433909410374	0.751258058110662 4	-0.453378614507419 47	-0.519787399793183 4	-1.322254919252426 4	0.571595922803714 1	-0.590043705970179 01	0.439586503894744	0.150969175984014 8	-1.039955861672873	-0.340152272905618 4	1.785918645604074	0.008619841492055 72	-0.070098410494733 16	0.348493425066703	0.068532584795815 5	-0.010073551195298418	-0.028155404660822 1
29	3.678622655918723	-1.843946633481991	0.799455176809435 3	0.299307423887 1886	-2.026781513826527	-0.169904100942245 48	1.195597349693802	-0.917802252738557	-0.599330357746455	-0.246012219917777 78	-0.340484333074935	-0.159886349668544 5	-0.294250926223775	0.103077992522578 3	0.131249693552483 45	0.077433535635677	0.058771950100018 93	-0.119214973116918 16
30	2.846795817992257	0.078170042022835097	0.107207220104997 88	2.007699025584653	-1.569699042527189 5	0.419277582689106 05	-0.709033005599437	1.188422443139937 64	-0.127401063687352 6	0.062478851319781 6	1.233367775384 37	0.528387214297465	-0.941152448807671 7	0.470404726363246 6	0.402474351271594 45	0.012451512222480 93	0.035998734166593 72	0.020651318066674 95
31	3.310096100819572	0.220578403852240 46	0.798609688223523	-0.899951801430958 8	-0.999781911045968 3	1.302074149085232	0.414535752424481 66	-0.860518451738782	-0.841483581009859	0.475916876073167	-0.233219252569416 53	0.528070808261320 2	0.694376015317622 7	-0.249553978604033 78	-0.089503821269045 3	0.192014390949218 63	0.009103846724812353	-0.041899257415658244
32	4.951631391718596	-0.626262762211787 24	3.124802551530166	0.796888625885731	0.454737409186899	-0.025447366161642566	0.559179838161372	0.168013964661806 5	0.124715373308404 78	1.253128645381 6366	-0.941964528946586	0.289248894832005 04	-0.109666233650720 8	0.349826732474156 9	0.586958906878234	-0.182114542387919 2	0.162623436077749 7	0.058956894119286 35
33	-1.513729485350808	1.669378297925642	1.046270899570373	-0.508972413632876	0.324565894926146	-1.448235182433968	0.036771616759434049	0.102338461589883 6	-0.786919279348048	-0.145867639402943 5	0.055359149157330 72	-0.031761146222198 72	0.083247561489717 6	0.050345312884344 63	-0.725118403107185	-0.065859008716472 86	0.040211315174457616	0.022704952688193576
34	4.375689326559402	1.134945899888203 8	1.259246794929723	-1.375460236882727	0.837449881254033 9	0.598670623184361	0.155479908709839 3	0.080956203962733 21	1.294855768607041	-0.331116595043357 7	1.041893526976788	-0.926475039881367 1	-0.156412501981595	-0.996462116853814	0.041449449362797 47	-0.139731576073848 57	0.075310712405529	-0.078797404753550 54
35	1.616260692684616 6	0.235789485869670 7	-0.497705319046419 7	0.267238175391298 7	-1.006764644731665 4	-2.068454442467719	0.059523178788304824	0.047668563168256295	0.451930592982024	-0.810189449696414	0.533759265114342	-0.296887775499248	-0.400038042227835	0.135476187229958	-0.015836363994002 4	0.219427352836651 18	0.024659596626918658	-0.059509386284674655
36	-1.751069263687811	-2.710275910862926	-1.618978454481135 3	1.626077022811853 5	-0.387712166776604	-0.291693493343799 96	-0.115422575182367377	0.490058530183813 7	-0.640297309187676	-1.061545707610044	-0.377605802231850 4	-0.338079333430029 2	0.544230372209326 9	0.152756230414147 7	-0.207087165213542 84	-0.058605348074378735	0.004779811066699884	-0.091208996985607256
37	1.237920813734592	3.002542178210219	-0.641889041231353	-1.786608225731027	0.453212495680352 7	-0.642996605139661 5	-1.199228365291896	0.383084323285567 3	0.933550105226594 9	1.503044055680687	-0.810411533814746	0.042764622856957 95	0.028991142704681 03	0.033175768388287704	-0.491944917903801	-0.013088288086985532	0.043220869161591412	-0.027024770051610792
38	-3.404515621030656	-1.534839633219577	0.717331157558489 9	0.173148182511728 17	-0.421649067501633 3	1.037950408322786	0.536163716224425 5	1.481429221844808	0.020147518930170 46	0.675150859597932	-0.048136787132223 65	0.301064836074975 5	0.227761527880162 34	-0.088979283019142 46	-0.127326204726949 67	-0.108374794032331 01	-0.005366634567549928	-0.069872330656632 59
39	1.806113836915070 8	1.663252631962301	-0.748457695605857	0.576124017853208 5	0.229057122746059 68	0.619260235105913 4	-1.335530775473122	0.198339197081800 8	0.137611543616974123	-0.564515851035737 82	0.602923012084124 1	-0.099513029457715 2	0.276582189550411 64	-0.270296230659776	-0.189549277096439 73	0.237719924602652 06	0.058313939931345 21	0.024557566179013
40	2.846375779488696	-1.770431727678879	-0.785123784488044 4	2.668486528036748 2	-0.279213323591417	0.207143779374521 51	0.983687646951583	1.020573695709558	-0.261007004086615 86	1.598572737067198	0.402339885755699 73	-0.502266279433151 8	0.964763331169470 1	-0.829186921414869	-0.515762395801807 73	0.053643728046079 86	-0.001778460268011433	0.077521761241337 18
41	2.880195099591578	-0.685348524825131	0.810491317951433	0.039666199076183 07	-0.004775688587104176	0.048843035368235 72	0.211504383853913 04	0.170914922402237 55	0.257587546297559 4	-0.983871606148938 3	-0.162076825786051 65	0.271145754144265 67	0.641661236727508 4	-0.503323588736429 5	-0.199016973044807	0.059438799223879 57	0.044255934362410769	-0.009757576113786898
42	-3.914930729703489	3.285296947081282	0.233704307457306 3	0.039454640489113 39	-0.027235167429221842 7	-0.921595167651669 96	1.420448324668184 3	-0.228541157920808 4	-0.193363616886133 27	0.732718404782478	0.402427869468137 76	0.152019636146319 1	-0.540343949629139 2	0.716435654298287	-0.185600233160733 3	-0.069473371308849 49	0.032281906707110 54	0.024052674056631 16
43	2.453290566165308	0.763664119541356	-3.318525377736097	-2.272561381475778 6	-1.100063989759268	-0.011345396051196664	-0.875138856297639 1	-0.333379387666194 46	0.171845729638626 02	0.564827148607112 4	0.505981247193300 14	0.348445192475667 5	0.240734724081658	0.337587737652143 6	-0.277415197694283	-0.011387595560540 38	0.016926309293813828	-0.048195071491614734
44	-3.659816436143936	-1.315928891692507	2.386565539754512 2	0.738428971336819 6	-0.124292102009405 74	-0.628118206513385	-0.158647487341542 02	-1.711042532956198	1.843169004351970 2	1.330375258353342	-0.102205181247542 1	0.911324533514812	0.164772253987939 8	-0.035281002579113 87	0.354262465332129 4	0.107411913986355 43	-0.054464000646561 73	-0.010174101498496891
45	-2.699039132926983	0.276257409542784	-1.131518731623914	0.623732877169519 9	0.872595933599726	1.599572791052948 7	-0.797369978613386	-0.842386650562616	-0.180984010867729 33	-0.226680353896204 55	-0.234160298801119 7	-0.852959768076361	0.908577287964945	0.270951716186075 6	0.119913965824062 6	0.208314562407145 74	0.030997111377019	-0.022467604213474 54
46	-2.198428766885916	0.197907088269799 14	-1.503177433712451 7	-0.607817399624655 72	0.007040840722776	-0.546205197642701 7	-0.087263934560802 73	0.664453720146838 5	-1.129465628478510 5	0.068134123720149 46	-0.268447020449366 3	0.735163207035394	0.515704744093351	0.098675198653316 32	0.400282109953216	0.304702892998366 3	0.065074055289628 9	-0.014962087812536498
47	2.991425831199794	-2.504027921953603	-0.080961278654488 7	-1.044850783360332 4	-1.623290394264298	-0.708802197772852	-2.243086460416818 3	0.271947507793170 6	0.474978969281958 1	-0.622233499872849	0.070131768893075 1	-0.087300423326060 14	-0.341273840736014 97	0.180514744856876 7	-0.157905798582673 2	0.127524447844866 97	0.084369040459947 05	0.130831643812216 62
48	-1.103202017961275	0.164912099767270 2	1.244882642201525 8	-0.320980227008362 65	-0.141172765502139038	0.210788599836186 57	-0.782786087014475 2	0.386741598791989 5	-1.342197020029145 3	-0.248911432606024 12	0.347353528694986	0.607689703169099	0.005322415062025919	0.177871308136128 28	0.167291867853563 2	0.062476040633099 71	-0.026179521854659 58	-0.007775585115755 63
49	0.309717906953574	5.488834211977837	0.325557156053274	0.119688728847073 84	-1.158194066447764 5	0.359145140473530 63	-0.510263597586399	0.487509086313535 73	-0.050211173053134425	-0.382420202152055 13	-1.130657815885787	-0.106388816054688 2	-0.002751575771332087 6	0.065308799428634 02	-0.043078191480739 33	0.277661810417449 03	-0.011699319818349487	0.033149740961493784
50	0.075765424526073974	-0.063237952884714 14	-0.142469198147296874	-0.854303640271527 4	0.441110123662486 9	-1.290357571314491 8	-0.026697260676336 16	-0.133172670750952 54	-0.285924171562406 63	0.259953974286675 7	-0.252596611685873 2	0.222240111121587	-0.600798743283692 9	-0.681165794331829 3	0.213398634262844 4	-0.132962442176094 13	-0.002729883200743853	-0.009047939856819657
51	-3.203024699797613 7	-0.021312142164489876	0.282325742664401 35	-1.177940836340854 04	0.608785916026173	0.103455117037296 95	0.640585523944774 31	-0.222033393555844 98	1.430268765079655 1	0.709236513449436 9	0.239105403912755	-0.104613930278486 03	0.312488009869243 6	0.520428116021659	-0.003770654093695889	0.036510047204383 36	-0.006602266360911048	-0.006602266360911048
52	-2.264331191871543	2.602979743380522	2.344040470818830 3	2.464146405380546	0.630875471763003	-0.843145559071754 1	0.204672141174403005	1.982285178280030 6	-0.847979765098549	0.130426995056896	-0.428265942362656 04	-0.322428964618377 44	-0.268425423825577 6	-0.024700065829169 85	-0.307128750421461 7	-0.283696400512695 23	-0.031237872132535603	-0.030218802774811882
53	-0.126471383354420 4	-0.529788736688001 4	-1.488128857204229	-0.396595454271591 6	-1.144973775128073 8	0.953487353374716	0.334700097780042 06	-0.410133419892266	-0.225415494271725 5	0.659426283755817	-0.157854923102140 47	0.078971328241152 7	0.320434625926203 92	-0.188382480581527	0.326037629237196 4	-0.117560587429965 57	-0.053614870539940 03	0.030997111377019
54	-3.221966893373857	-0.758990427504863	1.721240790019392 6	0.712407990193927 6	0.712074925446174	0.292454534612755 6	0.825234634487175	-0.950231735230746 47	-0.414272797694459 2	-0.250415763561273	0.833535536104288 3	-0.645639934256545	0.054933614150635	-0.197199695052836 64	-0.017163145574063 317	-0.233806197398154 1	0.003530536436319888	-0.072531125468823073
55	0.338097657458001 7	4.725542308895205	-0.857779946809887	-1.473516293617536	-0.215331660882013 75	-1.414123886937935	0.103798387407203 78	0.194324762063931	0.148030819693006	0.194802539440685	-0.380535482206110 13	0.970228678986433 5	-0.077345280049937 93	0.468334209221 1302	-0.026880242742206745	-0.096099545588898 56	-0.078071683003126 39	-0.035363314156637 135
56	2.659628752177557	0.711408036506321 2	-1.039310078007525 7	1.386205085309858	0.502308837802637 4	-0.393199492772323685	-0.638166029156487 5	1.343694926887785	0.384669449342753 2	-0.499438947535934 04	1.543664307346692 5	0.645070257147460 4	0.219599258202573	0.127521418765967 1	0.097367319006377 71	-0.032583131165267289 6	-0.002876744853486304 3	0.060945655032270562

	PC1	PC2	PC3	PC4	PC5	PC6	PC7	PC8	PC9	PC10	PC11	PC12	PC13	PC14	PC15	PC16	PC17	PC18
57	-0.3804588292441381	0.6788023634370144	-1.8314491552242695	0.9938195398614396	-1.0517359486985705	-0.0521280385253576	0.06021241430675225	-1.1965153953539377	0.6981724283031805	0.4998757731151856	0.1549732603073286	-0.6824433130347557	-0.2674574419015988?	-0.5496094875833013	0.3496427344174962?	0.3384078537112?98	-0.0874522468398121	0.07685649849262247
58	5.658018799215341	0.6731101154854527	1.3186637803940753	0.4276429510733033	2.2968790967797745	0.9081658368581661	1.8400815287839525	-0.610645400030775	0.3652539788232659?5	-0.6247635824506591	-0.4627275207306117?	0.5666982002033939	-0.3312725773776749	0.1494360764033761	-0.6482314923876114	0.2511220603896407	0.0009142471238595864	0.04171705826669746
59	-0.2053051661074524?	-0.8452724929774373	-1.2457379469965493	-0.3253674778827586	-0.2954596559629924	1.7892291253581962	-1.9853789181719503	0.1921555576483528	0.6972263093068954?5	-0.6064262656568461	-0.8225988366614584	-0.9989363109141285	-0.4671571388677916	0.2809694682864458?	0.1083316224062164?	-0.3309574271220059	0.0187772413237392163	0.06272403924840825
60	-0.6955160909568394	-2.5761807191329344	-1.9664204115339551	-0.4726899468863354	0.0220267113701063?4	-0.2505343010360985	0.29623136581497?55	1.7690956328137133	1.0073384640428893	0.8166137370669119	-0.3757359934544541?	-0.1587338206078235?	0.5773280091128515	-0.2819116631744509?	-0.4096653634433021	0.0181660310431939?8	0.0068835573615255?5	0.01367999882373261?4

