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August 29, 2024

### 0.0.1 Imports

```
[2]: from typing import Iterable, List, Dict, Callable
import os
import gc
```

```
[3]: import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
```

### 0.0.2 Constants

```
[4]: PATH_TO_DATA = "hydraulic-systems/"
NUMBER_OF_PROFILES = 2205
PROFILE_MAX_SAMPLE_RATE = 6000
TARGET_NAMES = ["cooler", "valve", "leakage", "accumulator", "stable"]

PLOT_STYLE = "darkgrid"
```

```
[5]: TARGET_VALUES_MAP = {
    "cooler": {
        3: "close to total failure",
        20: "reduced efficiency",
        100: "full efficiency",
    },
    "valve": {
        100: "optimal switching behavior",
        90: "small lag",
        80: "severe lag",
        73: "close to total failure",
    },
    "leakage": {
        0: "no",
        1: "weak",
        2: "severe",
    },
    "accumulator": {
```

```

    130: "optimal pressure",
    115: "slightly reduced pressure",
    100: "severely reduced pressure",
    90: "close to total failure",
},
"stable":{
    0: "yes",
    1: "not",
}
}

```

### 0.0.3 Load data

```

[6]: sersor_files_config = [
    {"name": "CE", "upsample_coeff": 100},
    {"name": "CP", "upsample_coeff": 100},
    {"name": "EPS1", "upsample_coeff": 1},
    {"name": "FS1", "upsample_coeff": 10},
    {"name": "FS2", "upsample_coeff": 10},
    {"name": "PS1", "upsample_coeff": 1},
    {"name": "PS2", "upsample_coeff": 1},
    {"name": "PS3", "upsample_coeff": 1},
    {"name": "PS4", "upsample_coeff": 1},
    {"name": "PS5", "upsample_coeff": 1},
    {"name": "PS6", "upsample_coeff": 1},
    {"name": "SE", "upsample_coeff": 100},
    {"name": "TS1", "upsample_coeff": 100},
    {"name": "TS2", "upsample_coeff": 100},
    {"name": "TS3", "upsample_coeff": 100},
    {"name": "TS4", "upsample_coeff": 100},
    {"name": "VS1", "upsample_coeff": 100},
]

```

```

[7]: def get_files_with_resample(config: List[Dict]) -> Iterable[np.ndarray]:
    for file in config:
        data = np.genfromtxt(PATH_TO_DATA + file["name"] + ".txt", dtype=float,
                               ↪delimiter='\t')
        yield np.repeat(data, file["upsample_coeff"], axis=1).flatten()

```

```

[8]: def load_feature_dataframe(config: List[Dict]) -> pd.DataFrame:
    columns = [file["name"] for file in config]
    data = np.stack(get_files_with_resample(config), axis=-1)
    data_df = pd.DataFrame(data, columns=columns)

    prodile_ids = np.repeat(range(1, NUMBER_OF_PROFILES+1),
                               ↪PROFILE_MAX_SAMPLE_RATE)
    prodile_ids_df = pd.DataFrame(prodile_ids, columns=["profile_id"])

```

```
return pd.concat([prodile_ids_df, data_df], axis=1, sort=False)
```

```
[9]: def load_targets(filename: str) -> pd.DataFrame:
      conditions_data = np.genfromtxt(PATH_TO_DATA + filename, dtype=int,
      ↪ delimiter='\t')
      conditions_df = pd.DataFrame(conditions_data, columns=TARGET_NAMES)

      prodile_ids = range(1, NUMBER_OF_PROFILES+1)
      prodile_ids_df = pd.DataFrame(prodile_ids, columns=["profile_id"])

      return pd.concat([prodile_ids_df, conditions_df], axis=1, sort=False)
```

```
[11]: feature_df = load_feature_dataframe(sensor_files_config)
      target_df = load_targets("profile.txt") #Note that targets is define for
      ↪ profile, not to points

      _ = gc.collect()
```

#### 0.0.4 Basic EDA

```
[12]: feature_df.head()
```

```
[12]:
```

|   | profile_id | CE     | CP    | EPS1   | FS1  | FS2    | PS1    | PS2    | PS3   | \ |
|---|------------|--------|-------|--------|------|--------|--------|--------|-------|---|
| 0 | 1          | 47.202 | 2.184 | 2411.6 | 8.99 | 10.179 | 151.47 | 125.50 | 2.305 |   |
| 1 | 1          | 47.202 | 2.184 | 2411.6 | 8.99 | 10.179 | 151.45 | 125.39 | 2.305 |   |
| 2 | 1          | 47.202 | 2.184 | 2411.6 | 8.99 | 10.179 | 151.52 | 125.40 | 2.336 |   |
| 3 | 1          | 47.202 | 2.184 | 2411.6 | 8.99 | 10.179 | 151.27 | 125.03 | 2.578 |   |
| 4 | 1          | 47.202 | 2.184 | 2411.6 | 8.99 | 10.179 | 150.80 | 124.05 | 2.977 |   |

|   | PS4 | PS5   | PS6   | SE     | TS1   | TS2    | TS3   | TS4    | VS1   |
|---|-----|-------|-------|--------|-------|--------|-------|--------|-------|
| 0 | 0.0 | 9.936 | 9.818 | 68.039 | 35.57 | 40.961 | 38.32 | 30.363 | 0.604 |
| 1 | 0.0 | 9.947 | 9.823 | 68.039 | 35.57 | 40.961 | 38.32 | 30.363 | 0.604 |
| 2 | 0.0 | 9.964 | 9.844 | 68.039 | 35.57 | 40.961 | 38.32 | 30.363 | 0.604 |
| 3 | 0.0 | 9.989 | 9.861 | 68.039 | 35.57 | 40.961 | 38.32 | 30.363 | 0.604 |
| 4 | 0.0 | 9.996 | 9.877 | 68.039 | 35.57 | 40.961 | 38.32 | 30.363 | 0.604 |

```
[ ]: feature_df.tail()
```

```
[14]: target_df.head()
```

```
[14]:
```