表4：固有ベクトルのすべてのデータ

	打率	得点	安打	二塁打	三塁打	本塁打	打点	盗塁	盗塁刺	犠打	犠飛	四球	故意四	死球	三振	併殺打	長打率	出塁率
PC1	0.2290094994030189	0.26451889764093023	0.23050615883076048	0.24781055130334697	-0.12733425027865902	0.3405841613814746	0.33868049059244306	-0.11142918806531212	-0.12667707162266834	-0.2390568031064702	0.15169131401859975	0.25230899345849?1	0.2249989466591736	0.0850889187584043	0.04123845896094554	0.16328577357500113	0.3785611603949473134	0.3005491009632734
PC2	0.2836590732258166?	0.32371001278758493	0.31262644001620696	0.16943732669355681	0.3804067269881369	-0.13701295177576972	-0.12989724235415961	0.4071325107706888?	0.3800418703858437	0.13712077843552034	-0.1205911397269230?	0.0334952401615?048	-0.1095546967795236	0.2013682384228332?	-0.1112454116039570?	-0.2375436493626929	0.0156435754742132?36	0.19813658386774588
PC3	-0.3309834859426219	0.12240071249150969	-0.2752997675831358	-0.1049921803619088	-0.0285768235886941?7	0.2786881165381426	0.12192297977299403	0.2293959402694?665	0.2511575709354774	0.0993134832321873?6	-0.1995543687852273	0.1777163240152823?8	0.0834437771546?6101	0.0795209033313223?6	0.6161138192177549	-0.3076861656795371?6	0.1387951502523499	-0.0511730023419829?6
PC4	-0.1954679592908982	-0.0003214331299882248	-0.1866536372788157?	-0.1425096775668009	-0.0333390847689661?7	-0.1210564583971991?3	0.02657855355010472?7	0.0366790906055458?6	0.0954866110078089?4	0.2520452804233433	0.5426954727794323	0.5194228898086562?1	-0.0961494181266187?7	0.1037306619225846?6	-0.1331929675479573	0.0260693044774517?8	-0.2027957158946184?8	0.3038239254024626
PC5	0.2131282942303?695	-0.1209315095863073?4	-0.1322224583125878?2	-0.0870493201185653?2	-0.2878553782791266	-0.0901595759632167?9	-0.2482868834698566?7	0.0027552674856004397	0.0131074878769672?3	-0.0953930376145900?6	-0.2947540993134476	0.2169972969205259?4	0.3220160275306537	-0.4191908899432231	-0.2012077489229961?7	-0.4011070837089216	0.0495833077488319	0.3606672798551185
PC6	-0.0243074296902519?7	-0.1255083607675156?4	-0.1670171314436455?2	-0.1231593392561839?9	0.0450306676645536?5	-0.0523288673822490?7	-0.0809617509300866?6	-0.0696863453887596	-0.1843507278130855	0.0779812837744366	-0.3497203095642?949	0.0345048723154567?6	0.3716606731941699	0.7545225616636725	-0.1429155975?209324	0.1051189887777444?1	-0.0243103268786281?8	0.1461266958358584
PC7	0.0850656755303934	-0.0917230881034696	0.1802656611542789?2	-0.4510511671888482	0.2078152965183874?2	0.0815582329751916?6	0.1211034982011605?2	0.3375450420900?106	0.0588083045316055?5	0.1335972686943055	0.2520004042924434	-0.1292454707640853?8	0.6237924107043141	-0.1905090015160?741	-0.0054169685189847?65	0.1582084554672625?6	-0.0141826471003?0841	-0.1333412406240443?7
PC8	-0.2414345501353167?6	-0.2001542995425?8?6	-0.0173623?99651?125	0.3931508963917?413	0.2459603676349696	-0.2483498361753756	-0.1098575758592614?8	0.2028261497689?357	0.0937845578196?726	-0.5749838141814?408	-0.0339223043372479?1	0.2339224963432987?3	0.2280589947954?0?63	-0.0809441695157?266	0.0834429411?78?745	0.2587372684376?228	-0.2058683217878972?7	-0.0373420906042829
PC9	-0.0635031720469605?94	-0.0095857592010640?8	0.0939357237?604482	0.6030581617323625	-0.3023073?3698706463	-0.1260332075046178?	-0.0466421198726525?25	0.1183260836017971	-0.1389508836539981	0.5804919769206139	0.0270795084125?6494	-0.0188882461527367	0.3075399875?54333	-0.0542634451139434?2	0.1656004791386362?6	0.1096971985045?354	-0.0756838662398?036	-0.1071652?140742175
PC10	-0.0625297421293?735	0.1727045854?0?25823	0.0762245382043?252	-0.1589904546?420?96	-0.0204099467777?0176	0.0729207826554337?8	-0.0478906663166865	-0.0385969852?5?16431	0.1693237?1?180?949	0.2565983624943242	-0.4991762?27829?076	0.2392696?0?450483?4	-0.1188572834940?938	-0.2656133527036?54	0.0183142722?1543023	0.6540529825409648	-0.0319836829?008?07	0.1094?7150228616163
PC11	0.0676817078706?565	0.0466975691?2603656	-0.1689936332470?715	0.0360933004060?8126	0.6545581541159812	-0.0776887380627775	-0.0029511169787299564	-0.1224300874993375?6	-0.5672285495?9?231	0.1857041099221909	-0.0525497662?183646	0.1185905010027879	-0.0208405053521399?2	-0.2249616533435?6033	0.2261731775?968?636	-0.0853510150885?1989	0.1019841137286?7625	0.1447612595556?3623
PC12	0.2?748886158502313	-0.5145904?4?1676?59	-0.1668453581637072	0.1461833338369647?2	0.1916146849?68?524	-0.0254331666?1976?142	0.0429197049?1133?19	-0.3491051?3?27?2104	0.1629263091?6339518	0.0977857335?335404	-0.1042577102661?934	0.0333753104882606	0.0105370803124609?7	0.2044505?1?0?988?64	0.1?24405319?6?87?71	0.2329813556999893	0.1652?87637161?378?	
PC13	0.3?6?82?7?3258?2?94	-0.1285085622?0?0?268	0.0764769099?3619?48	-0.1866152?0?427?0115	-0.2?0?8?1663?47?2?05	-0.2?0?66?70?93?24?94	-0.2?0?4?2?0?0?6?3?15?27	0.2?9?8?71?48?2?3?146	-0.2?5?0?4?2?5?1?4?3?2?37	-0.1?7?6?0?5?6?3?2?3?7?99	0.1?0?5?1?5?6?4?7?7?006	-0.0?6?9?8?7?6?9?1?3?0?98?3	-0.1?9?6?0?2?5?1?7?2?6?2?6?3	0.1?1?7?5?8?7?0?7?5?0?8?4?3	0.5?4?4?1?0?1?4?3?7?1?9?1?4?73	0.1?9?1?4?9?2?5?5?0?6?2?7?45	-0.0?9?1?6?8?7?1?8?0?7?6?0?5?8?8	0.2?7?2?9?0?9?3?3?7?8?4?7?3?8
PC14	0.0009586997816005?34	-0.3626676?4?1451979?3	-0.3012902877?3?4?5?4	0.1322423106406?86	-0.0219840?8?05?01?3?03	0.1607?8?5?0?2?1?6?9?1?36	0.2?8?0?9?7?3?6?3?7?5?3?3?6	0.6002?5?02?1?0?8?9?0?6?85	-0.1397?6?1?3?8?0?4?3?6?84	0.0?6?1?8?6?5?2?0?3?7?7?2?7	-0.0?9?3?5?5?0?1?5?9?1?0?2?7?7	-0.0?5?2?6?6?2?5?6?1?6?3?8?1?6	-0.2?5?9?7?5?1?0?4?8?2?8?1?8?8	-0.0?3?9?1?7?4?7?2?5?4?0?1?2	-0.3?1?2?3?1?5?2?1?6?9?7?8?1?85	0.1?0?6?4?6?3?8?4?9?0?7?0?8	0.2?3?7?6?2?2?1?0?2?3?1?4?9?2?7	0.0?6?7?2?2?4?0?8?7?2?4?0?4?2?2?3	0.2?9?3?4?5?2?3?9?0?7?9?1?9	0.0?0?8?7?2?0?0?1?0?9?5?4?9?3	
PC15	-0.0183704542?5?6?0?387	-0.3990?675?25?5?5?467	0.4969?14696?3?19?366	-0.0851496?5?0?6?92?4?09	-0.0?3?1?5?1?4?0?0?5?9?1?2?4?7?5	-0.0?9?1?5?3?0?9?9?7?8?1?9?4?8?9	0.5?8?2?9?5?6?1?7?4?1?8?7	-0.0?3?9?1?8?9?4?5?1?7?9?4?8	-0.0?6?5?4?0?0?5?3?0?6?8?2?7?0?4?5	0.0?4?5?8?3?7?9?9?3?1?7?8?6	-0.2?5?7?0?8?7?7?3?9?3?7?1	0.2?2?2?9?1?3?8?1?2?0?3?5?8?2?3?7	-0.1?0?5?7?4?6?4?7?6?4?2?3?3?0?7?6	0.0?1?8?2?0?2?2?9?5?8?2?9?7	0.0?6?5?2?2?2?1?8?3?0?3?8?5?2	-0.2?3?9?1?5?2?7?4?0?8?7?2?0?4	0.2?4?9?1?5?9?7?3?1?7?8?4?3?8	0.0?0?7?8?7?2?0?0?1?0?9?5?4?9?3
PC16	-0.1?7?9?6?6?1?3?8?9?7?4?4?1	-0.3?5?5?4?3?8?9?6?1?8?1?6?0?3	0.4?3?8?3?7?0?1?4?7?6?0?8?7?5?6	-0.0?1?3?4?8?6?8?6?3?3?0?7?9?6	0.0?5?7?3?7?9?4?4?5?6?6?7	0.4?2?7?6?4?0?2?2?8?0?6?7?0?7	-0.5?6?1?5?0?0?8?5?3?9?7?3	0.1?8?5?1?6?4?4?9?5?6?9?9?7	-0.1?0?5?2?9?9?3?2?6?6?1?9?0?9	0.6?0?7?3?6?6?2?7?4?8?8?4?4?4	-0.1?0?5?6?2?7?3?3?3?9?7?1?2?6?5?3?5	0.2?1?9?0?6?5?3?9?9?7?2?6?3?3?5	-0.2?9?5?5?4?2?7?3?6?4?8?0?4?7?1	-0.0?1?0?6?2?9?5?2?9?2?6?4?1?7?6	-0.0?1?0?0?2?5?2?9?2?6?2?8?1	0.0?0?2?4?5?5?3?6?9?8?1?6?0?9?6	0.4?8?3?6?3?6?6?4?1?0?6?7?6	-0.5?0?7?9?7?1?8?6?9?0?6
PC17	0.5?5?9?2?5?6?8?0?2?9?2?1	-0.0?1?8?2?9?9?4?4?3?1?3?0?9?1?9?6	-0.2?4?6?5?4?4?6?6?3?5?1?6?5?7	0.1?1?2?4?6?2?9?8?4?5?4?9?1?0?4?6	0.6?2?7?6?5?7?9?2?1?0?7?5?6	0.4?5?4?1?1?7?7?4?1?3?2?7?6?2	-0.0?1?7?0?5?5?9?8?5?2?0?5?7?4?1	0.0?1?6?7?0?0?8?5?2?2?8?0?4?3?2	-0.0?2?7?5?4?1?7?3?6?4?8?0?4?7?1	0.2?7?3?4?7?3?4?8?0?4?7?1	-0.0?2?7?5?4?7?3?6?4?8?0?4?7?1	0.1?8?5?0?5?3?0?0?9?2?8?6?8?5?1	0.0?2?2?7?5?6?2?5?1?6?4?5?8?4	-0.0?5?8?6?2?6?7?0?5?6?5?6?1?2?5	-0.0?1?6?5?2?2?7?1?4?5?8?1?4?1?6?7?8?6	-0.4?8?3?2?6?3?6?6?4?1?0?6?7?6	-0.5?0?7?9?7?1?8?6?9?0?6
PC18	0.2?1?1?6?2?8?4?6?7?2?4	0.0?1?4?6?0?5?3?1?8?4?5?6?3?7?6	-0.0?1?6?7?4?4?1?7?5?6?2?1?5?2?7	-0.1?4?0?9?4?1?7?6?9?1?3?4?1?9?2?5	-0.0?7?2?6?1?4?0?6?9?2?3?0?9?8	-0.4?4?7?4?2?4?9?7?1?9?6?7?5?1?6	0.0?1?9?5?7?3?0?9?5?2?3?9?4?0?2?9?7	0.0?1?6?7?0?0?8?4?1?4?2?4?3?9?-0?0?1?7?7?5?5?9?8?5?2?0?5?7?4?1	-0.0?0?6?6?2?7?4?0?7?9?5?3?6?9?3?7?4	-0.0?2?7?5?4?1?7?3?6?4?8?0?4?7?1	-0.0?3?3?4?2?1?5?8?3?1?6?8?7?2?2	-0.0?1?4?1?5?9?6?5?4?7?3?6?9?4?4?6	-0.0?1?0?0?2?9?5?2?9?2?6?2?8?1	0.0?0?2?4?5?5?3?6?9?8?1?6?0?9?6	-0.4?8?3?2?6?3?6?6?4?1?0?6?7?6	-0.5?0?7?9?7?1?8?6?9?0?6

また、各選手の成績と各成績を第一・第二主成分でプロットしたものをそれぞれ図3、図4に示す。

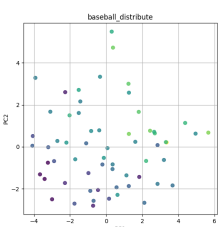

図3：各選手の成績について第一・第二主成分でプロットしたもの

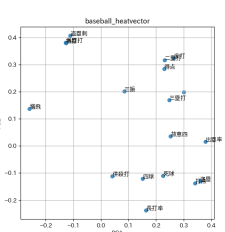

図4：各成績について第一・第二主成分でプロットしたもの

成績と主成分との関係を見ると、出塁率、盗塁、打点など、足が必要な成績が第一主成分の係数が大きく、本塁打、二塁打など、パワーが必要が成績が第二主成分の係数が大きくなっている。

そのことから、野球選手の成績を決める要素の第一主成分は足の速さ、第二主成分はパワーだと考える。

ポケモンの個体値の分析

ポケモンのデータには、名義変数として、abilities、classification、name、japanese_name、is_legendary、typeが、

間隔尺度として、generation、pokedex_numberが、

ほかの変数に大きく依存する変数として、against_bug、against_dark、against_dragon、against_electric、against_fairy、against_fight、against_fire、against_flying、against_ghost、against_grass、against_ground、against_ice、against_normal、against_poison、against_psychic、against_rock、against_steel、against_waterが

含まれるため、これらのデータを削除し、次の変数で主成分分析を行った。

- attack
- base_egg_steps
- base_happiness
- base_total
- capture_rate
- defense
- experience_growth
- hp
- sp_attack
- sp_defense
- speed

実行結果

ソースコード、固有値・零与率・累積零与率、主成分得点、固有ベクトルをそれぞれプログラム4,出力3,表5,表6に示す。

プログラム4：ソースコードpokemon_analize.py

```
"""
pokemon.txtを主成分分析する
"""
import pandas as pd

from src.pca import pc_analyze
from src.read_data import read_file

if __name__ == "__main__":
    # ファイルの読み込み
    res = read_file('output/pokemon.txt', 'shift-jis')
    data = pd.DataFrame(res[1:], columns=res[0])
    # 他の比例係数に大きく関わる変数を削除する
    data = data.drop(columns=['against_bug', 'against_dark', 'against_dragon', 'against_electric',
                              'against_fairy', 'against_fight', 'against_fire', 'against_flying',
                              'against_ghost', 'against_grass', 'against_ground', 'against_ice',
                              'against_normal', 'against_poison', 'against_psychic',
                              'against_rock', 'against_steel', 'against_water', 'base_total'],
                     axis=1)
    # 名義変数、もしくは不向に従い変数を削除する
    data = data.drop(columns=['abilities',
                              'classfication', 'name', 'japanese_name',
                                  'generation', 'pokedex_number'], axis=1)
    data = data.drop(columns=[], axis=1)
    data = data.drop(columns=['type1'], axis=1)
    #data = pd.get_dummies(data, columns=['type1'])
    data = data[data.is_legendary == '0']
    data = data.drop(columns=['is_legendary'], axis=1)
    # 欠損値が含まれる行を削除
    data = data.dropna(axis=0).astype('float64')

    print(f"data:\n{data.head()}")
    # 主成分分析を行う
    pc_analyze(data, 'pokemon')
```

出力3：pokemon_analize.pyの出力結果

```
$ pipenv run python3 pokemon_analize.py
data:
   attack  base_egg_steps  base_happiness  ...  sp_attack  sp_defense  speed
0    49.0          5120.0            70.0  ...       65.0        65.0   45.0
1    62.0          5120.0            70.0  ...       80.0        80.0   60.0
2   100.0          5120.0            70.0  ...      122.0       120.0   80.0
3    52.0          5120.0            70.0  ...       60.0        50.0   65.0
4    64.0          5120.0            70.0  ...       80.0        65.0   80.0

[5 rows x 10 columns]
score:
        PC1       PC2       PC3  ...       PC8       PC9      PC10
0 -0.735032  0.039927 -0.970165  ... -0.980489 -0.916745 -0.596271
1  0.319958 -0.321832 -0.169041  ... -0.515883 -0.586317 -0.376433
2  2.928888 -1.082753  0.446791  ... -0.884615  0.507171  0.130238
3 -0.967884  0.176732 -0.789713  ... -1.077591 -0.886046 -0.369526
4  0.203343 -0.265664 -0.912633  ... -0.606485 -0.522358 -0.044526

[5 rows x 10 columns]
states:
       eigenvalue  contribution  contribution_sum
PC1     3.161814      0.316181          0.316181
PC2     1.481989      0.148199          0.464372
PC3     1.173779      0.117378          0.581750
PC4     0.986909      0.098691          0.680351
PC5     0.859388      0.085939          0.766290
PC6     0.764899      0.076490          0.840780
PC7     0.514127      0.051413          0.892193
PC8     0.425257      0.042526          0.934718
PC9     0.378982      0.037898          0.972616
PC10    0.273836      0.027384          1.000000
component:
        attack  base_egg_steps  base_happiness  ...  sp_attack  sp_defense     speed
PC1  0.382103        0.235464       -0.132575  ...   0.368410    0.383839  0.226599
PC2  0.062425        0.492725       -0.021875  ...   0.169950   -0.224713 -0.183362
PC3  0.018480        0.048316       0.021564  ...  -0.297496    0.230436 -0.710861
PC4  0.159192        0.002205       0.468753  ...  -0.173990   -0.259598 -0.193867
PC5 -0.024965        0.598358       0.060594  ...   0.257282    0.295587 -0.208322

[5 rows x 10 columns]
```

表5：主成分得点のすべてのデータ

	PC1	PC2	PC3	PC4	PC5	PC6	PC7	PC8	PC9	PC10
0	-0.7350322852831072	0.039927238172694834	-0.9701647450887583	-0.2250346536758574	0.5818423968295411	-0.2960686372969366	0.12381133530853799	-0.9804888291522917	-0.9161745025092618	-0.5962709502589276
1	0.3195979801233603	-0.3218324843473936	-0.1690410137220122	-0.2124724876761518	0.4995707203422?955	-0.4444488332987?696	0.08298465138052682	-0.5158829343769425	-0.5863169631419943	-0.3764329470347796
2	3.0268077249880494	-1.0827529301161332	0.4467905529450297	-0.6568579593723253	-0.0424899757187763464	-1.2166390573017	-0.0016573754263114243	0.0846152353113536?9	0.5077113093612437	0.13033021678953885
3	-0.9670835829623665	0.17673222438737?352	-0.7897129165465488	-0.2827798552415363?	0.1624433132196785	0.0149902677914051?9	0.3761124556?16845	-1.0773906149337589	-0.8860480307477352	-0.3695262061858647
4	0.2033430109?1991817	-0.2456642?5373?143962	-0.9126333883742564	-0.2124638115491501	0.1714645424853124	-0.1742716924598937	0.2144522924607257?5	-0.6054845565082906	-0.5233582141475349	-0.0445203102455?406
5	3.0992795?9138?808	-1.2868039151?844024	-1.3426941?9162328	-0.7383226657274313	0.4475968?2825284?9	-1.2943076720012185	-0.7318779?73541?919	-0.1101396324468?998	0.8547?5660278?105	-0.3846959300168234
6	-0.8011004562?13?53	0.1414?74?3569?3352	0.4258749?1263?24174	-0.2329642454423317	0.2?6638?1?4?80?008	-0.2073946875?37927	0.4831292?48?145986	-0.9191?73?7?2?66?49	-1.0367?74?56?8425	-0.3437?4555?11?497
7	0.3050808282634826	-0.2253?0?1?21?5?4532	0.3559599?523?072?36	-0.2257?2?1?8?5?348?296	0.1?44?4?0?0?2?0?458	-0.3562533?2?24868?53	0.4?4?2?5?5?3?0?4?6?24	-0.4385650?24?67?34	-0.6?8?2?4?5?2?2?9?8?43	-0.1?2?4?6?2?9?8?0?3?2?5
8	3.0?1?4?4?8?3?1?7?69	-1.0?3?4?2?7?2?8?0?4?8?8	0.2?6?3?5?7?5?3?0?2?6?9	-0.6?2?4?7?3?7?2?9?6?8?2?4	-0.0?8?6?0?1?2?9?4?3?1?6?6?3?1	-1.2?7?0?4?3?3?2?6?4?3?5?9?1	0.3?4?9?5?1?2?8?1?6?5?4?1?0?6	0.6?8?1?0?9?3?4?6?5?7?5	0.5?3?8?7?9?2?4?6?3?5?5?2?6?5	0.1?3?8?3?5?4?6?9?8?8?1?5?1?9?4?3
9	-1.8?5?1?4?8?4?1?7?1?7?9?6?9	0.4?2?3?5?5?3?7?8?3?4?9?0?4?9?3	-0.0?9?4?3?5?5?8?9?2?0?5?1?9?1?8	0.2?8?2?3?1?5?6?2?7?5?3?1?0?6?5	0.1?7?6?9?1?1?8?0?8?4?8?0?9?6	0.1?8?7?4?5?2?8?0?8?6?9?5?1?3?4	-0.0?7?2?3?4?8?0?0?5?8?0?3?1?6	0.3?1?4?6?1?3?0?7?9?8?4?2?5?9	0.0?1?1?9?8?3?4?6?9?8?8?1?3	0.4?0?2?7?3?2?8?6?4?9?1?6?5?8
10	-2.8?4?3?6?8?9?8?5?2?5?7?6	0.1?8?8?2?9?4?1?2?7?2?8?7?4	0.5?1?6?4?5?6?3?9?2?8?3?2?2	0.2?5?0?9?9?6?6?5?5?3?4?5?8?5?1	0.1?6?8?7?1?6?8?6?5?8?9?1?2?7?7	0.2?0?2?9?1?5?1?8?3?2?8?3?6?5	0.0?0?3?1?0?4?6?0?4?9?1?0?0?6?1?4	-0.7?9?4?6?2?3?5?1?6?4?3?5?9?6	0.9?1?4?9?7?3?2?6?5?8?6?9?3?7?6	0.5?8?9?5?3?6?1?2?4?5?0?4?2
11	-0.0?1?8?2?6?5?3?9?6?4?8?7?3?1?5?4?6	-0.9?0?4?3?6?3?2?4?0?5?6?3?7	-0.7?5?1?8?3?7?8?2?8?5?4?2?7	-0.5?6?5?3?3?8?1?2?2?4?8?8?8?2	0.7?2?6?3?4?6?9?6?1?4?9?5?1	-0.6?1?4?7?9?1?6?0?9?2?6?8?8	-0.2?0?3?7?9?7?4?9?7?4?7?3?9?2	-0.3?4?0?8?6?8?3?5?9?0?4?8?3	-0.9?1?4?9?7?3?2?6?5?8?6?9?3?7?6	-0.2?0?8?4?0?6?1?2?5?7?1?4?8?9
12	-3.8?7?1?8?5?7?1?5?3?1	0.4?5?3?9?4?6?0?6?9?2?9?4	-0.5?2?5?9?9?4?2?6?7?2?6?8?3?5	0.1?8?7?3?8?0?0?5?8?6?9?7?0?3	-0.2?5?1?2?7?8?6?3?4?3?2?0?0?3	0.2?8?3?5?8?5?7?1?1?9?8?5?5	-0.0?0?6?1?8?5?7?3?9?4?1?7?6?4	0.2?8?1?9?5?8?9?1?6?8?5?8?7?2	0.0?8?2?7?8?2?9?4?8?0?7?5?2?4	-0.2?7?0?2?2?7?4?9?6?5?7?9?0?6
13	-2.8?5?4?2?0?9?4?8?4?7?5?9?9?4	0.2?1?9?1?2?5?9?0?3?5?3?3?2?2?2	0.3?3?0?8?8?2?3?5?8?1?5?7?2?6?5	0.1?5?5?9?7?1?0?8?3?4?2?9?7?1?5	0.0?3?4?9?0?1?9?5?4?3?9?6?8?2?6	-0.6?1?4?7?8?9?1?2?0?9?2?6?8?8	-0.2?0?3?7?9?7?4?9?7?4?7?3?9?2	-0.3?4?0?8?6?8?3?5?9?0?4?8?3	0.9?1?4?9?7?3?2?6?5?8?6?9?3?7?6	-0.2?0?8?4?0?6?1?2?5?7?1?4?8?9

表6：主成分得点のすべてのデータ

	PC1	PC2	PC3	PC4	PC5	PC6	PC7	PC8	PC9	PC10
0	-0.7350322852831072	0.039927238172694834	-0.9701647450887583	-0.2250346536758574	0.5818423968295411	-0.2960686372969366	0.12381133530853799	-0.9804888291522917	-0.9161745025092618	-0.5962709502589276
1	0.3195979801233603	-0.3218324843473936	-0.1690410137220122	-0.2124724876761518	0.4995707203422?955	-0.4444488332987?696	0.08298465138052682	-0.5158829343769425	-0.5863169631419943	-0.3764329470347796
2	3.0268077249880494	-1.0827529301161332	0.4467905529450297	-0.6568579593723253	-0.0424899757187763464	-1.2166390573017	-0.0016573754263114243	0.0846152353113536?9	0.5077113093612437	0.13033021678953885
3	-0.9670835829623665	0.17673222438737?352	-0.7897129165465488	-0.2827798552415363?	0.1624433132196785	0.0149902677914051?9	0.3761124556?16845	-1.0773906149337589	-0.8860480307477352	-0.3695262061858647
4	0.2033430109?1991817	-0.2456642?5373?143962	-0.9126333883742564	-0.2124638115491501	0.1714645424853124	-0.1742716924598937	0.2144522924607257?5	-0.6054845565082906	-0.5233582141475349	-0.0445203102455?406
5	3.0992795?9138?808	-1.2868039151?844024	-1.3426941?9162328	-0.7383226657274313	0.4475968?2825284?9	-1.2943076720012185	-0.7318779?73541?919	-0.1101396324468?998	0.8547?5660278?105	-0.3846959300168234
6	-0.8011004562?13?53	0.1414?74?3569?3352	0.4258749?1263?24174	-0.2329642454423317	0.2?6638?1?4?80?008	-0.2073946875?37927	0.4831292?48?145986	-0.9191?73?7?2?66?49	-1.0367?74?56?8425	-0.3437?4555?11?497
7	0.3050808282634826	-0.2253?0?1?21?5?4532	0.3559599?523?072?36	-0.2257?2?1?8?5?348?296	0.1?44?4?0?0?2?0?458	-0.3562533?2?24868?53	0.4?4?2?5?5?3?0?4?6?24	-0.4385650?24?67?34	-0.6?8?2?4?5?2?2?9?8?43	-0.1?2?4?6?2?9?8?0?3?2?5
8	3.0?1?4?4?8?3?1?7?69	-1.0?3?4?2?7?2?8?0?4?8?8	0.2?6?3?5?7?5?3?0?2?6?9	-0.6?2?4?7?3?7?2?9?6?8?2?4	-0.0?8?6?0?1?2?9?4?3?1?6?6?3?1	-1.2?7?0?4?3?3?2?6?4?3?5?9?1	0.3?4?9?5?1?2?8?1?6?5?4?1?0?6	0.6?8?1?0?9?3?4?6?5?7?5	0.5?3?8?7?9?2?4?6?3?5?5?2?6?5	0.1?3?8?3?5?4?6?9?8?8?1?5?1?9?4?3
9	-1.8?5?1?4?8?4?1?7?1?7?9?6?9	0.4?2?3?5?5?3?7?8?3?4?9?0?4?9?3	-0.0?9?4?3?5?5?8?9?2?0?5?1?9?1?8	0.2?8?2?3?1?5?6?2?7?5?3?1?0?6?5	0.1?7?6?9?1?1?8?0?8?4?8?0?9?6	0.1?8?7?4?5?2?8?0?8?6?9?5?1?3?4	-0.0?7?2?3?4?8?0?0?5?8?0?3?1?6	0.3?1?4?6?1?3?0?7?9?8?4?2?5?9	0.0?1?1?9?8?3?4?6?9?8?8?1?3	0.4?0?2?7?3?2?8?6?4?9?1?6?5?8
10	-2.8?4?3?6?8?9?8?5?2?5?7?6	0.1?8?8?2?9?4?1?2?7?2?8?7?4	0.5?1?6?4?5?6?3?9?2?8?3?2?2	0.2?5?0?9?9?6?6?5?5?3?4?5?8?5?1	0.1?6?8?7?1?6?8?6?5?8?9?1?2?7?7	0.2?0?2?9?1?5?1?8?3?2?8?3?6?5	0.0?0?3?1?0?4?6?0?4?9?1?0?0?6?1?4	-0.7?9?4?6?2?3?5?1?6?4?3?5?9?6	0.9?1?4?9?7?3?2?6?5?8?6?9?3?7?6	0.5?8?9?5?3?6?1?2?4?5?0?4?2
11	-0.0?1?8?2?6?5?3?9?6?4?8?7?3?1?5?4?6	-0.9?0?4?3?6?3?2?4?0?5?6?3?7	-0.7?5?1?8?3?7?8?2?8?5?4?2?7	-0.5?6?5?3?3?8?1?2?2?4?8?8?8?2	0.7?2?6?3?4?6?9?6?1?4?9?5?1	-0.6?1?4?7?9?1?6?0?9?2?6?8?8	-0.2?0?3?7?9?7?4?9?7?4?7?3?9?2	-0.3?4?0?8?6?8?3?5?9?0?4?8?3	-0.9?1?4?9?7?3?2?6?5?8?6?9?3?7?6	-0.2?0?8?4?0?6?1?2?5?7?1?4?8?9
12	-3.8?7?1?8?5?7?1?5?3?1	0.4?5?3?9?4?6?0?6?9?2?9?4	-0.5?2?5?9?9?4?2?6?7?2?6?8?3?5	0.1?8?7?3?8?0?0?5?8?6?9?7?0?3	-0.2?5?1?2?7?8?6?3?4?3?2?0?0?3	0.2?8?3?5?8?5?7?1?1?9?8?5?5	-0.0?0?6?1?8?5?7?3?9?4?1?7?6?4	0.2?8?1?9?5?8?9?1?6?8?5?8?7?2	0.0?8?2?7?8?2?9?4?8?0?7?5?2?4	-0.2?7?0?2?2?7?4?9?6?5?7?9?0?6
13	-2.8?5?4?2?0?9?4?8?4?7?5?9?9?4	0.2?1?9?1?2?5?9?0?3?5?3?3?2?2?2	0.3?3?0?8?8?2?3?5?8?1?5?7?2?6?5	0.1?5?5?9?7?1?0?8?3?4?2?9?7?1?5	0.0?3?4?9?0?1?9?5?4?3?9?6?8?2?6	-0.6?1?4?7?8?9?1?2?0?9?2?6?8?8	-0.2?0?3?7?9?7?4?9?7?4?7?3?9?2	-0.3?4?0?8?6?8?3?5?9?0?4?8?3	0.9?1?4?9?7?3?2?6?5?8?6?9?3?7?6	-0.2?0?8?4?0?6?1?2?5?7?1?4?8?9