|   | profile_id | cooler | valve | leakage | accumulator | stable |
|---|------------|--------|-------|---------|-------------|--------|
| 0 | 1          | 3      | 100   | 0       | 130         | 1      |
| 1 | 2          | 3      | 100   | 0       | 130         | 1      |
| 2 | 3          | 3      | 100   | 0       | 130         | 1      |
| 3 | 4          | 3      | 100   | 0       | 130         | 1      |
| 4 | 5          | 3      | 100   | 0       | 130         | 1      |

```
[15]: target_df.tail()
```

```
[15]:
```

|      | profile_id | cooler | valve | leakage | accumulator | stable |
|------|------------|--------|-------|---------|-------------|--------|
| 2200 | 2201       | 100    | 100   | 0       | 90          | 0      |
| 2201 | 2202       | 100    | 100   | 0       | 90          | 0      |
| 2202 | 2203       | 100    | 100   | 0       | 90          | 0      |
| 2203 | 2204       | 100    | 100   | 0       | 90          | 0      |
| 2204 | 2205       | 100    | 100   | 0       | 90          | 0      |

```
[16]: def generate_encoder(target_labels: Dict[str, Dict[int, str]], feature_name: str) -> Callable:
    encodes = target_labels[feature_name]

    def encode(value: int) -> str:
        return encodes[value]

    return encode
```

```
[17]: def plot_profile(df: pd.DataFrame, target_df: pd.DataFrame, profile_id: int, features: List[str] = []):
    filtered_df = df[features][df.profile_id == profile_id].reset_index()

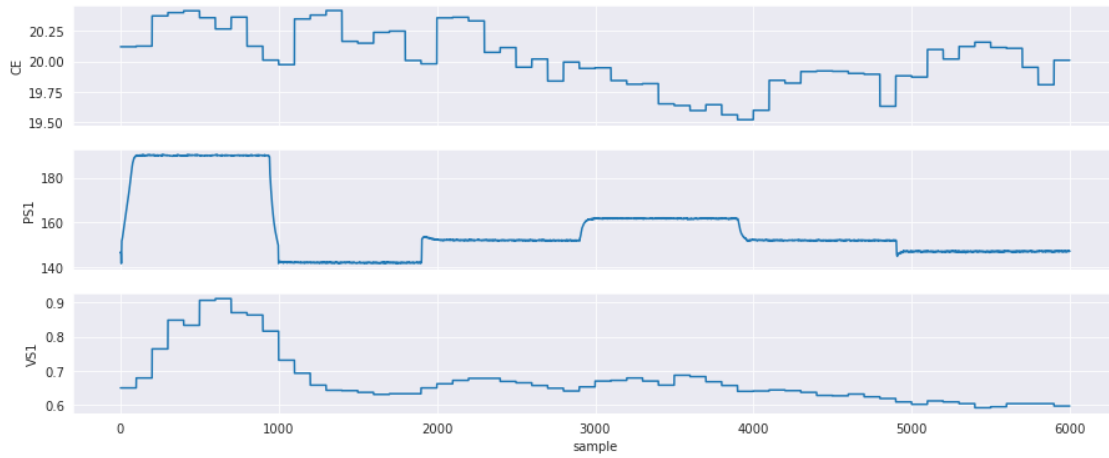
    profile_target_values = target_df[target_df.profile_id == profile_id][TARGET_NAMES].to_dict("records")[0]
    profile_target_labels = [f"{k}: {generate_encoder(TARGET_VALUES_MAP, k)(v)}" for k, v in profile_target_values.items()]

    with sns.axes_style(PLOT_STYLE):
        figure, axes = plt.subplots(len(features), 1, figsize=(15, len(features)*2), sharex=True)
        figure.suptitle(f'{" ".join(profile_target_labels)}', fontsize=14)
        plt.xlabel("sample")

        for ax, feature_name in zip(axes, features):
            ax.plot(filtered_df[feature_name])
            ax.set_ylabel(feature_name)
```

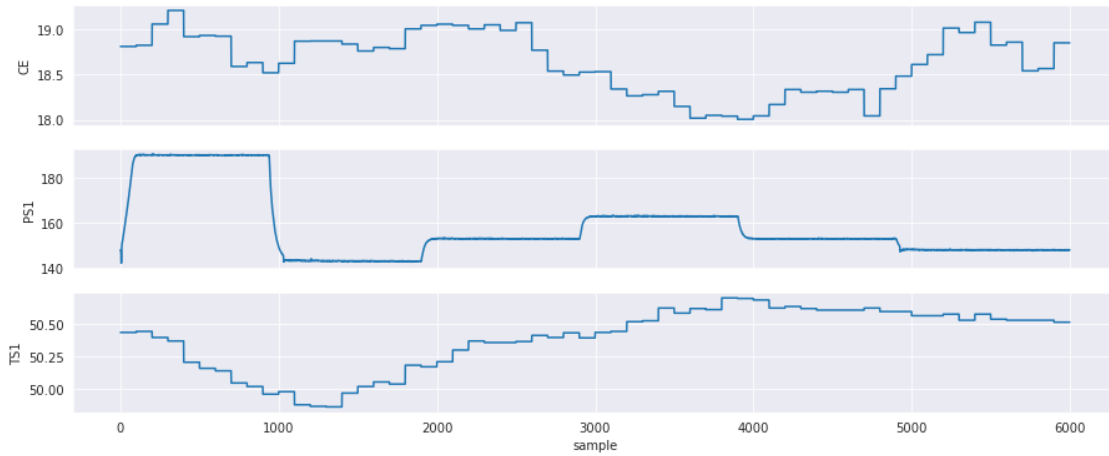
```
[24]: plot_profile(feature_df, profile_id=200, target_df=target_df, features=["CE", "PS1", "VS1"])
```

cooler: close to total failure, valve: optimal switching behavior, leakage: no, accumulator: optimal pressure, stable: not