	PC1	PC2	PC3	PC4	PC5	PC6	PC7	PC8	PC9	PC10
14	0.9100813374381306	-0.5888488771777074	-2.02615613251551	0.09519533240031988	-2.5013032629932415	1.577668173100196	1.513976852202701	1.4115427889417933	-0.5257144636668051	-1.3763440811096483
15	-3.1297158597404557	0.41136442041997967	-0.36144295020630385	0.09075839794390604	-0.33324116216487093	-0.3352790357218729	0.05908264409729661	0.4081776749382313	0.38988842977436916	0.148816117246128
16	-1.0973260420459328	-0.16369451486030065	-0.527763154523047	0.3006751401493856	-0.3616728091991884	-0.058975967964751685	0.12299751462368975	0.088854821558203	-0.5226222962385709	0.2215539321427518
17	2.09421463547489	-1.310078919487582	-1.9414257130928747	-0.4060815795156336	-0.11137067490503426	-0.928975061578403	-0.40404842537323393	-0.09136515307451716	0.11118645661531089	0.8493203054156523
18	-3.220684395093301	0.3252016746048322	-0.7216723542121991	-0.32082409800002804	-0.7759741192461084	0.11797753304611816	0.4029403006075247	0.5521371628079446	0.4790971913014056	-0.08539876914781099
19	-0.35035221017771734	-0.6323194758310338	0.06699633838384644	0.086816361687955	-0.3945896982645112	0.08024687148539478	0.4952683311515045	1.0323289065369732	-0.4354725775068345	0.02759117805839847
20	-3.0935213971904694	0.2704032898978815	-0.8376343332934755	-0.006708382021740206	-0.690177726762677	0.2366363751189745	0.05525855007949271	0.5836512703656555	0.5272794178828324	-0.03923762163702945
21	0.0989829121712182	-0.6064738052858915	-1.0398663419294791	-0.12971937433692657	-1.0181281132531936	0.30280834078081076	0.29750123638485604	0.2818679952663797	-0.21924453607458516	0.11660143480974768
22	-2.525819461531473	0.40646406074552854	-0.057313762048111776	-0.38788212306285363	-0.12198134201318662	-0.06934731006117549	0.22909881779443772	0.5084141923609982	0.9095753471861063	-0.37883636397098674
23	0.43793852238777053	-0.3644562134282831	-0.31097500707179565	-0.31263396944175625	-0.5111476941326515	0.20174524733428137	0.33495388263221637	0.16231175775403875	0.11322126980262831	-0.47445750093795486
24	-2.167082958654367	-0.43707320271763106	-1.2807666642907765	-0.6604232514395655	-0.7966715751730322	-0.40057352964643805	0.2730116764184784	0.4435682793972647	-0.05291349652217421	-0.002193568662644362
25	0.6157996814440521	-1.3371551212276975	-1.7702000323560587	-0.7081803181696741	-0.6099519950995241	-0.6029020798381745	-0.10756615350587528	0.38802436691414066	-0.2949006509591837	-0.38328857002446287
26	-2.401730718476077	0.7030861801378612	1.3782858490551853	0.270432366539904	-1.1395743938532936	0.4947673632380947	0.4233070087802096	0.4731960524868087	0.8360129505705788	0.5511430856971564
27	0.440884526812151	-0.07540840462479975	1.359929958956913	0.27475371891644496	-1.4081766042926407	0.7214540372245304	0.8531246835823734	0.3076276096692275	-0.17630790620105657	0.5753447705005584
28	-2.486403508116041	0.5634702999292753	0.29160571667445234	0.4277769772418172	0.16469873206344915	-0.1141333391043924	-0.09012031089295156	0.2706386113977596	0.47853587295239025	0.27402317612065835
29	-0.6842215101912728	0.0698140576440753	0.12332365541970557	0.44115044799910047	0.057509496777729714	0.03785880050658768	0.03326416900875182	-0.05005903962139015	-0.21371736064095165	0.2781245419040818
30	1.507293515853042	-0.5622357695157206	0.054761130958150744	0.4136707153840497	-0.19395637290957163	0.010371770054134356	0.1194893904599386	0.2426354398498536	-0.3167349047683524	0.09363492528700715
31	-2.5435421913304648	0.6209501203426796	-0.17996463564110982	0.2639044930861576	-0.06523231312901989	-0.015125730219967395	0.000446749943568631	0.2520104149084668	0.6019695294661636	-0.12895840809228698
32	-0.7187378557928297	0.12637059348683516	-0.3103759751180682	0.26580487582607476	-0.19333669854880248	0.12560141331295033	0.1380525765382976	-0.07552502261636986	-0.08183973452274618	-0.08609863543822335
33	1.4515766016561218	-0.47754552958040614	-0.5699967871847935	0.27850955091385177	-0.4701828752033694	0.08858772874570049	-0.05234301462444066	-0.07723575843189588	-0.057262958429545256	-0.053669542782831155
34	-2.461894456240474	-4.829305602805544	0.6616175865018714	1.8645328767474156	0.8009364028545357	0.11108843640825435	1.2420653600365745	-1.4584527828225184	1.2130477383971707	-0.5804861539737055
35	0.256301543663366	-5.631937674071858	0.3307743169536995	1.8292404342625996	0.6954322369117678	0.06926490416075666	1.1705127649565572	-1.653294745575759	0.7863897408174334	-0.4174794532419043
36	-1.9957046038808948	0.08031406776710856	-0.4495052827232354	-0.6318092140095423	0.4895121134270925	-0.24099232084554986	0.4577676627301158	0.2999069762782058	0.19696557567505985	-0.300782450265907
37	1.171928629915927	-0.9193999682066767	-0.9179503865053978	-0.6812858289169488	0.28515126313046313	-0.26710519149147427	0.7826191407101135	0.7239560699998812	-0.15102052467865018	0.19931531833075453
38	-2.476448866508303	-1.1518562205743565	0.3096266765012124	1.4780312957378472	0.6640819385101564	1.3581068878929505	-2.173471898684776	0.7313365815785752	-0.901978552799906	0.5211452290634104
39	0.27417302186369313	-1.9778126208314695	-0.06846619233922037	1.412995894482115	0.6016589194691994	1.2399255489141952	-2.3419317155551744	0.5133496923656012	-1.223710018310011	0.7117026339833591
40	-3.226543824970795	0.22130362803775425	-0.2774628709044582	-0.09266469204439563	-0.2296068562320637	-0.06207601107867383	0.05992300559425309	0.5825752456946375	0.3279391802304496	-0.04428492152877407
41	0.3397789360230924	-0.8087911310448106	-0.5896558982465874	-0.05798727571026895	-0.503453293214972	0.03285039141154781	0.19577615528264244	0.5380609167171582	-0.34410812036772503	0.14958847103708542
42	-1.9486892954630721	0.2841324335293015	0.4897281358726817	-0.2021680252013004	0.6515365180481151	-1.02664999062263	-0.5550626660279063	0.16827173336931867	1.1259207133103615	-0.2447370587505566
43	-0.20099171994965898	-0.14195959194881735	0.4407747208056989	-0.07460440845579347	0.4853458779341992	-0.7181921489094745	-0.4372569182370593	-0.3705360084511504	0.1865042745080653	-0.2589660296324931
44	1.4397444417996466	-0.6282790862430359	0.3294998390505602	-0.08476057855486388	0.4949809900145543	-0.8109397257486209	-0.6276253816551931	-0.582289807150833	-0.03188955311195359	-0.20010823295115482
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46	0.19805192801586877	-0.18032196228614925	1.2271092103178658	-0.0068488204396841695	-0.28004298239908804	0.06326485759862036	-0.22342254574758424	-0.3931538991759448	-0.13573271114440275	-0.8631626720607879
47	-1.8524918271373436	0.16476602543926028	0.3226289269606884	0.2256764229975027	0.2506523749683743	0.20416689257977952	-0.021968271347132758	0.3916052659840752	0.1462271336653106	-0.10319194720503204
48	0.5264071085713494	-0.6602388451796516	-1.0368002813023203	-0.35062709526604524	0.3928004445989248	-0.11018932596327025	0.02838662830962077	-0.017228736674613512	-0.1310944169252045	0.1775480256759629
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116	0.3013489236698991	-0.31884085548887153	-0.5962561435655553	-0.6161287437329338	-0.37200646186431396	-0.17240366567662757	-0.013964902111099051	-1.0411830358187986	0.16388124588437847	1.163982171185849
117	-1.9958210837324364	0.33975371560640155	0.05904278094197038	-0.18371515665949978	-0.48263286007898676	0.20545269847430997	0.40532239691824884	0.4898566735560072	0.6960073494609799	0.042487664436258815
118	0.7238413718841561	-0.5126104641309208	-0.05162450911174466	0.2605984224246481	-0.11418733410738453	0.4076488278578266	-0.025586179514334825	0.21379373706502433	-0.33044254763405656	-0.44691706257994496
119	-1.6517772839915634	0.836030895501591	-1.1994033817063143	-0.22138195002030872	-0.04852407595149285	-1.541577106346567	0.787406878972904	0.05648758981926931	0.844460612494034	0.2614482850090196
120	1.550780677464549	-0.07468445287956434	-1.4853523508635673	-0.19245059885867516	-0.2778346534799148	-1.4009662949871964	0.9385352769503778	-0.14220727007998293	0.053263815205177735	0.3855838879271081
121	1.0553042194969873	-0.6676631311811811	-0.7165118651584825	-1.7324444968251096	1.3856625805676683	-0.9136691483696248	1.005299122894408	-0.1776890230939191	-0.1493005501113955	-0.6458488965012726
122	1.3979650551410758	-0.20544949014927827	-0.6066760896063036	-0.17614607399080304	-0.7877237772819744	0.926880968333863	1.0282891131304897	0.27304306583026217	0.045580512257023094	-0.22665387996958983
123	0.9726782096900347	-0.7142041425547271	-1.730256751069085	-0.792683713377769	1.6394895800096927	-0.35052819862486223	0.047245205238611636	-0.21429185194260753	-0.12653854488941219	-0.41738800870978954
124	1.314400346001376	-0.49082214398493357	-1.4342256418764132	-0.5973260442222599	0.36906401566435415	0.2118470323748068	0.41614382445598463	-0.120189972043223	0.134047576442638	-0.2732811925598819
125	1.429655359376107	-0.4508208483816726	-1.1705670239840622	-0.4808861830638956	0.25815293388738164	0.20992290654159615	0.072023186509545	-0.2870762130065826	0.3065362260272401	-0.563917037589907
126	2.799024688980312	0.5193292956030053	-0.08667696070911181	0.3767064550535253	-2.099918181560397	-0.2261228250661686	1.3765624966236734	0.06319419106931635	0.7564515191843773	-0.4303122716464801
127	1.2461971769329427	0.34470231052853184	-0.6509862692642163	0.7935054593059476	-1.4148510404713042	-0.1428189881574767	1.5661846024875135	0.3636410949262077	-0.5348894798625791	0.3651862403241266
128	-4.09609125211875	0.6087041544121682	-0.9279892770775028	0.060655161575081 98	-1.200705353008644	-1.6741343210806905	1.0852006381525958	0.3306969033155172	-0.5933915439299672	1.0930932150171306
129	2.955386270056166	-1.187201110487082	0.5713158053152615	0.9115496122273077	-2.2543168596260954	-1.5237334901372381	0.16963117635504735	1.4646454645952787	-0.42789760307295494	-1.1928216842379515
130	2.7305857604071484	0.8390420159469122	0.3380955918993526	1.993212013458729	1.8440677986466731	0.30948746004730926	0.35111383714590616	0.37435436949233597	0.35690793838732415	0.17870459672336142
131	-1.1419638641369896	0.058165731919247884	-0.08733039846960805	-0.0991485346533989	0.30755182228875066	0.4251391814633476	0.20153995716713916	-1.0564234459834287	-1.1932049241180551	-0.28197342164104394
132	-0.2966590468084801	0.7835069524523655	0.06898740535906711	-0.09804653449723862	1.2411157930204377	1.139813309063138	0.9555494969084611	-0.7764718479577583	-0.3544016431163767	-0.4938028808507 7473
133	2.289205813502864	-0.41966956309708164	-0.22605225420419064	0.9867870308429134	2.4688263829044756	0.7122311676502512	-0.5873051876222602	0.38063888126067014	0.21170065905226826	0.33883047243193254
134	1.9543151279497117	-0.19199298349328148	-2.0344222201863156	-1.0699132128201798	1.378051907700507	0.3267110777827418	1.1203439187693531	-0.0991179701766816	0.645794185761144	0.1914090803354692
135	2.267354559756108	0.14073573366457331	-0.0426589651318131	-0.3374560457378718	0.5757760849092524	0.6761112188766119	0.15635223275078378	-0.2516504165832294	1.067576537760421	-1.809174095441982
136	0.22405504188984712	-0.4587239273914368	0.44780926406140853	-0.17889991521188334	0.6822685008320705	-0.2822052142713408	-0.4389463923862467	-0.7788183280920411	-0.553719221098906	-0.2295078642282636
137	-0.07064466997938917	0.4703662793020244	0.8967425796758763	-0.9868144150991333	0.9670127775024056	-0.23201702738856034	0.23447652242796346	-2.08753737626593	0.04011105504229949	0.575848369958441
138	1.6301985762859712	-0.10383211675592842	0.823793539347922	-0.6026418003009482	0.862946611746481	-0.30885141361057444	-0.09606427508874968	-1.377130479679021	0.5309273679653317	1.255732591306095
139	-0.1783188427578221	0.809341746095104	0.4772510043951375	-0.6748661581453973	-0.36599386416820284	0.7482937000098222	0.809254679586861	-1.6955082204920542	0.1107469344153626	-0.018578612530618693
140	1.5289656501143405	0.28897956349313997	0.3271098323348749	-0.3237149302840521	-0.7748264227305698	0.8986421794107253	0.8143129681404383	-0.6260533083320552	0.5768418870436829	-0.004406458256187677
141	3.1467428577300716	0.7503629112697449	-1.8294285324401187	0.45150707978707694	-0.8092029552520456	0.47773812442475816	2.0895111233436494	0.6915635073312268	0.9395262464759668	-0.20847944043344113
142	3.119994649006968	0.755371821367355	1.2259632461250758	3.1276258616576467	1.9918218970947013	0.9122499801299423	-0.16115411844107458	1.026587506841345	-0.05502777916758889	-0.7986726955330369
143	0.06133920284838483	3.825293361123405	-0.3769962938086429	-0.5059285794490945	0.8840347415246937	0.5040507486573937	0.08572287286063646	-0.6189205761806954	-0.9029214277559285	-0.5143069447887593
144	1.5163984009994842	3.347775718317766	-0.48197256265481478	-0.48294431875912247	0.7058913037067486	0.32131311318079775	0.024621879704297352	-0.0021984524936033796	-0.42632344099320 13	-0.23535578619767572
145	3.7855221455840886	2.7468621074313657	-0.11476739145840642	-0.2045498419898414	0.18010805982839928	0.15031747840334186	-0.4913135807808136	0.7400723424718952	0.47724241063709893	-0.33237677503989665
146	-0.7567225282520391	0.1260334940554538	0.39645886154011106	-0.2211041889116803	0.27298593011259914	-0.18205863185528667	0.5241429444401935	-0.8521549400001028	-1.0389127136743599	-0.3458286265171103
147	0.29691209696911275	-0.23034458747196693	0.32674656832115345	-0.20829636886414682	0.1714107244554684	-0.3233132025169864	0.5083369669579109	-0.3795281771527419	-0.7161201322601016	-0.1103380257277971
148	1.7519712951202124	-0.7078622302776052	0.2217703355816486	-0.18531210817417484	-0.006732713362476291	-0.5060508379935825	0.4472359738015716	0.23719394653435033	-0.23952214549737436	0.16861313286328652
149	-0.9670835829623665	0.17673224387373762	-0.7897129165465488	-0.28277985524153637	0.1624433132196765	0.014990267791405179	0.3761124556716845	-1.0775906149337589	-0.886046030477352	-0.3695262061856847
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154	1.7876164567405597	-0.5190632704116998	0.18789064252183893	0.2656109981399421	-0.6443715779489682	-0.019663713630217145	0.1279503257706041	0.05887598629763166	-0.03693095055244434	0.1577252118726195
155	-3.440640352612882	0.31788378751427054	0.5835080559546068	-0.04025905579857809	0.07808588295923014	-0.3334047893780386	-0.46904862279782955	0.18985544978968966	0.3446545966983057	-0.5920195522023837
156	-0.19392851023308164	-0.59648173267834	-0.6567378363069389	0.5217828258193471	-0.6708460999863196	0.6165507827195142	0.22937012332520318	0.5966330140408732	-0.6812727275619721	0.5084810483025741
157	-2.932366884082521	-0.1065307913769331	-0.1285565198944189	0.19000689833597226	0.5874494813227682	-0.2580611363558068	-0.1342757013501663	1.1037700929446805	0.08847368871306031	0.02567963027473103
158	0.4848410495947187	-1.271504748936088	-0.4474921480491769	0.32100589465828977	1.125676676284463	-0.4598289459757668	-0.5171014229087562	0.9575123312758872	-0.6975891527510325	0.02360040001682071
159	-3.020044144239562	-0.8403078167039645	0.057663949210693545	-1.318882176564873	0.9815402402553653	-0.031802640202632376	0.09685430485876112	1.254920106299502	0.187617713347436	-0.3705515748246694
160	-0.5078757271087945	-1.5809415944488971	-0.3061544416470598	-1.5907255862178702	0.8916477520430827	0.0904799299765296	0.7030323727884876	0.9938693176729935	-0.9239604789752249	-0.46665564486943817
161	-3.202791173037546	-0.3238310301557075	0.556831342867129	-0.5932301549667185	-0.20819246240268752	0.6401752269104626	-0.8432980037446075	0.28234471173287135	0.6727406429608427	-0.3274851152068502
162	-0.2902959981452086	-1.1015820194467265	0.8857506712655865	-0.36468447277021676	-0.3757474000192557	0.8418834161647457	-0.8162559026680187	0.0016891620889000355	-0.2763463694196783	-0.4560249205576022
163	1.1751322058468308	-1.0868475570866893	-1.404260241617248	-0.1762694866550243	-0.91899747804479	0.16402526425185165	0.6607959752292294	1.1081544386557778	-0.10161327770294658	0.6833725623357074
164	-1.4253036555354566	0.6032527423716117	-0.8407490463538239	1.147418930493269	0.7202709021531629	-0.8937524482959582	0.24798452723198122	0.6468710310960736	-0.04093887924026136	0.29731680116480325

	PC1	PC2	PC3	PC4	PC5	PC6	PC7	PC8	PC9	PC10
165	0.9769054220427784	-0.1521301720487695	-0.4569339499525038	2.045888557493883	0.9968725901142066	-0.5762704404362897	-0.2804585786203932	0.7999593016202635	-0.7947356937709854	0.546901512229195
166	-3.4940350678149206	-0.0184199030275375	-1.0069514843988792	-0.5154517440174071	-0.4458268604345378	-0.25705821457100547	0.02034058190082329	-0.1320531080845738	-0.4820685058958139	-0.5667563416498644
167	-3.7057509509163347	-4.467570913262381	0.8042228889654014	1.7116312375079277	1.1371494591814058	0.11198087531262593	1.311136399318604	-1.9523661110956687	0.7867174114924715	-1.0204576488154073
168	-3.23161647255335	-0.9083066148829072	0.2859876930445092	0.927183869199778	0.7276016975024233	1.1338885375856476	-1.8754043825856104	0.22640729869951096	-1.0408685888052132	0.34065613506127684
169	-2.9411023001125747	-0.9388072296981408	1.393056784228664	-1.2518667654089242	0.36937433459453006	-0.30646701597171966	-0.36294180218860306	0.09809554712787222	-0.5327722415898408	0.023602093564009524
170	-0.2260820057796369	-1.8418416219896478	1.1715026589829938	-1.5524039671426388	0.6222480178999473	-0.6914309121656854	-0.41799298931676065	0.06279840460982695	-0.8867660053906921	-0.18733384149146715
171	-1.801589084627037	0.11955589425380239	-0.8552673546413968	-0.5189107760227816	0.18349813173229543	-0.17675900964499536	-0.060841985715941835	-0.21641510464425107	0.5762608577621322	0.17486341226480337
172	0.7281225123732814	-0.6128591694342167	-1.076037532265896	-0.4940451749205122	-0.012762822462396529	-0.11613568777231337	0.03199199760759185	-0.2287516938198551	0.12230661755015383	0.3184403573437685
173	-2.368026764129602	0.38771315040592697	0.0025961735744154937	0.30255105759997636	0.7563971075485383	-0.5038270297384486	-0.6230115530883789	0.05202653808178191	0.6282096352437404	0.08520044359409751
174	-0.6066934403657978	-0.08731021030172563	-0.03754034960492793	0.35087261597486197	0.6867616674977252	-0.3684558541015773	-0.5754237751599359	-0.3177606886856857	-0.07387248877607928	0.03544935281395231
175	3.0048066767385886	-1.1912086030197255	0.49326811140116406	-0.24570386900186944	0.8700588053641751	-1.6119915234513242	-1.6087264608406668	-0.700787635618101	0.777142079390849	-0.050172908656204634
176	1.4473886085394272	-0.6025963804088661	0.8121978807987695	-0.12248844578006307	0.3273260052837312	-0.7301568182327887	-0.10079732458398336	-0.20767591114394526	-0.23583867869614775	-0.26050048988498564
177	-2.956247830291831	-1.0127239032278044	0.744577203037774	-0.17314004818540682	0.35280746100083316	0.6006831361243558	-0.34342097610886985	0.9064787149042157	-0.9453466936789151	0.5996203406815874
178	-0.0994980404776786	-1.8484196840869904	0.9078589742759148	-0.06255801200469399	0.3506853693190544	0.42155695944010596	-0.7481495599596192	0.737566740408562	-1.20089234552037	0.6347908311686139
179	0.2496532949456087	0.03479958908279972	2.0807016378160563	0.3940622810108781	-1.0893912073658087	0.5860387563807912	0.28978990060774573	-0.3323671106875729	-0.41156584406802627	0.01033221883402357
180	1.521906006433938	-0.7865422866375575	-0.049233790485408414	0.1961975204074246	0.627513943588312	-0.45459260363206216	-0.07623245769278357	0.3116556256065796	-0.40864767929366413	-0.16208756627473442
181	-2.930169374365206	0.578492843480322	-0.01749717786651189	-0.24123145333108692	0.4043905348222515	-0.4670478660539496	0.46229049934812133	0.5113489539185192	0.512765070021495	-0.1947811867663405
182	-1.071505861113964	0.0338232067416646	-0.6657715387307033	-0.12754927739514768	0.28882033975356863	-0.06006599133029243	0.8224430574185109	0.2686014521843114	-0.489004758704359	0.0497056901959522
183	0.82510877933055	-0.617890877805147	-0.9004263259863532	-0.26922893994485764	0.28257060665973915	-0.09632453437705454	1.3604593566659353	0.7603267839726108	-0.9189236085566777	0.23569330516602102
184	-0.5946474588958098	-0.6988873304343837	-0.5305532796259367	-0.7975247356506694	-0.3176339591605527	1.5682440457532292	0.5081813000886466	-0.22961964370853616	-0.7997445180514022	-0.0473878334642699
185	-3.6451407314813946	0.9056438344892979	0.10538851205880559	0.08589011488196403	0.39079045377484084	-0.156685940216534	0.049009536918533866	-0.2692365627185945	0.17850149020297237	-0.19933776148907492
186	0.2736415483677053	-0.38922512731233083	0.3361584331843305	0.2835313154456239	0.9427401912953526	-0.8165372498573971	-1.183422488958573	-0.20146458259253636	0.37494982019351036	-0.7169222168117522
187	-0.30262935591649515	-0.2884517680659456	-1.5728232858064324	-0.03303451053825887	-0.008450513784220138	0.4901783428106012	0.02917401330344337	-0.3712760973112767	-0.31183535878569285	0.35858087581367243
188	-3.381128179081936	0.7185483234258856	0.9175497852768888	0.6806617229767853	0.19716175964780605	0.38369202811505165	-0.5157430470981575	0.0956694285057356	0.4182212601434055	0.16061756292942528
189	0.3855646848058684	-0.3563943200478996	1.0916948520514966	0.8608775549538142	0.028994644150038	0.3664501658396891	-0.6983519535918946	0.008977327456758373	-0.17399210546999871	0.20881891888878046
190	2.0442566111456877	-0.23432712274298623	-1.7264123583928963	-1.049764823478688	1.7051861706956792	0.005064754303611752	0.45895608889199824	-0.5242714996670566	0.8436279308267388	0.050530418110325305
191	2.63786177042433	1.5376844542851615	1.406734829045793	-1.339638158221896	1.394199778708957	0.3860683116417754	0.22490769172501265	1.7495522533274033	-0.9347174066152294	0.29667263686325385
192	0.5824260519479043	1.6395839198896618	-1.8068384085712028	-0.9651975890534992	-0.5520963513414392	0.44911722739723353	-1.3427890265067302	-0.027741338115414654	-1.2932286208084742	0.14035010702406212
193	1.3955752486175075	-0.9735015708024379	1.1450191585850762	0.21236768975922835	1.1497101527888127	-0.6343168125780604	-0.9077360068663187	0.24363630390247115	-0.1270571719173236	-0.5055917929471376
194	0.9267314691948932	0.7599958041104629	-0.6546964502094931	-2.4486892345343567	0.7438308797842643	0.883321855632996	-0.9507261263762553	0.6923719040798876	-1.0645384906911763	0.1493047403557941
195	-1.1349472403541094	1.3995087980070962	-0.05183895480434186	-0.10575436352623968	1.2130580869735228	0.8663413296496637	0.07887258157777514	-0.44135329280677116	2.071805126972216	-0.23167875734174131
196	0.4489144690900949	-0.9348682496858852	1.0386422000437943	3.360871937775367	1.9174731126256899	1.554186691007164	-1.0903935809301817	1.6138993919391158	-2.116250217127573	1.609042802060063
197	0.6744173224040371	-0.5444004050948308	-0.9053650022148436	-0.166765132510575	-0.038915063728431724	0.12797937480117264	-0.17812898181310674	-0.3554225868978937	-0.07672300774193101	0.14846254864837316
198	-2.012462652088588	0.5531557063805516	1.7066393569960256	0.24137057593774466	-0.5113328241068157	0.1712855895848345	-0.24723863531177112	-0.5077192577292738	0.37600324540868435	0.4091308368017706
199	0.8000281650725666	-0.1908004144405243	1.9592532015938804	0.12282257682293772	-0.969033154977297	0.09109646048173702	0.02336218167458331	-0.6055281782259622	0.027598625252107635	1.0371878677637394
200	-0.44140636567950975	-0.3356636608226015	0.6311371742632149	0.925555492060582	0.4407175921394166	0.15191611741367209	-0.7652960251812712	0.9153519956515951	0.5005687666703864	0.49441503310725154
201	0.34380034363844764	-0.03351815526891737	0.343142923012238	-0.01749383329893279	-0.9190471767336534	0.27209981482102247	1.263943312496772	0.02770971681409935	-0.6183610109153591	0.7054620721011531
202	3.0814026065597044	-0.1541437335549443	4.29342077789259	-0.4617341445940656	-1.8779343598136076	-0.12064894605215253	0.9872641093798735	-0.7461852926649495	0.4827839600067002	1.4074525815565724
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204	0.5376986769824779	-0.8348004679598436	0.843430100637258	0.3218218211154222	-0.6969024690804059	1.6809546510965978	-1.0012308760176016	0.01064016437828554	0.1175594079335042	-0.34615814343209217
205	0.5229959316478898	-0.21345810151358313	-0.2710031834032398	-0.01778210896075156	-1.0210083205203109	0.6985395317215938	0.48022492030299146	-0.3814125627313813	-0.3406413036287159	0.2682954790152626
206	2.877440459482605	-0.2948223399012353	1.382177702083436	-0.36290560142262773	-1.6866883146103941	0.5149730170129732	0.8033229337951658	-0.09013408880426933	0.6138736224243934	-0.34480453940563277
207	1.0119114216374616	-0.7295524709339948	6.444155237987399	-3.119319318715985	0.9133393077341488	-3.6212621706600134	3.699199453471412	2.1384654434519748	-0.035400087896888144	-0.17096151187908065
208	2.9772325173379794	0.6024746697818374	1.0274035695764334	1.1405905430088568	-2.34681571664845	0.23740617425582378	1.1319321388922747	0.62005735447195	0.6376900107248786	-1.4674458338958798
209	0.6530773928285111	1.642553983353688	-1.352953841714289	-1.308623226924192	-1.192564560440559	0.6671192786407248	0.28166398918293506	1.4545584544239374	-1.402411943639383	-0.29011572163555704
210	-1.095480494748539	0.13679927784952925	0.26470278679116155	0.37861045210580146	-0.17515256731122952	0.5069259852681139	-0.37399956057514927	-0.3217076558003286	-0.09448560374242296	-0.5298504182504056
211	1.3915655836488867	-0.4786443671516543	0.36912090079508786	0.7286373675810135	-0.7735679422558259	0.6543379894208776	-0.7206179856027396	0.04529562480836644	0.19535125650675064	-0.7057361532543679
212	-2.4655308215273952	0.33106052638620403	0.28108148454393594	-0.1428068533016565	0.7587956694645298	-0.34057620651958875	-0.8425739415632144	-0.7869931530963866	0.3473796463076375	-0.22071165668124842
213	0.46816125102888	-0.4659566378155845	1.6504687133422231	-0.6500594268241879	0.4867949912078491	-0.9263667825878847	-0.2038285284340302	-0.9035807719986327	-0.12409433358077185	0.6988874874634999
214	-2.654809145675865	1.2891553473822923	-0.3523395947059658	1.1176766439088026	-0.18400974991537694	-0.540470908630111	0.37025317778090244	0.11907768012261752	0.22332359203615235	0.07962430709373221
215	0.8394116179115679	0.39954259632661004	0.3875454010727783	1.8965994042206913	-0.5193947111242116	-0.23891233466906733	-0.22770365073782656	0.051339781870008365	-0.31397632774845713	0.0619232986432807
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218	1.0849074922292627	-0.5416006050317373	0.28224526454656934	0.11963565627667369	-0.0646043153059091	-0.15017161883261215	-1.1135296030507116	-0.5688289632828823	0.45404326841224796	-0.4954208961457362
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223	3.0331075355726034	1.2887301697616107	-1.784564723803022	-1.1889235265629727	-0.2668762983568679	-1.640072974050799	-1.0980588373036553	0.5788922561986176	-0.3904711700254842	0.745854989254415
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226	1.3229495611237254	-0.28370199744087	1.3635850172765704	0.6931206604235401	-1.3056624745260281	0.6679109967252764	-0.29351549149856093	-0.2628320867164685	0.09718698575757853	0.4760758128737586
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228	1.0756311014467133	0.23768718885502296	-1.1472049835833156	0.8630208480847378	-0.4571790328852801	-0.6160488457471995	0.1503350812632199	-0.4115604247904973	-0.23283459738467155	-0.23713562350530787
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235	1.2941198571799024	0.19193446532256173	-0.1735895404289671	1.1949489529240278	-0.8501281980729997	-0.21687514882036463	1.3845514084823802	0.561702894216232	-0.8345635231669295	1.0120815166164103
236	2.132140178521779	-5.317166413724216	0.36616764421697345	5.5357510510448025	6.276723029794269	2.6230554096783716	1.119853800769801	1.666040723810327	0.2993501260977203	0.3930347591588939
237	0.10093048145872238	3.8206771166031643	0.019213270860401355	-0.21992642931846726	0.9385474076269682	0.5930585801087975	-0.02561722733417535	-0.512388364083157	-1.0012040879820305	-0.41563152586762336
238	1.474292331287893	3.38042523695262	0.17052811427170303	-0.12704599339329084	0.8355115602788362	0.3770790166839838	-0.2383116244370353	0.00615460810729957	-0.5442638820722591	-0.24438528040367727
239	5.061303647549377	2.6072776654178105	1.423885500203571	-0.24919906593206934	-0.6737532335674158	-0.024016739949104162	-0.23372515469278782	1.0559939646458976	0.9139963066402839	-0.0741042895804136
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258	-3.3575508537102854	0.3231821105188214	0.18850988087337436	0.07183901951117423	0.4881913173016974	-0.7334515601578321	-0.258613870549041	0.3897539756873646	0.17132785308103707	-0.35082716576127115
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263	1.0104713481351664	-0.7217493470522057	-0.9591650363212647	0.7411245162676847	-0.56391624426657	0.09198927806589738	-0.7557656053540743	-0.13681031267354624	-0.3744004013487024	0.002988916970748358
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265	0.4531344124277824	-0.5289742027226497	-2.1226423659321916	-0.20132095522512575	-1.1199537116107565	0.1461502454317707	0.5217235789868575	-0.22953844104001322	-0.4843935097261208	0.44528882374737594
266	-2.5104453608952535	0.24724961126779946	-1.5155507097438694	-0.4020900607616384	0.3330345565898899	0.15645039873077254	0.3033554969192896	-0.12982387421927755	0.15010084398984752	0.5593519487652824
267	0.6287929194224523	-0.5651563670644784	0.21146667404966835	-0.7108779510565634	0.37035159009543567	-0.5677029721941197	0.04160615909650468	-0.9331055663532872	-0.34526003537255895	0.833049053882074
268	-2.944383578617613	3.0604322820245544	-0.6040628882899274	-0.6641468033539406	0.35887795373108666	-1.125686798946208	-0.8958362158205018	0.6031923069243103	-0.6743527400859758	0.013682867410002311
269	-1.2314296317954228	2.5411560807883147	-0.7596148942628217	-0.8163477666008959	0.4985239669226651	-1.1736460639339774	-0.8387566970001019	0.19392411377305338	-1.3762004838190949	-0.19434110169768085
270	3.454125775469745	0.8609355924718081	-1.7481184688214348	-1.7388442687297712	0.8779557425157998	-2.506507674306992	-1.4040661161208448	0.9173580297081875	-0.29366734990228277	-0.6317176979318698
271	-2.595458924601535	-0.13075917471807025	-0.7404994550145577	-0.46494551037558934	0.35940748894993535	-0.3977214697669021	0.12075723084354252	0.2934728567674984	-0.11176287079196104	-0.008838827021530795
272	0.490623942277103	-1.0553048447330964	-0.8154363137754929	-0.44946960539956343	0.41048839028517425	-0.662673536597223	-0.37256122943749787	-0.008854915557474132	-0.33018338957469695	0.09961387568190075
273	-2.0242378595082355	1.844115355268327	0.20982581688639462	2.238551966948813	-0.07008411311753299	-3.0948480411757826	0.6860496737718481	0.6739915519355805	0.07698713248658383	-0.007648133665486664
274	0.8859149778246371	1.5768887603398647	-0.5871496488814996	2.2225612811373052	-2.166813226258232	-2.168420422643643	0.6984816873835757	-0.34237594888346434	-0.012785459780648925	-0.8130273920890797
275	-2.5263791121355217	0.963258364018565	0.5538866159068059	1.361006522172503	-0.5672236305656502	-0.9958349013421988	-0.23033628160341746	0.37540017058853703	0.4207868901615954	0.21897292127767654
276	0.08998970458194519	0.17759130881488613	-0.6813777014751946	1.0998692311162093	-1.0147845927368067	-0.706290699465162	0.5135744309724947	0.46538413581953375	-0.25624254483626624	0.6879600764939617
277	3.4483253163840515	-0.6203116757149706	-0.7359489560206028	2.715565061635851	-1.8003423198471007	0.10067727476304597	-0.9633874998478424	0.9648933036489953	0.21060266040129452	0.7314338505873752
278	-3.280091603073738	-0.8129209139937208	1.4241394613603733	-1.7549822872827896	-0.6812630216765623	1.2408383968161112	-0.35362567515709775	0.045570659363613944	0.7486406198281109	1.0761782410238465
279	-0.46313362158742255	-1.8134295700651721	-2.5426409179864122	-1.685944853239212	-1.3180023651694948	2.4004925928415797	0.5751583968120052	1.1357778834160217	0.15298356065337237	0.6870844034097574
280	-2.3282669044630357	-0.7308654083988062	0.36995977452883855	-2.0091699666238165	-1.360303906919469	2.1260526659039765	-0.3037164782470288	-1.7163275018207445	-0.7038528314909396	-1.2366789251171373
281	-2.584619346630742	0.5982642574171867	-0.2006648264555748	1.0303886483639697	0.4814004695760624	0.29666910926579393	-0.9142127327150539	-0.33868331016458686	0.06873953439382759	-0.10450983817090562
282	-0.6968459575944155	0.038257391023131124	-0.36014968588210816	1.0510204678955615	0.31933776232717614	0.2898721314873708	-0.8723161977511579	-0.19871550878108463	-0.0936113541180287	0.04959053588807142
283	1.369704246448993	-0.6142080996425989	-0.4347558762923558	0.9714778676485544	0.27226352668540404	0.17758776386798059	-0.725542394871191	0.08720601447609325	-0.3106211148414897	0.015119869508282686
284	-2.1243957498608372	2.4396654018814123	-0.15406886106427262	3.2990436583934977	-0.1731494235861435	-1.6252638678081066	0.4257010976282418	-0.028894723235662077	-0.5494352128235966	-0.514139865749967
285	0.7014578907838116	1.5816396893033968	0.04466605329626183	4.62053168339224	-0.7196834802245459	-1.1955654128273054	-0.2404319339516529	1.8403800601563496	0.36366317251245445	-0.05359882978741317
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287	-1.3591419844638357	0.12228604090305144	2.554943066208828	-1.3264551026907998	-0.17156295620114487	-1.3272689164675973	0.9050932065415858	0.44652220506706364	1.1240226325690692	0.6471262604121574
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289	-0.35046524935206363	-1.2129280852567335	-0.6108666597129377	-0.6367274143674349	-0.396116192753332	1.1405378286076502	0.04494080473321263	0.0756111178808264	-0.8037409893572703	0.5579904242890793
290	1.9391015306944843	1.626059238679558	2.2518909090175714	-1.9197219731044821	0.15491770900086005	-0.991091331965758	-0.8449533692687166	0.130478254725181	-0.7210342996996372	-0.4354745959927079
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293	1.2096522097294764	3.485284815515462	1.7409259133559665	-0.3771494877307561	-0.7067935589147533	-0.036419152435236045	-0.008140864944048096	-0.2858534440556444	-0.14703707397945873	1.1614506465221797
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296	1.1235176609240602	-0.5757553558440834	-0.6177354846472575	-0.667916394042176	-0.7298866728288653	-0.04169679530326549	0.5114985878398993	0.24376238815895118	0.4495348766197474	-0.07588339817009286
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302	0.14474891507690324	1.0960278793054743	-0.9697856039382986	1.5117693931498186	-0.09857070044417122	-3.359734914656492	1.259997225067331	0.561714326831698	-0.29483868274452507	0.26831120768696887
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304	-1.6275157277074153	2.0724311788677894	-0.11369129119184805	2.5583551942820937	0.2575409508378207	-2.545681525664661	0.6879464693842595	0.4512157497527695	0.05552482587953162	0.07486423746543437
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307	2.441001039476588	1.8828446634954281	-1.7911138797208854	-0.43725574953219654	-1.6043514243081474	-0.5427760298274195	-1.3676178136898673	0.4922972770371107	-0.09730182156197102	-0.20063149576981573
308	0.7406078724958728	2.716468250729611	-1.2145844221908726	4.162268225641216	1.5842204045167698	-0.4527342059564756	0.2530154967308853	0.024685541380973862	0.44003122983694415	0.5463644840654448
309	2.4395360463232914	2.1834820992746686	-1.0918800315281334	4.973270749242266	1.7473678917784605	-0.17909724739054003	-0.4065024639607608	0.20050604616918918	0.1565521265271855	0.7406042925473598
310	-2.217822920632066	0.2339376343124234	0.09871587506282437	0.33160531863872267	0.4205167967031494	-0.09462335905906477	-0.9158548404012643	0.3077003321023564	1.0401115832852834	-0.09094841615845703
311	1.770937066308523	-0.7982569251438663	1.3100365782044059	-0.43098944222786245	0.18691425341267662	-1.346165761159708	-1.8842038633198965	-0.38234313237168593	1.8368273742395158	-0.826552438086887
312	0.8793559751413306	-0.30530261188415986	2.3025908762181198	-0.13573337510053124	-0.4314312609135988	-0.5387716531622162	-0.5662912886502736	-0.8950916988516083	0.3791844573283271	0.7718595203013022
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314	0.8521445825964722	-1.6672462080958386	-0.18486760125243357	-1.1824420837911966	1.4230538369278962	0.18977860929884213	-0.004153617748124816	0.6203545876196436	-0.4899659830802974	0.018551387855103442
315	-1.9159642705663296	-0.8794457631283086	0.18347670207943176	-0.7442678047758651	-0.05266022259938767	0.32108484504821044	-0.6317084300968655	0.9837000744884673	0.9410119773844053	0.35920885698594224