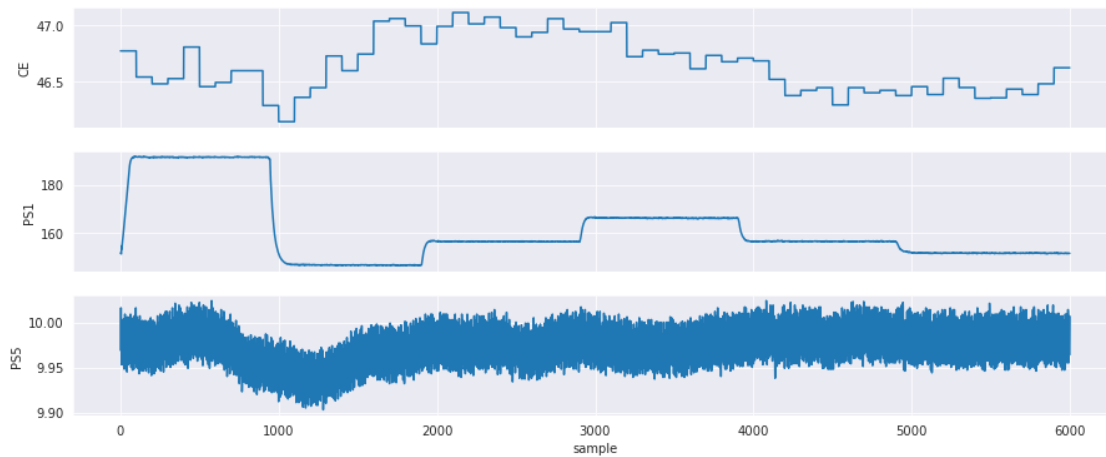
```
[25]: plot_profile(feature_df, profile_id=35, target_df=target_df, features=["CE",  
    ↪ "PS1", "TS1"])
```

cooler: close to total failure, valve: optimal switching behavior, leakage: no, accumulator: optimal pressure, stable: not



```
[26]: plot_profile(feature_df, profile_id=2205, target_df=target_df, features=["CE",  
    ↪ "PS1", "PS5"])
```

cooler: full efficiency, valve: optimal switching behavior, leakage: no, accumulator: close to total failure, stable: yes



```
[18]: def count_targets(df: pd.DataFrame):  
    for target in TARGET_NAMES:  
        encoder = generate_encoder(TARGET_VALUES_MAP, target)  
        data = df[target].map(encoder)  
        print(f"Distribution of '{target}' target:\n{data.value_counts()}\n")
```

```
[19]: count_targets(target_df)
```

```
Distribution of 'cooler' target:  
full efficiency          741  
close to total failure   732  
reduced efficiency       732  
Name: cooler, dtype: int64
```

```
Distribution of 'valve' target:  
optimal switching behavior  1125  
severe lag                  360  
close to total failure      360  
small lag                   360  
Name: valve, dtype: int64
```

```
Distribution of 'leakage' target:  
no          1221  
severe      492  
weak        492  
Name: leakage, dtype: int64
```

```
Distribution of 'accumulator' target:  
close to total failure    808  
optimal pressure         599
```

```
Distribution of 'stable' target:
yes      1449
not       756
Name: stable, dtype: int64
```

```
[20]:
```

|      | profile_id | cooler | valve | leakage | accumulator | stable |
|------|------------|--------|-------|---------|-------------|--------|
| 0    | 1          | 3      | 100   | 0       | 130         | 1      |
| 1    | 2          | 3      | 100   | 0       | 130         | 1      |
| 2    | 3          | 3      | 100   | 0       | 130         | 1      |
| 3    | 4          | 3      | 100   | 0       | 130         | 1      |
| 4    | 5          | 3      | 100   | 0       | 130         | 1      |
| ...  | ...        | ...    | ...   | ...     | ...         | ...    |
| 2200 | 2201       | 100    | 100   | 0       | 90          | 0      |
| 2201 | 2202       | 100    | 100   | 0       | 90          | 0      |
| 2202 | 2203       | 100    | 100   | 0       | 90          | 0      |
| 2203 | 2204       | 100    | 100   | 0       | 90          | 0      |
| 2204 | 2205       | 100    | 100   | 0       | 90          | 0      |

[illegible]

[illegible]