	PC1	PC2	PC3	PC4	PC5	PC6	PC7	PC8	PC9	PC10
316	-2.2761131569570443	0.8137902723072286	0.9724891600889619	0.634782821743673	-0.608689039642984	0.0060306804330746994	-0.8898381847970447	0.023144779644031162	1.2766617600750283	-1.156524162072356
317	-1.0658695933731808	0.258907982204367	-0.589632427785045	0.06934303560524444	-0.3199330899960496	0.18570032075560586	0.3392084135666338	-0.2258494673945684	-0.12730225180165586	-0.2101266802781772
318	1.5803415512304972	-0.5457497929916804	-0.8054988769161185	0.1012989539705096	-0.5699188925418328	0.10010171507446845	0.3579114182466626	0.18842551566793772	-0.0969933523089047	0.07453135989547673
319	-1.0495551679616648	2.127348511524849	-0.32456207350792426	-0.783446880570328	-0.2628064870157237	-0.19686444284285123	-2.3497385738516563	0.31102794699520514	0.09762818087442059	-0.31063709341512014
320	1.4607490108971075	1.4586194270667086	-0.6270110922573146	-0.7725905521069922	-0.5270178039374583	-0.09563903921867942	-2.4592075357770664	-0.06527547063028415	-0.37982630217669416	-0.3763050457492402
321	-2.4772261920867873	-1.0935663522012715	0.9542721356982253	-1.8421296470433772	0.6969244743447716	1.126762728881901	-0.09789412370158547	1.07418025423391	0.8397926665527826	0.08438772556842954
322	2.2362602016075037	-2.218612009977478	0.6270192070841489	-1.9604779113872284	-0.19492836408662625	1.0966927014832601	-0.6969359318288791	0.07012397965896662	0.652550196844697	0.06483270567425771
323	0.2113149008130143	-1.4733868748453478	-0.4304046724025635	-1.016168368118765	-0.8328084253036188	2.4914947267465153	-0.5184776162701574	0.376675470882141	0.38599809583187966	-0.19513667232690968
324	1.0682074066064355	1.5179665957581134	-1.2068609614269945	2.2986464558855335	-0.5257320897084127	-2.461430669737872	-0.015729385998977243	-0.6825822430265174	0.20714426697474886	-0.4903385613141176
325	0.9594198121411409	-1.2101628092948042	-0.15573666799651065	-0.5929551970213586	1.4563974282651369	0.8582933097840452	-0.4556837656305731	-0.013612691053054274	-0.2546985686238823	0.3277300331861884
326	0.8830927995632066	-0.7308685961127219	0.4787455098903851	-0.060133907874783794	-0.15183846935878	1.8312667921896602	-0.03430318369034828	0.04267651766411366	-0.17054928606863545	0.3254822274009881
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329	-1.6282170057531191	2.1454304129966104	-0.07173741869297517	2.187551672750278	-1.2821889418054608	-2.647933677655411	0.31898424610984466	-0.5133459358436323	0.3189116152764395	-0.33526336549025887
330	0.639189581157646	1.53295755765122	-0.40813334339116597	2.1933373924621167	-1.680710329538162	-2.790567208024991	-0.14784526894534283	-0.45241192787093365	0.8042512882352336	-0.3709980751532632
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333	-0.182871054278322	-1.0202842838648571	1.8022553768537544	-1.4779102430860493	1.8804856883549896	1.7730517270242392	-0.20979214038422914	-0.5520006493370058	-0.4214582141053177	-0.13902956967162494
334	1.5221177878745902	-1.4569705996586273	1.7093664760116352	-1.3508002471321643	1.2935589824459863	1.759908765881517	-0.3919902963981286	0.07826738677821796	0.2831242058495302	-0.16011631155511274
335	-0.48151327104314773	-0.49653704094868645	-0.16876453315054016	-1.4273848035080818	-0.13308467409714558	3.0662546627653486	0.3081848678497715	-0.6995527054216071	0.0656568826133083	-0.5996547641430809
336	1.437114812380597	-0.9984517719330211	1.5902247924229254	-1.0882622412355567	-0.15880578934581507	2.480046681080525	-0.550813578633606	-0.4319222939276499	0.7470468736839864	-0.43987343631287773
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338	1.6117423355773324	-2.55171583024118	0.319525807823379	-1.6965972105039144	1.4648858928058428	0.8895135745943737	-0.4696380290607387	1.0726130581382853	-0.14027468512562397	0.11589479928235043
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410	0.2685460151005814	-1.0343424511365358	-1.1964140892010036	-0.7635341883123645	-0.4605393062885524	1.4283259790867155	0.2960514005450081	0.2897742601142637	-0.09247479478594904	0.5175053513024437
411	-1.6875555328420329	-0.26913205589493994	0.14177088642171662	-1.0396516054850644	1.2137942676694444	0.838622300768431	-0.204281644878948	-0.7746806668793885	-0.07965410598038407	0.20685189867247664
412	-1.9202718765183837	0.20931937131351994	-0.5732657379038444	0.2909961811040118	-0.23005925762805665	0.47761762010063086	0.108607924528211	0.7185229763890196	0.6115842019615219	0.38778139718519633
413	0.9911300339674394	-0.6079744202797087	-0.6028386181530558	0.8636109579569814	-0.2257148842877006	0.8186768466351867	-0.32319936366490387	0.34963904185832523	-0.29925417686127537	0.4127533940495337
414	-2.198462699160671	0.09026430834727205	2.0322976427448958	-0.2745384645951324	0.8416554331370044	-0.6875855276240941	0.6147808266203966	1.1636986316192328	0.29136260610560694	0.2828350207620723
415	1.3283096829481809	-0.6759609149068183	1.9805289178815513	-0.5661881713960071	0.08293043545054117	-0.8207263985647631	0.025294790605007868	0.1623809866113348	0.250511315942868	-0.5011182759598487
416	-2.379915849893963	0.7362165530569992	2.333629857277496	0.3774632177507946	-0.9548954668067375	0.29122317810520343	0.07132617458058958	0.34495821187793596	0.8461259734859737	0.07026176111580057
417	-1.3741522052472768	0.10996139241545394	-0.263861086669239245	-1.5223435832218744	1.4136417475911023	-0.7698814240850237	0.8492475955885642	-0.27712268377647004	0.15767280325713656	-0.7117591593588632
418	-2.669288106202504	-3.036956720048389	0.6396228773181237	2.9544316804087174	3.8314571015182555	2.431673054618038	2.7028014130549156	-1.124101515269446	1.1670239956518835	-0.7067468764669732
419	0.6682479649144273	1.4407959962790848	-1.7986484589254645	-0.7339775477516876	0.03556205787416417	0.3214025328999353	-1.5035251504091813	0.14355837701851745	-1.5009461840490674	0.7332277288881085
420	1.3385380299617122	0.058718946788973714	1.6053953935824326	-0.9323508924872767	0.5679792236566394	-0.48674639916101264	0.2099373881440476	-0.5159338532053086	1.0738996573952342	-0.700250265923598
421	-0.2683340492378	2.1079438968112374	-0.01377841166985276	1.2360021441735367	1.0171290210786712	0.8176023465657669	1.0386230773859353	-1.3164278889214045	-0.14641542796812898	-0.6766103410917358
422	0.9423641048687773	1.7731870265958458	-0.6397424816543907	1.0325031763580352	0.39376714604441376	0.8544316694487469	1.4734109446836763	-0.7409453489023201	0.3070689725903226	-0.17024693829886584
423	4.6003657020329	0.8316967632805256	-0.17415188175955895	1.2595803121912132	-0.39396062195115017	0.2893512815542952	0.18803962130497306	-0.15232850343586868	2.0552042781205717	-0.22994638105035645
424	1.1466298688590835	1.3817293118702663	1.3766509037233956	3.0997356933517453	2.2087580763067542	1.0778360752977685	-0.12156270846716292	0.42595425305519063	-0.422579235737218	-1.1027720778675676
425	-1.3091931115162219	0.7964413347047693	-0.48536848103356545	0.13972019075644798	-0.16229741684124666	0.7941209795360399	0.6479870722119189	-0.881893216928946	-0.47850926396634175	-0.6030097076558276
426	2.9545322028887404	-0.39185765404863293	-1.6291471343198392	-0.29822293483985224	-1.0324096776324523	-0.008106294065723621	-0.5537474597078829	-0.8341830540494866	1.4840702033090247	-0.04790738909746988
427	-0.7643038501075525	1.6070293806174587	0.8990488709189564	1.415867676455786	0.1115989709545773	0.019437818634265344	0.4992044038158945	-0.5278480053863123	0.308780886453612	0.1804519450254605
428	2.161564930823458	0.7958844741596048	1.2810425253633828	1.7937165005744815	-0.24084033973638122	0.017568578647768052	0.19731057771614213	-0.15032370817605697	0.3730501352676771	0.4687929137392833
429	-1.0811807425084425	0.9423173400676432	0.32823956351322986	0.22594130134924753	-0.6035330403843653	-0.8960110923082186	1.4625958404517492	-0.3416986315060516	-0.4699371379318905	0.4433477263117087
430	1.4290148775165277	0.24925818810325437	-0.15970897090916575	0.46733191570058635	-1.0671745743004004	-0.7224328007555565	1.252123228616101	-0.06646936173926364	-0.3588362030303911	0.5638479091527767
431	-2.2581587928823588	-1.8962830941370323	-0.4127919629123455	0.9684259442407743	-0.34618693020694885	-0.30582696057470515	0.2669500432422661	-1.1734277814988092	0.3283745431566752	-0.4452096133147309
432	1.0291188440921588	-0.5442510926922886	-0.8085609984418638	0.31350623101908726	-0.4886479720641071	0.48210189975118073	-0.43044438416182584	0.03369205228482135	0.24788091995085954	-0.060238549747230426
433	0.299018591421436	0.7763987361026953	0.20822307626896108	1.0356350758830521	0.03339746741193304	-1.0310159345647012	-0.4774971438296616	0.21124449059337283	1.4959322960371364	-0.3605272904132015
434	-1.917207979895388	-1.1698816127216825	0.215718461421328	-1.7015683203503664	0.4068816128106948	1.529645262604868	-0.18480815167284978	0.5221643524649554	0.4641348879069524	0.26545629915827046
435	0.36352182098575975	-1.8448334157220903	-0.06256712491816162	-1.7674000661718356	0.2745226468331018	1.5935466674825325	0.04785793272391343	0.4947406091350052	-0.10364979198665418	0.3033213475240829
436	0.10834893179385054	0.3715288102702271	0.1739054362386115	-0.30397400787495343	1.9209674137422135	-1.5846524026039892	1.4962402018703382	-0.21187322701549555	-1.3607516071318282	-1.208011786210882
437	-0.8422028776617747	0.7035920437473361	-0.0202850004717756	0.9442239027366368	0.28266716741093695	-0.9342410019782632	-0.02007807173491955	-0.37435599831005784	-0.2704929421020992	-0.4909118807943759
438	2.895608259795831	-0.22778595616867583	1.022265593532088	0.9318089822286452	-0.22474212084607637	-1.6795387959472703	-1.264368665312155	-0.4965955371421697	0.8403900498394795	-0.8463328314814064
439	1.7273881905074178	1.3805959303882587	-1.397097035242144	-1.0962812662318044	-1.5384259259546618	0.7869243916619622	0.12680059774917798	1.756911259030762	-1.1536051608145554	-0.3372297435906262
440	1.9725605148386602	-0.9802339726752202	0.46551200151075667	-0.8212268444826011	0.47569631891119374	-1.051605929531131	-0.5694897350733777	-0.9904828133816338	0.149153777835778	0.6446014186621429
441	1.8255568720602096	-0.9434026900832425	0.9956569076385153	0.6766782085300892	0.43880564752749607	0.10408783218917175	-0.45434414508425996	0.3398187932480166	-0.5698418290764686	0.16967004695419238
442	2.1638655205033297	0.4064204036010174	1.6193744586711512	2.336100620663842	-1.7364886913100077	0.1601618658602433	-0.32563767652588615	-0.27200027648082625	-0.20278510173370087	0.5096130012706284
443	1.9337154834423795	-0.6400846165496061	0.8445304690398138	0.6067197483601362	-0.5211136156999735	0.11825809293432094	-1.196867863915823	-1.077803516805435	0.17124433943889925	1.3158684160662957
444	2.071617435475995	-0.46647934110483036	-0.9541670251998134	-0.13052868621318744	-0.3818209426281639	0.5917237532155338	0.004411883951728303	-0.1556399738340427	0.4285350552250984	-0.6836384845297311
445	2.151552044162174	-0.7407893183476749	-0.8816262918864033	-0.471901635261084	0.659823212341451	-0.18639738544034365	-0.44774540413821334	-0.45560447073682775	0.4324718050549938	-0.4606877008321004
446	1.6711553009540343	-2.5653108762861203	0.052080994078327225	-1.4385400940648398	0.7689774976812828	-0.7676075169036036	-0.6870957967644155	0.35999495545996985	-0.7387742349654405	0.5675622591930493
447	1.5385178545446427	-0.8245636148784928	-1.1005592113093856	-0.05006267308892312	0.0308817957676311	0.007045299535468074	-0.5400747563967291	-0.7203326568698992	-0.0468252078122242	1.1368253663702594
448	2.3107156334139938	2.2880860823053575	0.4009873263190667	-1.5192908766204316	-0.9781074609753684	1.2444287868403288	0.2489163230957768	0.3201770388604846	-0.078334042981102	1.1088761141721684
449	2.5448587073002664	1.6383084598702826	0.3112484175246798	-2.1739588376540127	1.4390613131818748	-0.41386609762746923	-1.0064771206099314	-0.20060781826809373	0.011255408631134937	0.8701717495990375
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451	1.8738259935121828	0.18880609835533074	-0.4630306536151555	2.0289565901567337	-1.1709858583282138	0.1430128870677251	-0.20800670589589895	0.2535169888024626	-0.06977354754015358	0.058042330718901906
452	1.8749743310826614	-1.0586477007482695	-1.3008305553772008	-0.2308305597466066	0.5290985908747855	-0.3615000776368496	-0.8977518779703788	-0.6045505691738925	0.1342580898750555	0.4293232260547343
453	3.3124585477621973	1.7306072703489919	-0.5426822228770503	-0.7661012409906511	-2.2582872785970003	-0.45194049292763927	0.07242334346884738	1.7511149617411321	-0.40311949240219735	-1.1561378492732672
454	1.8329231747145887	-1.0405483974858785	2.6337372867224134	-1.4481536100187464	0.7156877022993189	-1.5888472745740618	1.0686211951844427	0.44200051993067707	-0.3198080884272221	-0.12416099201475221
455	2.2343176487501015	0.7485707144247737	2.430348055349463	-3.1412607142246682	-0.30439906750713164	0.19316664227333888	-0.253508272009867	0.9411815188671288	-0.5821107705372259	-0.5965249467152615
456	0.789758307103344	-0.6070471978679647	-1.2930632517133922	-0.35986540967724767	-0.31395740310460335	0.2137740789228813	0.4421976577058927	0.17949388034076547	0.007364497728629046	0.41428244254189567
457	1.6075458997181664	-0.9224585603887483	0.01911953287670403	-1.4960862896835678	0.2497982849268543	-1.0670622936250187	0.6117505968656551	-0.3610595502379163	0.028891247665781678	0.21201925400488253
458	1.972990521527164	1.2571572636248987	-0.3808023935127486	0.7742084729875138	1.120985426790223	0.1493831482537398	1.2055248536529233	-0.6075875319061664	0.39218114242792124	0.04129142195413308
459	-0.9713008126205108	0.16534494781161302	-0.30449383504919425	-0.1864418308079309	0.17490100714931492	0.06926995716813193	0.724243673425409	-0.7782012740021483	-1.1297556373190771	-0.12099734269447504
460	0.2913324334435857	-0.25701764573302527	-0.3723086720592187	-0.2828376370851128	0.008371682213310834	-0.13835208549863778	0.8385281480748635	-0.1936607707336196	-0.7458781662268975	0.14913793636005643
461	1.6356630278296111	-0.7166460024327582	-0.6964145852200497	-0.4491296185974993	-0.23326523319250658	-0.3127322002171898	1.1044060266708386	0.4890588840315446	-0.34234291428176256	0.5269781285417254
462	-0.8879617220716	0.21576861703121514	-0.06657767481722356	0.6834947684406959	0.11833336589605198	0.5215546758382043	-0.048482621718330295	-0.7445752992773322	-1.087405511450236	-0.3382689492540888
463	0.4793281442654126	-0.178247520401637	-0.22752814540107086	1.0791585335031215	-0.10777650868150833	0.547237748253895	-0.6354638124282707	-0.33628289807106326	-0.5139488627591983	-0.24735520646753392
464	1.843342559435792	-0.5653336096004693	-0.45058153253518857	1.3216516848499134	-0.3360085463721193	0.4628538482715333	-1.2564343370389641	-0.07118325242487679	0.14235803194507468	-0.20300123632160838
465	-0.8931500100696576	0.16654991647055023	-0.2774473568799959	0.28764566245229495	0.34836997972859246	0.13151787427547193	-0.2113028331705375	-1.1278972659675912	-0.9180390699920109	-0.28156086873386643
466	0.39057034063067053	-0.24674336489467852	-0.39334092716410507	0.42426392493692766	0.2031482884831925	0.019349054858198333	-0.4325140458435854	-0.6331740527837088	-0.46787006424941735	-0.06353162025400172

	PC1	PC2	PC3	PC4	PC5	PC6	PC7	PC8	PC9	PC10
467	1.79843583193714	-0.6217455037363383	-0.28424266131210824	0.5845884726197246	-0.12398132870401382	-0.1281303673974258	-0.8269999240461182	-0.3655454774129301	0.1354831674971897	0.3278870855330861
468	-3.0473842053276403	0.23161198717730555	0.08844019465692578	0.13066629933649915	-0.29899120359364245	-0.04873197582618443	-0.3241175148325332	0.4588341140594124	0.4698905949825345	-0.15501277709907282
469	-0.9427073718144153	-0.06347031055251563	-0.14927579985127595	-0.20826556608031115	-0.48019798065359914	-0.12589673621916125	0.09927450903936727	1.1270543061069307	1.4491578365256004	0.09856144658034469
470	-2.806072452817167	0.3791261118512307	-0.030053407695320091	0.23023481260252357	-0.6128734889271384	-0.18376670334426998	0.2097136893106382	0.7718238920680257	0.4288636610532839	-0.14181292787046826
471	-0.7657071417902265	-0.1431464132194804	0.24656933900621208	0.41334846590431423	-0.7358022445420946	0.05052812860891719	0.29896119117284203	0.43622013731607884	-0.474858222021587	-0.30246837686800476
472	1.2817613091086981	-0.6757883505896896	0.3305836930676884	0.4670111879439506	-1.1849354545898458	0.18148713159093074	0.5510801395378652	0.7362139627525487	-0.6708306621062363	-0.3375009946940936
473	-2.6848726162274406	0.3936420761207599	-0.717872112528007	-0.21857454778274032	0.023549087773300847	0.050492138049789	-0.004932699524752115	0.3163527575725804	0.8932853797333502	0.1749105413894013
474	0.26376913932468626	-0.3791366888273781	-1.8252636998809257	-0.17077802680708085	-0.45425642716888	0.4217761144681852	-0.10281084095177576	-0.2385459431343866	0.2843476383129717	0.20124263168736353
475	-1.8169407036567138	0.14772804975884515	-0.4204357490158921	-0.16034914527191707	0.11234707250460171	0.08586197516614447	0.0739745335095963	0.13691873256907353	0.3599211591888726	0.136510089316988
476	1.0530931885919512	-0.6142573085375893	-1.4193659278721829	-0.07750535196278063	-0.41517127361410155	0.275187377394729	-0.29920461835981516	-0.11867085838932387	0.36148981477675585	0.1696872866077774
477	-1.8169407036567138	0.14772804975884515	-0.4204357490158921	-0.16034914527191707	0.11234707250460171	0.08586197516614447	0.0739745335095963	0.13691873256907353	0.3599211591888726	0.136510089316988
478	1.0530931885919512	-0.6142573085375893	-1.4193659278721829	-0.07750535196278063	-0.41517127361410155	0.275187377394729	-0.29920461835981516	-0.11867085838932387	0.36148981477675585	0.1696872866077774
479	-1.8169407036567138	0.14772804975884515	-0.4204357490158921	-0.16034914527191707	0.11234707250460171	0.08586197516614447	0.0739745335095963	0.13691873256907353	0.3599211591888726	0.136510089316988
480	1.0530931885919512	-0.6142573085375893	-1.4193659278721829	-0.07750535196278063	-0.41517127361410155	0.275187377394729	-0.29920461835981516	-0.11867085838932387	0.36148981477675585	0.1696872866077774
481	-2.331831273405472	-1.301875979050868	0.6397809545980868	-0.18984696861619982	0.9513737512453042	0.014929748131077988	-1.511483436636899	0.4254007743547311	-0.4163974244455095	0.4189397355999259
482	0.8782691810805138	-2.2824147673062187	1.2312537029980892	0.044830573694807974	1.0887734193770289	-0.2626442415893857	-1.9345035305646625	0.525205791492156	-0.6956976241668474	0.5447818039145083
483	-2.925894430506187	0.44075620908458324	0.13443772577287605	0.46686109623880545	-0.49993878191082636	-0.21119930781403246	-0.30522267409758286	0.32367313720588564	0.48978683939902984	0.2765110634229962
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485	1.0065249637730866	-0.48714590996726764	-0.7151611145031282	0.5666618084141737	-1.5480677081070782	0.4351774926802484	0.002809384423646511	-0.04339351223303074	-0.3382182267076894	0.17183842868321 39
486	-2.153606987899715	0.3168691484460221	-1.149029676563792	-0.06129865210927284	-0.20856853154587013	0.4561157354628671	0.05299042999921263	-0.025509752462012782	0.3981752812345952	0.061748230298690795
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560	0.6902847971229308	-0.6138716002889114	-1.695630334439819	-0.3058305735252569	-0.09650127237449069	0.13917795480472878	-0.043054352428340284	-0.18246844885510363	0.13761200614768807	0.48695972731711507
561	-2.096389560673794	0.28346312216009545	2.4473707834516403	-0.39746772191654645	0.23507414946419167	-0.6580079718240818	0.44029485265550067	0.8129966873328645	0.6445607683905344	-0.31983528522812005
562	1.2308361430040637	-0.5287551938557856	2.8718187078131123	-0.21322144568659446	-0.2347452854586604	-0.5222897247177466	0.27457516220476913	0.3932367306115995	0.015857360652411563	-0.427344004543305
563	-1.4643835352150525	0.39484167742320353	0.9309560694742797	-0.1601760269047739	0.052542184613992376	-0.3590644110250957	0.24934960457386907	-0.5637771016391118	-0.2223847481967433	-0.33916905792367436
564	0.6796964830714929	-0.22976525347072083	0.8624128460150516	-0.2221096780164915	-0.16285452048141064	-0.4744431171491553	0.2557351108707451	-0.40471229401796077	-0.25185211112403705	-0.2343759144284072
565	1.6680878354405013	-0.38258234918071293	0.2046822510783673	-0.5133077129349346	-1.0743279101198997	-0.20912755278953202	0.9273668284953397	-0.2711509216474074	-0.1346320907363085	0.23048242722678539
566	-2.156229985895489	1.155076412015514	-0.7303997585256774	0.5131174524961971	-0.24579943346753882	-0.8251154801200468	0.53862335499266	-0.26730451606753813	0.22003411475470355	-0.26943809234361543
567	0.4214841385083651	0.4719344912040407	0.2923609664146171	0.8927059004130441	-0.10761242393182367	-0.9386846373508504	-0.11971403082258768	-0.718517972298173	-0.34997714916163936	-0.621401662795161
568	1.9709474926295558	0.04949587761017249	0.04594673927177295	1.1341908626919586	-0.32895271994958064	-0.9476653983197093	-0.6965427576674661	-0.6577416076392393	0.032494513282097556	-0.630555171734424
569	-1.8168911314684597	0.06815231204876733	0.38111000141695134	-0.08843616051950813	0.6478097793789941	-0.6576238649637342	-1.0598369502296618	0.06915930605966232	1.288308915851033	0.050582127049737184
570	1.1255133794605678	-0.8565371910793718	0.3769122189742102	-0.32075750213114645	0.987277289274981	-0.9501577907500792	-1.192911878361315	-0.4048557896004397	0.45826531742966636	-0.35723785294152455
571	-2.086437505701994	0.31282263851173875	0.7077905736001072	0.04450599738807386	0.9944120281700956	-0.774200956071855	-0.46389905751587135	-0.3657698125483557	0.15185092349619417	0.03924316613688325
572	-0.4136553994355572	-0.2082165244593024	-0.4069298659706185	-0.16306098753306814	0.9128308387212869	-0.6990938447771967	-0.41084125786945	-0.7947430365060594	-0.2529405223473223	0.3370844751144547
573	1.67249010213527	-0.8894992667576005	-0.7506867899881257	-1.0324447956596055	0.8989020211001735	-1.5367331597933185	-0.4460893731976882	-0.980152702637659	0.2489132167790554	0.5298017453073159
574	0.055569688192987146	4.041876980902091	-0.10834837000973291	-0.17724130479299638	-0.046803694210467435	0.9819567668677548	0.3202146195361032	-0.24679595125140473	-0.5415064379511606	-0.26944703365384737
575	1.258972392998938	3.7539802950656345	-0.13850988664001956	0.18439171314877428	-0.44850894312039713	1.190436903974839	0.07951601579263042	0.1449373163982594	-0.25926646614866194	-0.32637796707964734
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577	-1.4213670695357346	0.1852802059133661	-0.1327126195748651	0.300837808830098	0.06208257681041264	0.4226506188743137	-0.6056176036300971	-0.6746908437085367	-0.09954042881968339	-0.42189735674176637
578	1.4844825339443621	-0.5125330136709891	0.6984322310407689	0.8380701547371916	-0.7292599352455073	0.6605942178113898	-0.6781118361317987	0.212308139375023	0.1192722106606935	-0.7059593836296573
579	1.885642658676734	-1.11980276538844	-1.125550915543477	-0.8599028964284054	1.8296089687881278	-0.42973176653614953	0.9165260382454462	0.9031958615606027	-0.5700245455822164	-0.6522326788933083
580	-1.9990113907442415	-0.11214409411612981	1.533892260805688	-0.26100185157921907	0.05343086685063739	-0.6777512492448993	0.025455780903663502	0.24672325836417006	-0.030062642002045847	0.29699083215058797
581	0.705683758148579	-1.148807059586671	-3.0652416076886335	-0.25899460755057013	-0.20977972867465727	0.11438407538498363	0.0701459944042843	0.4872693503348109	-0.20858183468722885	0.7489563924571723
582	1.096964591154816	-0.8902478304364446	1.2953384432730801	0.6975494651000274	1.1121506348637376	-0.23724503517594195	-0.7243898170651221	0.5376849407127745	-0.4445378481091686	0.04675398418416279
583	-1.1490424681356977	0.6879706938591369	-0.43817227550034415	0.03263890027472092	-0.29802464599082956	0.2907612905661157	0.23332970136891484	-0.10449533145565826	0.9075178329045619	-0.4330468648776841
584	1.5462171291999431	-0.008016213856654242	-1.631465150431555	0.0531457562177949 3	-0.8364987105825945	0.6026334033647587	0.026128386123014984	-0.5719376527966888	0.6231063949771034	-0.4191151794564144
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605	-0.942816963218684	0.07697669149980811	-0.6520971452170147	-0.35438500263375206	0.5152461204135288	-0.17840689341681049	0.3719557557633039	-0.9468377110977239	-0.9783527469494897	-0.5356645060145195
606	0.29759677448899013	-0.338731467056837	-0.7919595733369544	-0.27474117271190635	0.48088552458762585	-0.4172929631362616	-0.0028413440877860514	-0.6847914631052501	-0.483762532938377	-0.08442674320072993
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610	2.9420896403302086	-0.857943852312063	-2.6887130541332356	-0.3574209364988998	-1.1249413668745978	-0.23784967750436023	-0.828201586208462	-0.5571770211386836	1.3354040594539514	-0.17840937742285046
611	-3.34919683256069	0.23149008543803656	-0.3377043263822981	-0.19197583016558578	-0.13843343332938052	-0.1454476801449675	0.1134635754999893	0.45657859260345524	0.2786916610104683	0.22364806846307994
612	-0.2349250420833333	-0.7746568443688837	0.05785115795500976	0.17827581743825488	-0.021704577829284248	-0.08266457662703146	0.33154681244557904	1.0116431386072295	-0.5007865159046266	0.6205911662620418
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615	1.0438189035731509	-0.8347055190052127	-1.7240488470328663	-0.032532999188083486	-0.7864244246321039	0.008647326732726416	0.6424990652020677	0.40299488720911864	-0.5954041273329518	0.6188638620845404
616	-3.7447947127829235	0.4349495204077324	0.21689611237326317	0.08503439794754719	-0.14312632433373035	-0.04467399688592268	-0.21748778463432	0.09225982156599992	0.18312359790424873	0.2194432104541546
617	-2.7283361651350706	0.1685610913491258	0.6961272827371077	0.06258292286114184	0.11132132146798722	0.0575680806733224	0.08209574630903484	-0.7528898123805347	-1.1621777217764198	0.4980883361875244