19\t2.25\t2.32\t2.32\t2.305\t2.328\t2.352\t2.359\t2.383\t2.328\t2.281\t2.305\t2.383\t2.414\t2.406\t2.383\t2.32\t2.227\t2.227\t2.32\t2.352\t2.328\t2.32\t2.375\t2.32\t2.242\t2.227\t2.273\t2.273\t2.266\t2.305\t2.32\t2.336\t2.352\t2.359\t2.352\t2.336\t2.414\t2.437\t2.445\t2.414\t2.336\t2.359\t2.297\t2.25\t2.352\t2.328\t2.297\t2.297\t2.297\t2.32\t2.297\t2.32\t2.336\t2.32\t2.211\t2.211\t2.227\t2.219\t2.305\t2.328\t2.32\t2.336\t2.352\t2.336\t2.359\t2.391\t2.359\t2.336\t2.305\t2.281\t2.359\t2.391\t2.383\t2.383\t2.266\t2.25\t2.359\t2.414\t2.391\t2.32\t2.273\t2.281\t2.297\t2.273\t2.25\t2.281\t2.383\t2.43\t2.445\t2.437\t2.445\t2.523\t2.5\t2.445\t2.469\t2.484\t2.445\t2.461\t2.43\t2.406\t2.414\t2.336\t2.328\t2.375\t2.359\t2.328\t2.328\t2.32\t2.305\t2.305\t2.32\t2.273\t2.227\t2.25\t2.273\t2.336\t2.375\t2.406\t2.437\t2.383\t2.383\t2.391\t2.297\t2.25\t2.273\t2.305\t2.359\t2.406\t2.359\t2.242\t2.211\t2.297\t2.328\t2.32\t2.336\t2.32\t2.281\t2.305\t2.273\t2.266\t2.297\t2.273\t2.281\t2.297\t2.359\t2.414\t2.375\t2.414\t2.484\t2.469\t2.445\t2.437\t2.43\t2.383\t2.336\t2.359\t2.437\t2.469\t2.445\t2.43\t2.437\t2.359\t2.281\t2.281\t2.273\t2.273\t2.273\t2.281\t2.32\t2.32\t2.383\t2.406\t2.375\t2.406\t2.461\t2.437\t2.406\t2.383\t2.281\t2.32\t2.305\t2.266\t2.32\t2.266\t2.242\t2.297\t2.305\t2.328\t2.336\t2.297\t2.25\t2.281\t2.297\t2.281\t2.305\t2.32\t2.375\t2.461\t2.516\t2.469\t2.43\t2.461\t2.461\t2.445\t2.43\t2.391\t2.383\t2.352\t2.32\t2.297\t2.273\t2.305\t2.32\t2.281\t2.305\t2.352\t2.297\t2.32\t2.305\t2.242\t2.273\t2.266\t2.297\t2.359\t2.328\t2.32\t2.352\t2.336\t2.281\t2.352\t2.352\t2.328\t2.352\t2.414\t2.375\t2.32\t2.32\t2.336\t2.297\t2.297\t2.352\t2.352\t2.25\t2.25\t2.305\t2.227\t2.187\t2.211\t2.25\t2.281\t2.273\t2.273\t2.297\t2.375\t2.445\t2.445\t2.43\t2.461\t2.461\t2.445\t2.437\t2.391\t2.406\t2.414\t2.391\t2.375\t2.375\t2.414\t2.414\t2.352\t2.359\t2.305\t2.242\t2.273\t2.266\t2.227\t2.25\t2.32\t2.328\t2.281\t2.305\t2.336\t2.359\t2.391\t2.336\t2.328\t2.375\t2.352\t2.359\t2.383\t2.375\t2.328\t2.219\t2.211\t2.352\t2.391\t2.359\t2.359\t2.266\t2.242\t2.281\t2.273\t2.25\t2.266\t2.297\t2.273\t2.32\t2.359\t2.359\t2.414\t2.375\t2.32\t2.383\t2.383\t2.297\t2.297\t2.305\t2.297\t2.281\t2.273\t2.305\t2.273\t2.305\t2.383\t2.359\t2.305\t2.219\t2.219\t2.25\t2.297\t2.305\t2.273\t2.352\t2.383\t2.359\t2.391\t2.461\t2.461\t2.484\t2.445\t2.383\t2.391\t2.414\t2.383\t2.359\t2.383\t2.352\t2.375\t2.461\t2.437\t2.391\t2.406\t2.383\t2.336\t2.297\t2.336\t2.32\t2.297\t2.32\t2.297\t2.352\t2.406\t2.406\t2.305\t2.227\t2.242\t2.328\t2.32\t2.266\t2.281\t2.227\t2.219\t2.242\t2.195\t2.211\t2.211\t2.227\t2.273\t2.227\t2.227\t2.281\t2.305\t2.25\t2.187\t2.172\t2.187\t2.227\t2.25\t2.242\t2.281\t2.328\t2.305\t2.32\t2.391\t2.492\t2.461\t2.352\t2.391\t2.414\t2.391\t2.391\t2.43\t2.437\t2.43\t2.406\t2.383\t2.391\t2.383\t2.336\t2.32\t2.328\t2.359\t2.32\t2.273\t2.32\t2.406\t2.437\t2.445\t2.492\t2.461\t2.43\t2.469\t2.445\t2.375\t2.375\t2.437\t2.414\t2.383\t2.383\t2.383\t2.352\t2.297\t2.297\t2.305\t2.305\t2.273\t2.211\t2.219\t2.266\t2.242\t2.25\t2.281\t2.25\t2.266\t2.32\t2.383\t2.437\t2.445\t2.375\t2.297\t2.336\t2.391\t2.359\t2.305\t2.297\t2.281\t2.273\t2.273\t2.297\t2.297\t2.25\t2.266\t2.242\t2.156\t2.133\t2.141\t2.164\t2.172\t2.133\t2.219\t2.359\t2.414\t2.437\t2.445\t2.539\t2.539\t2.461\t2.43\t2.43\t2.43\t2.406\t2.383\t2.406\t2.406\t2.336\t2.32\t2.359\t2.328\t2.281\t2.305\t2.32\t2.352\t2.305\t2.227\t2.242\t2.25\t2.219\t2.336\t2.437\t2.352\t2.328\t2.32\t2.32\t2.336\t2.273\t2.242\t2.25\t2.227\t2.266\t2.297\t2.281\t2.281\t2.25\t2.211\t2.242\t2.305\t2.297\t2.25\t2.281\t2.281\t2.25\t2.266\t2.297\t2.297\t2.297\t2.32\t2.352\t2.406\t2.352\t2.32\t2.359\t2.336\t2.336\t2.359\t2.352\t2.328\t2.305\t2.273\t2.297\t2.32\t2.32\t2.297\t2.297\t2.328\t2.297\t2.242\t2.242\t2.242