	PC1	PC2	PC3	PC4	PC5	PC6	PC7	PC8	PC9	PC10
618	0.047265808654094421	-0.871836557824632	-1.4613840081685242	0.14016555117060917	0.27874321217157625	0.04030804406556806	-0.4729608805230687	-0.3788474215370192	-0.8650217681259689	0.6985150898836651
619	-1.3167866861694364	0.06899846702189168	-0.5970712728339458	0.026936329086808426	0.32743311148982332	-0.5032451653975399	-0.10589894836248237	0.44924091553427536	0.8077676868140947	0.6151583440070073
620	1.2556032876600357	-0.6978157072135938	-1.522281255234940	0.053761298579197016	0.2709150903497347	-0.3056890219657664	-0.16628334082476107	-0.09134476918951417	0.027035691387813106	0.9376688161527678
621	-2.022483799685439	-0.027238147176659268	0.17138809731349428	-0.5376556807453057	1.0382978741797526	-0.6753092920013858	-0.05848927506016494	0.5432251023794279	0.5223365495406297	-0.5927430381239494
622	1.6240811532065194	-1.3101294139068641	-0.7992109890872056	-1.0440529453775525	1.2442942339955198	-1.2912756413206319	-0.1121756012776409	0.9074035659169565	0.6615005894208545	-0.3545733555211528
623	2.2332067693878113	-1.5136480799316603	-0.030435464668206193	-1.0171268060610505	1.5968018546648501	-1.2689767881662535	-1.1895154910046335	0.9118037343228297	-0.2487324235066626	-1.1545051868686886
624	-1.3666025878287746	-0.017438128293355816	-0.07493821388532912	0.2369230322296627	0.2803046107163203	0.04960619204394356	-0.4465269190677599	0.4295868850643586	0.5875990389047764	-0.07445530740427372
625	1.8755706128249365	-1.0190705830171496	-0.33945987186213306	1.177556038916608	0.4501199099973355	0.5079970124357116	-1.1144796945465107	0.5187834999575709	-0.2125935268982845	0.010117024474535294
626	-1.3709933076390658	0.5342573499708915	0.5622521574411153	0.52047752905551185	-0.07343787694301047	0.6091737453203674	-0.2450778562149683	0.3741312085018092	1.0621840236628521	-0.008345559755111
627	1.4119943191062933	-0.16185524607132023	0.41175996033364264	0.8599532272179354	-0.4513985171637996	1.0093735876593626	-0.4289307061139231	0.07194274395628579	0.3431985156748319	-0.4065178085544541
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629	-1.3149038916473216	-0.12922013092627	-0.38181379613427314	-0.13274684367910663	0.45986464022637964	-0.1352183866697234	0.012127850085856786	0.4602875421186879	0.3873201188603951	0.3490207323384798
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631	-1.5809166296443187	0.5377662691357546	1.3708877036893754	0.027637445383595458	-1.0414226102599606	0.2406182295110895	0.07189555654894786	-0.5222160478482295	0.5454241088633655	0.9895181746031003
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634	-1.3394206135783098	-0.10329556763894456	0.9747661966556205	0.5129374719558768	0.8544973197370449	-0.2207604477059459	-0.7953465761276838	0.4339693813633587	0.3811561359847548	0.05724730320946528
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639	0.9452117956961272	-0.5359151076207153	0.20939704455266875	0.27435009673697847	-0.3716195916691827	0.3207381238956896	0.015164734228588994	0.2993339423854058	-0.029144459000865548	0.26756604033026007
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705	-1.2744151315663903	-0.2323353718114848	0.0643961796595758	0.5583774950605899	-0.4110324867431589	0.3484846347316879	-0.4261451101371154	0.2436567719162534	-0.2998820174183654	-0.1952175527828674
706	1.1447829153394124	-0.7703436717799785	0.6479600698561227	1.6471147626073108	-1.1399260416103234	1.0298607065977717	-0.8981663101425159	0.7219290626174282	-0.3475648887458925	0.1284560189211432
707	-3.2601541938404973	0.7384927989801149	0.3029345232363883	0.2418365133918801	0.4942485424505147	-0.1784779494746747	0.08088363394857 5	0.0734996806344955	0.1524421849545532	0.0020033004324826 7
708	-1.6583422988186456	0.2898644410861351	-0.3516858321350954 6	0.10967156850618204	0.2815562974744465	0.0858824569018268	0.5227307003240474 7	-0.2050801983135607 7	-0.6196449836235602	0.1397490919573916
709	1.5847037802119713	-0.3315708149136202	0.7141525059206892	0.1001152330555144 8	-1.0912672490193 31	0.1714373156032163	0.7420803950242478	0.3951459304714663	-0.1823136686125837	-0.7177351124438951
710	0.8981724325316357	-1.4826320606418104	-0.2015733437190159	-2.0962522589493955	0.5287162876221564	0.0084702753556347 03	0.8999497708542027	0.3287348154128466	-0.2233010403522638 7	0.2054987009567393 7
711	1.5928271782636512	-0.2905765987016945	0.1988014092651664	0.6914245349931637	0.9718299720651827	-1.5350292713366484	0.2716476950126533	0.3029611009699478	-0.6663711889165441	-0.2006574803702026
712	1.3796577405447182	0.4054733521846256	0.0011635900153223	1.8523036945733201	-1.4281038416781175	0.3046487471153449	0.5794289574554432	0.3409616170940384	-0.9578243043007351	0.1507328789003242
713	-2.4007036090234877	0.4665864623634331	-0.9477772198812583	-0.5622385479657537	-0.2618749381047875	0.6849231142407577	1.2096651168413409	-0.7483837081173261	-1.0176187265406187	0.1199165598242615
714	1.8664599955723896	-0.4143977271822992	0.2233616194584799	0.8040152996550499819	-1.3359923847908	0.1091265405498661	0.1481448493049733	-0.2461233063493310 5	0.1256771505732695	-0.0803451389256526 5
715	-1.4280430223359573	-0.1509935622844259	1.1844074748763938	0.0574614252861836046	-0.0279267743479989937	-0.5051865897391 12	-0.9152133324202293 5	-0.8500626494079403	-0.0973121119864655	0.2966420825279515 5
716	1.7042141074733072	-0.9446632522304855	1.2148949262612646	0.1078026197433834	0.2002735272340359426	-0.6962572706998201	-1.0171181757457026	-0.5747936542206777	-0.2469294153194860 4	0.6149624663839228
717	0.2203607701142942 5	-1.3331112294592585	3.6840110113713207	-1.4117885501422873	0.1583459704183876	-0.2558149296755939	0.5497012338551393	0.3935429922181656	-1.0467949595260506	-0.6389837329215462
718	1.5977837107246861	0.3125575004499999	0.7973836227100514	-1.1870474283534864	1.5806795257700425	4.1556314502335054	1.2437694346197112	-0.4854922944239194	2.5266176672343457	0.2633861484593259
719	0.2711947501205805	0.1784007531414657	-0.1252642514328524	-1.4386736596822232	1.5362922000787715	4.2750329084986381	-1.7895056888271863	-0.1320473490360316	2.5973856783940097	0.6511238357170208
720	1.4488001149893436	-0.1257002313176294 5	-2.1047942660841303	-0.3355285780043256	-0.4388573034503152	0.3681375484784185	0.3929715105969016	-0.6869557121240609	0.3135451546493538	0.0441780536442825 1
721	1.4066622470473445	0.2082326808819452 1	-0.2146625946874731	0.6523167200621632	-0.5682223636083634	-0.8304601954686658	0.3079420209621386	-0.0877993940825159	-0.1394327544695391 5	-1.3749788055531222
722	1.1542579886425102	-0.4930955112852823	1.8279107289558306	-0.6884226864274795	-0.2205152626946202	-0.8124847757188225	-0.1375413478630876	-0.8324822429642063	0.2319167399760626	0.5391275075968258
723	-0.6455583181509635	-0.7515962446666697	-0.6086606056259947	-0.0414021728345809 9	-1.5073634240458325	0.0133093526332435	0.3518999133513087	1.4292359684225358	0.1741775400220585	-0.2140784669763253
724	1.0366150151332469	-0.5936734900035091	-0.1775379080519764	-0.8086568134130526	0.5158773175471751	0.1018344815848231	1.3239727195421563	0.5235414110158339	-0.4543835992259977	-0.6823921315954655
725	0.6269431947984376	-0.7123173971894714	-0.7444648205696875	-0.0961656736539654	-1.1047395097599508	0.2070762748289725	0.028912190015093787	0.2389272410690519 2	-0.0496891863016920 57	-0.2045639827632745 6
726	1.2496178453151739	-0.9459332503314908	0.5129237702206907	-0.3747945508145883	1.2946618233151067	-1.1493003773470481	-1.3133693753247374	-0.7549566224091505	0.2471216752370076 8	0.1310715899976482
727	2.0197541166613395	-0.2208586500721749 2	1.2067260203682998	-0.0133464671708847 29	-0.5423954524349944	0.3129452388529998	-0.3702699838687846	-0.7301165955956599	0.4176332247628212	-0.9539930178240875
728	-0.3148991465830914 2	1.2116722185317 72	0.1993373175123428	-0.1864985021413026	-0.1685795741926309 4	1.0157474516749239 2	0.4036198172173486	1.3720455782950853	-1.6462945167077532	-0.1065158056362020 1
729	1.1374310326046324	1.6708560251112587	0.2115042725463835	0.3696011984184017	0.7495321803397818	0.0411396970255988	1.5063799458728845	-1.1286509561373814	0.4338981103680988	-0.0269187627256422 15
730	1.3641491185063894	0.9995381888060144	0.3793529477087963	0.1448890471784445	0.4113867489822865	-0.4673431298109461	1.3387458667154462	-0.4546378137373429 7	1.3090566738773144	0.1041107041743115 8

表6.:固有ベクトルのすべてのデータ

	attack	base_egg_steps	base_happiness	capture_rate	defense	experience_growth	hp	sp_attack	sp_defense	speed
PC1	0.3821020840048738	0.23546376205314194	-0.13257507163637	-0.45868049779501957	0.33854145066682886	0.11128151831469488	0.33040248239661 8	0.36840979959575115	0.38389353548790595	0.2265994911568248
PC2	0.06242460635282773	0.49272467100240985	-0.6370748821167422	0.08743923577475491	-0.013816878842258578	0.47435986842523331	-0.17931747630455694	-0.16994982209886855	-0.2247105227418197	-0.10336202022179654 7
PC3	0.018479608446988878	0.048315668487553338	0.021563818916318315	0.05777795795809401	0.5667322850497784	-0.1498392256762644 7	0.05437022883003304	-0.2974957489159991	0.2304358616309261	-0.0108606171030323
PC4	0.15191969203487644	0.002295435368656818	0.40875332237472061	0.002493666413396801	-0.1716938321531312	0.5185947515485403	0.6134738251174793	-0.1739901808434843	-0.2595978675491 1	-0.1938672192846964 7
PC5	-0.6249646156929852	0.5003502515509545	0.06659395922959492	-0.01704570281652694 6	-0.3129935282772834	-0.0811640228897173	0.2299453583159414	0.2572815445245777	0.2955069323090763	-0.2083218382487769
PC6	0.2592823895622246	0.41639226885436706	-0.0198524145591552 94	-0.1864985021413026	-0.1685795741926309 4	-0.6348158851641325	0.2295704259760686	-0.3710656472594244	-0.3064475867259825	0.0922101327330214 7
PC7	-0.1851383061743116	0.29842486263957035	0.42448381992492026	-0.1091782022983744	0.2128213017727608	0.2260862871627682	-0.2756298396675021	0.5209076998305798	0.2531444452268063	0.4204663766840707
PC8	0.020705954614750137	-0.17149091349020748	-0.3412005505877530 3	0.5051633887827361	-0.1023269214088033	-0.0519066160303032	0.4266037650161043	-0.3327153861147363	0.4672660338424326	0.2723141721036611
PC9	0.3485519462165415 6	0.39646740594128697	-0.3260300668807842	0.6777290101431549	0.1263633214304734	-0.0649499756807458	-0.1168922955770883 4	0.3448703167356453	-0.0234133664442057982	0.0545233174773312
PC10	-0.4587102403656544306	-0.007328775689979496	-0.0945194060872532	0.13234282860502436	0.5800164205893255	-0.0600018072136512 7	0.3234110474911035	0.10838566848592242	-0.4663458837192775	0.2987352589894085

また、ポケモンの個体値と各技種を第一・第二主成分でプロットしたものをそれぞれ図5、図6に示す。

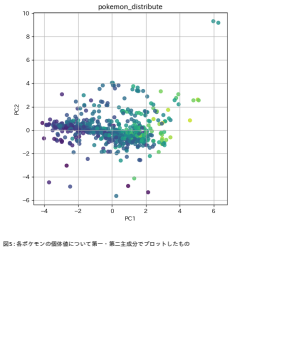

図5: 各ポケモンの個体値について第一・第二主成分でプロットしたもの

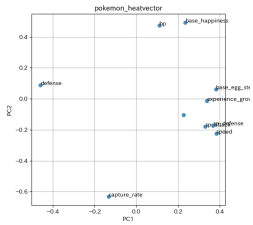

図6：各個体値について第一・第二主成分でプロットしたもの

ポケモンの個体値と主成分との関係を見ると、`defence`、`attack`、`defense`、`sp_attack`、`sp_defense`、`speed`など攻撃型か防御型かを表す値が第一主成分の係数が大きく、`hp`、`base_happiness`は基礎なつき度、`capture_rate`は捕獲率など、生誕さを表す値がが第二主成分の係数が大きくなっている。

そのことから、ポケモンの個体値を決める要素の第一主成分は攻撃型か防御型か、第二主成分は生誕さだと考える。