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19\t2.281\t2.352\t2.305\t2.32\t2.336\t2.352\t2.43\t2.461\t2.43\t2.375\t2.359\t2.305\t2.266\t2.305\t2.328\t2.336\t2.297\t2.32\t2.375\t2.375\t2.32\t2.211\t2.172\t2.187\t2.227\t2.273\t2.305\t2.25\t2.25\t2.297\t2.297\t2.336\t2.391\t2.383\t2.32\t2.375\t2.375\t2.328\t2.352\t2.305\t2.266\t2.273\t2.297\t2.32\t2.336\t2.32\t2.305\t2.32\t2.32\t2.273\t2.211\t2.219\t2.227\t2.195\t2.219\t2.25\t2.266\t2.297\t2.32\t2.32\t2.352\t2.383\t2.305\t2.211\t2.211\t2.227\t2.211\t2.195\t2.195\t2.227\t2.266\t2.227\t2.211\t2.172\t2.156\t2.195\t2.219\t2.195\t2.219\t2.25\t2.211\t2.242\t2.297\t2.305\t2.375\t2.406\t2.391\t2.375\t2.359\t2.352\t2.352\t2.297\t2.25\t2.266\t2.297\t2.375\t2.391\t2.352\t2.297\t2.305\t2.352\t2.352\t2.406\t2.406\t2.375\t2.32\t2.32\t2.328\t2.359\t2.383\t2.383\t2.383\t2.359\t2.391\t2.383\t2.328\t2.297\t2.273\t2.273\t2.352\t2.359\t2.328\t2.352\t2.359\t2.336\t2.281\t2.242\t2.211\t2.164\t2.172\t2.273\t2.273\t2.219\t2.211\t2.117\t2.109\t2.227\t2.242\t2.305\t2.406\t2.43\t2.461\t2.414\t2.32\t2.328\t2.383\t2.328\t2.281\t2.328\t2.383\t2.414\t2.469\t2.437\t2.328\t2.32\t2.281\t2.266\t2.297\t2.266\t2.25\t2.273\t2.266\t2.336\t2.445\t2.43\t2.414\t2.391\t2.297\t2.336\t2.352\t2.297\t2.281\t2.273\t2.336\t2.43\t2.414\t2.328\t2.281\t2.227\t2.219\t2.281\t2.242\t2.219\t2.25\t2.273\t2.219\t2.219\t2.25\t2.281\t2.352\t2.32\t2.32\t2.336\t2.266\t2.305\t2.25\t2.172\t2.219\t2.211\t2.25\t2.305\t2.25\t2.273\t2.352\t2.297\t2.242\t2.25\t2.219\t2.219\t2.227\t2.219\t2.273\t2.32\t2.281\t2.297\t2.43\t2.391\t2.437\t2.406\t2.352\t2.32\t2.328\t2.328\t2.336\t2.273\t2.266\t2.32\t2.352\t2.383\t2.383\t2.328\t2.266\t2.266\t2.219\t2.211\t2.227\t2.187\t2.195\t2.266\t2.328\t2.328\t2.328\t2.352\t2.43\t2.414\t2.336\t2.359\t2.406\t2.32\t2.305\t2.328\t2.266\t2.273\t2.32\t2.328\t2.305\t2.25\t2.273\t2.281\t2.242\t2.273\t2.273\t2.25\t2.273\t2.297\t2.32\t2.305\t2.32\t2.375\t2.406\t2.359\t2.305\t2.336\t2.352\t2.305\t2.211\t2.195\t2.297\t2.336\t2.328\t2.281\t2.266\t2.242\t2.187\t2.172\t2.164\t2.195\t2.211\t2.172\t2.211\t2.195\t2.211\t2.305\t2.352\t2.375\t2.359\t2.336\t2.336\t2.352\t2.352\t2.305\t2.273\t2.32\t2.352\t2.336\t2.32\t2.352\t2.359\t2.297\t2.297\t2.305\t2.297\t2.359\t2.359\t2.297\t2.281\t2.305\t2.336\t2.328\t2.328\t2.305\t2.359\t2.414\t2.406\t2.359\t2.242\t2.164\t2.195\t2.242\t2.211\t2.242\t2.297\t2.266\t2.227\t2.219\t2.211\t2.195\t2.172\t2.156\t2.133\t2.172\t2.242\t2.227\t2.227\t2.266\t2.32\t2.383\t2.469\t2.414\t2.32\t2.352\t2.359\t2.328\t2.352\t2.359\t2.273\t2.219\t2.227\t2.195\t2.25\t2.25\t2.211\t2.242\t2.242\t2.133\t2.133\t2.195\t2.164\t2.211\t2.227\t2.242\t2.359\t2.406\t2.359\t2.328\t2.328\t2.375\t2.375\t2.328\t2.305\t2.32\t2.305\t2.305\t2.336\t2.328\t2.305\t2.305\t2.281\t2.273\t2.305\t2.273\t2.266\t2.242\t2.242\t2.273\t2.297\t2.297\t2.273\t2.32\t2.352\t2.352\t2.406\t2.555\t2.523\t2.437\t2.414\t2.359\t2.383\t2.437\t2.445\t2.414\t2.437\t2.484\t2.406\t2.328\t2.297\t2.32\t2.305\t2.281\t2.25\t2.273\t2.352\t2.375\t2.391\t2.328\t2.336\t2.437\t2.461\t2.406\t2.359\t2.391\t2.359\t2.297\t2.266\t2.273\t2.32\t2.32\t2.281\t2.305\t2.336\t2.336\t2.383\t2.383\t2.328\t2.266\t2.227\t2.25\t2.273\t2.297\t2.359\t2.43\t2.539\t2.492\t2.383\t2.43\t2.461\t2.414\t2.375\t2.391\t2.391\t2.414\t2.461\t2.43\t2.352\t2.266\t2.32\t2.328\t2.227\t2.25\t2.305\t2.336\t2.328\t2.273\t2.266\t2.25\t2.281\t2.305\t2.352\t2.414\t2.406\t2.406\t2.328\t2.219\t2.227\t2.273\t2.273\t2.242\t2.227\t2.187\t2.219\t2.25\t2.219\t2.187\t2.242\t2.297\t2.305\t2.352\t2.281\t2.219\t2.219\t2.211\t2.195\t2.219\t2.297\t2.359\t2.406\t2.375\t2.352\t2.32\t2.281\t2.281\t2.211\t2.187\t2.211\t2.211\t2.242\t2.227\t2.266\t2.281\t2.25\t2.227\t2.195\t2.242\t2.25\t2.211\t2.219\t2.219\t2.328\t2.383\t2.305\t2.32\t2.391\t2.414\t2.445\t2.43\t2.336\t2.328\t2.32\t2.281\t2.25\t2.172\t2.195\t2.227\t2.219\t2.227\t2.25\t2.195\t

t2.141\t2.156\t2.164\t2.195\t2.187\t2.187\t2.242\t2.297\t2.305\t2.305\t2.383\t2.414\t2.328\t2.32\t2.32\t2.281\t2.281\t2.266\t2.273\t2.32\t2.328\t2.32\t2.32\t2.352\t2.305\t2.211\t2.273\t2.352\t2.297\t2.242\t2.25\t2.266\t2.25\t2.273\t2.273\t2.32\t2.43\t2.492\t2.461\t2.375\t2.305\t2.32\t2.336\t2.359\t2.32\t2.242\t2.703\t2.094\t0.937\t0.93\t0.891\t0.859\t0.875\t0.875\t0.859\t0.883\t0.961\t2.1039\t2.1055\t2.109\t2.187\t2.297\t2.375\t2.453\t2.594\t2.648\t2.695\t2.75\t2.734\t2.68\t2.695\t2.648\t2.719\t2.812\t2.719\t2.727\t2.805\t2.844\t2.898\t2.937\t2.898\t2.945\t2.992\t2.953\t2.047\t2.133\t2.062\t2.055\t2.133\t2.156\t2.156\t2.172\t2.164\t2.211\t2.25\t2.25\t2.227\t2.211\t2.164\t2.187\t2.242\t2.227\t2.172\t2.117\t2.164\t2.164\t2.164\t2.219\t2.211\t2.219\t2.25\t2.336\t2.375\t2.359\t2.383\t2.375\t2.305\t2.187\t2.141\t2.195\t2.219\t2.172\t2.109\t2.117\t2.172\t2.195\t2.141\t2.133\t2.187\t2.187\t2.266\t2.391\t2.383\t2.336\t2.359\t2.383\t2.383\t2.383\t2.406\t2.359\t2.25\t2.227\t2.195\t2.219\t2.305\t2.32\t2.242\t2.195\t2.242\t2.281\t2.375\t2.406\t2.32\t2.281\t2.305\t2.328\t2.32\t2.281\t2.219\t2.172\t2.242\t2.359\t2.43\t2.406\t2.375\t2.297\t2.32\t2.383\t2.352\t2.375\t2.406\t2.375\t2.43\t2.492\t2.516\t2.469\t2.383\t2.328\t2.305\t2.375\t2.32\t2.242\t2.25\t2.281\t2.32\t2.305\t2.25\t2.281\t2.352\t2.273\t2.281\t2.375\t2.391\t2.445\t2.5\t2.5\t2.414\t2.336\t2.359\t2.359\t2.352\t2.336\t2.352\t2.352\t2.375\t2.375\t2.328\t2.32\t2.25\t2.266\t2.336\t2.336\t2.305\t2.297\t2.281\t2.32\t2.32\t2.328\t2.414\t2.406\t2.352\t2.336\t2.336\t2.336\t2.297\t2.25\t2.242\t2.242\t2.273\t2.328\t2.359\t2.43\t2.445\t2.391\t2.391\t2.359\t2.297\t2.352\t2.352\t2.273\t2.266\t2.273\t2.273\t2.273\t2.281\t2.266\t2.242\t2.281\t2.352\t2.375\t2.359\t2.336\t2.352\t2.43\t2.445\t2.383\t2.281\t2.273\t2.305\t2.297\t2.352\t2.383\t2.328\t2.266\t2.25\t2.227\t2.227\t2.219\t2.27\t2.266\t2.187\t2.227\t2.32\t2.297\t2.266\t2.25\t2.273\t2.305\t2.266\t2.195\t2.156\t2.164\t2.242\t2.242\t2.211\t2.187\t2.227\t2.328\t2.305\t2.305\t2.32\t2.273\t2.281\t2.336\t2.375\t2.336\t2.305\t2.305\t2.297\t2.25\t2.266\t2.383\t2.383\t2.273\t2.227\t2.297\t2.297\t2.242\t2.25\t2.273\t2.266\t2.328\t2.391\t2.391\t2.383\t2.375\t2.328\t2.359\t2.352\t2.297\t2.25\t2.266\t2.266\t2.25\t2.281\t2.219\t2.211\t2.328\t2.359\t2.32\t2.32\t2.352\t2.375\t2.336\t2.328\t2.305\t2.281\t2.266\t2.273\t2.266\t2.273\t2.281\t2.266\t2.25\t2.211\t2.219\t2.297\t2.273\t2.195\t2.273\t2.305\t2.266\t2.336\t2.406\t2.406\t2.383\t2.383\t2.281\t2.219\t2.273\t2.297\t2.266\t2.281\t2.227\t2.211\t2.25\t2.25\t2.273\t2.242\t2.25\t2.328\t2.336\t2.352\t2.336\t2.305\t2.305\t2.328\t2.383\t2.328\t2.328\t2.375\t2.336\t2.328\t2.297\t2.273\t2.273\t2.266\t2.359\t2.305\t2.281\t2.281\t2.336\t2.437\t2.406\t2.352\t2.383\t2.352\t2.281\t2.328\t2.281\t2.211\t2.266\t2.227\t2.195\t2.219\t2.273\t2.336\t2.273\t2.242\t2.336\t2.414\t2.383\t2.352\t2.359\t2.336\t2.32\t2.32\t2.297\t2.305\t2.281\t2.25\t2.25\t2.219\t2.211\t2.273\t2.32\t2.305\t2.32\t2.359\t2.336\t2.359\t2.375\t2.305\t2.281\t2.281\t2.281\t2.305\t2.336\t2.297\t2.227\t2.266\t2.32\t2.297\t2.227\t2.25\t2.32\t2.281\t2.25\t2.273\t2.328\t2.336\t2.32\t2.281\t2.242\t2.273\t2.297\t2.281\t2.266\t2.227\t2.273\t2.266\t2.195\t2.187\t2.25\t2.305\t2.281\t2.305\t2.305\t2.281\t2.305\t2.391\t2.352\t2.219\t2.219\t2.297\t2.266\t2.227\t2.242\t2.281\t2.297\t2.297\t2.273\t2.242\t2.297\t2.273\t2.352\t2.352\t2.305\t2.359\t2.336\t2.281\t2.273\t2.273\t2.32\t2.281\t2.242\t2.281\t2.273\t2.25\t2.281\t2.305\t2.273\t2.281\t2.32\t2.281\t2.32\t2.375\t2.414\t2.406\t2.32\t2.25\t2.32\t2.32\t2.25\t2.25\t2.25\t2.266\t2.227\t2.227\t2.273\t2.297\t2.305\t2.305\t2.297\t2.297\t2.359\t2.352\t2.383\t2.375\t2.227\t2.242\t2.297\t2.266\t2.25\t2.227\t2.211\t2.297\t2.32\t2.227\t2.266\t2.25\t2.305\t2.391\t2.375\t2.359\t2.383\t2.375\t2.375\t2.375

336\t2.375\t2.383\t2.336\t2.281\t2.297\t2.328\t2.25\t2.25\t2.359\t2.328\t2.32\t2.359\t2.391\t2.414\t2.414\t2.406\t2.391\t2.43\t2.391\t2.375\t2.391\t2.445\t2.43\t2.383\t2.352\t2.336\t2.359\t2.383\t2.375\t2.352\t2.328\t2.297\t2.328\t2.406\t2.469\t2.437\t2.445\t2.492\t2.445\t2.492\t2.445\t2.359\t2.414\t2.445\t2.461\t2.445\t2.328\t2.25\t2.32\t2.43\t2.437\t2.43\t2.445\t2.445\t2.484\t2.492\t2.5\t2.547\t2.523\t2.43\t2.375\t2.375\t2.32\t2.297\t2.359\t2.406\t2.352\t2.328\t2.359\t2.328\t2.305\t2.32\t2.352\t2.391\t2.43\t2.445\t2.383\t2.375\t2.352\t2.32\t2.352\t2.297\t2.273\t2.305\t2.305\t2.328\t2.305\t2.25\t2.273\t2.297\t2.297\t2.305\t2.328\t2.336\t2.383\t2.406\t2.359\t2.336\t2.328\t2.352\t2.32\t2.273\t2.281\t2.242\t2.25\t2.305\t2.242\t2.242\t2.273\t2.219\t2.281\t2.391\t2.352\t2.328\t2.375\t2.359\t2.406\t2.375\t2.25\t2.266\t2.281\t2.281\t2.281\t2.297\t2.281\t2.227\t2.25\t2.25\t2.273\t2.281\t2.273\t2.273\t2.227\t2.266\t2.414\t2.469\t2.406\t2.359\t2.328\t2.281\t2.273\t2.266\t2.297\t2.328\t2.32\t2.336\t2.281\t2.227\t2.25\t2.227\t2.25\t2.391\t2.391\t2.328\t2.336\t2.359\t2.383\t2.383\t2.391\t2.281\t2.187\t2.242\t2.328\t2.328\t2.266\t2.336\t2.406\t2.359\t2.336\t2.32\t2.336\t2.391\t2.391\t2.445\t2.5\t2.484\t2.5\t2.414\t2.32\t2.43\t2.445\t2.32\t2.25\t2.305\t2.297\t2.328\t2.359\t2.305\t2.25\t2.266\t2.297\t2.305\t2.32\t2.359\t2.375\t2.297\t2.328\t2.43\t2.375\t2.219\t2.211\t2.297\t2.336\t2.359\t2.25\t2.211\t2.187\t2.219\t2.242\t2.211\t2.281\t2.352\t2.297\t2.281\t2.305\t2.266\t2.219\t2.227\t2.25\t2.242\t2.227\t2.273\t2.273\t2.172\t2.141\t2.195\t2.195\t2.195\t2.297\t2.32\t2.32\t2.328\t2.359\t2.352\t2.266\t2.273\t2.328\t2.32\t2.25\t2.281\t2.336\t2.297\t2.281\t2.25\t2.219\t2.227\t2.227\t2.297\t2.352\t2.336\t2.375\t2.406\t2.352\t2.32\t2.305\t2.32\t2.352\t2.305\t2.297\t2.305\t2.305\t2.328\t2.281\t2.219\t2.305\t2.336\t2.273\t2.32\t2.305\t2.297\t2.406\t2.414\t2.297\t2.352\t2.461\t2.437\t2.359\t2.273\t2.305\t2.336\t2.328\t2.266\t2.242\t2.273\t2.297\t2.328\t2.305\t2.328\t2.352\t2.336\t2.336\t2.32\t2.336\t2.336\t2.305\t2.281\t2.273\t2.328\t2.32\t2.25\t2.273\t2.273\t2.273\t2.305\t2.281\t2.25\t2.273\t2.32\t2.336\t2.336\t2.406\t2.414\t2.359\t2.297\t2.281\t2.375\t2.352\t2.281\t2.305\t2.242\t2.156\t2.102\t2.102\t2.187\t2.266\t2.281\t2.25\t2.305\t2.297\t2.266\t2.328\t2.328\t2.328\t2.281\t2.219\t2.25\t2.32\t2.305\t2.273\t2.266\t2.242\t2.25\t2.227\t2.195\t2.227\t2.273\t2.359\t2.391\t2.359\t2.375\t2.359\t2.305\t2.328\t2.375\t2.383\t2.359\t2.305\t2.305\t2.336\t2.32\t2.227\t2.195\t2.281\t2.273\t2.266\t2.336\t2.352\t2.359\t2.414\t2.445\t2.43\t2.461\t2.492\t2.445\t2.328\t2.328\t2.383\t2.328\t2.336\t2.352\t2.297\t2.25\t2.25\t2.25\t2.242\t2.328\t2.352\t2.328\t2.336\t2.391\t2.336\t2.273\t2.266\t2.305\t2.336\t2.242\t2.141\t2.141\t2.156\t2.164\t2.172\t2.187\t2.211\t2.273\t2.375\t2.32\t2.195\t2.242\t2.359\t2.32\t2.211\t2.211\t2.25\t2.336\t2.328\t2.273\t2.328\t2.359\t2.336\t2.32\t2.273\t2.273\t2.281\t2.305\t2.336\t2.32\t2.32\t2.383\t2.391\t2.32\t2.32\t2.375\t2.359\t2.391\t2.32\t2.266\t2.297\t2.266\t2.32\t2.359\t2.273\t2.219\t2.273\t2.336\t2.406\t2.352\t2.352\t2.391\t2.359\t2.328\t2.273\t2.211\t2.242\t2.305\t2.266\t2.195\t2.211\t2.227\t2.305\t2.352\t2.375\t2.383\t2.406\t2.383\t2.375\t2.492\t2.555\t2.516\t2.437\t2.391\t2.383\t2.375\t2.336\t2.32\t2.25\t2.211\t2.242\t2.227\t2.156\t2.164\t2.195\t2.172\t2.164\t2.164\t2.281\t2.383\t2.406\t2.336\t2.266\t2.352\t2.43\t2.414\t2.43\t2.391\t2.352\t2.383\t2.414\t2.898\t3.805\t4.258\t4.461\t4.641\t4.508\t4.211\t4.156\t4.07\t3.75\t3.781\t3.906\t3.672\t3.672\t3.664\t3.523\t3.437\t3.281\t3.328\t3.336\t3.234\t3.094\t3.039\t3.031\t3.031\t3.086\t3.031\t2.953\t2.867\t2.836\t2.82\t2.836\t2.852\t2.766\t2.711\t2.664\t2.594\t2.594\t2.656\t2.625\t2.594\t2.602\t2.602\t2.648\t2.711\t2.664\t2.648\t2.687\t2.648\t2.547\t2.51

6\t2.547\t2.57\t2.609\t2.578\t2.547\t2.539\t2.523\t2.555\t2.539\t2.5\t2.484\t2.4  
06\t2.383\t2.391\t2.383\t2.414\t2.484\t2.43\t2.328\t2.242\t2.219\t2.281\t2.336\t  
2.297\t2.281\t2.359\t2.43\t2.484\t2.492\t2.445\t2.328\t2.328\t2.359\t2.383\t2.39  
1\t2.352\t2.352\t2.406\t2.461\t2.43\t2.336\t2.305\t2.328\t2.352\t2.352\t2.328\t2  
.297\t2.25\t2.227\t2.305\t2.352\t2.375\t2.43\t2.406\t2.328\t2.352\t2.414\t2.391\t  
t2.359\t2.352\t2.305\t2.281\t2.336\t2.375\t2.352\t2.305\t2.266\t2.281\t2.266\t2.  
211\t2.227\t2.281\t2.242\t2.211\t2.211\t2.242\t2.352\t2.469\t2.445\t2.336\t2.352  
\t2.359\t2.352\t2.32\t2.297\t2.281\t2.281\t2.336\t2.305\t2.297\t2.305\t2.266\t2.  
297\t2.297\t2.219\t2.141\t2.172\t2.219\t2.195\t2.141\t2.172\t2.242\t2.297\t2.359  
\t2.328\t2.281\t2.305\t2.281\t2.219\t2.227\t2.242\t2.266\t2.328\t2.328\t2.328\t2  
.305\t2.281\t2.266\t2.211\t2.187\t2.227\t2.219\t2.242\t2.297\t2.281\t2.273\t2.32  
\t2.32\t2.281\t2.383\t2.437\t2.383\t2.383\t2.383\t2.305\t2.25\t2.273\t2.273\t2.2  
66\t2.25\t2.305\t2.359\t2.305\t2.266\t2.297\t2.266\t2.219\t2.227\t2.187\t2.211\t\t  
2.32\t2.297\t2.266\t2.305\t2.375\t2.43\t2.43\t2.406\t2.406\t2.391\t2.336\t2.305\t  
t2.273\t2.281\t2.352\t2.305\t2.281\t2.328\t2.273\t2.266\t2.266\t2.187\t2.141\t2.  
109\t2.117\t2.164\t2.164\t2.195\t2.25\t2.297\t2.281\t2.266\t2.273\t2.242\t2.227\t  
t2.25\t2.266\t2.25\t2.25\t2.273\t2.32\t2.328\t2.25\t2.25\t2.281\t2.297\t2.227\t2  
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t2.273\t2.227\t2.281\t2.281\t2.219\t2.242\t2.266\t2.266\t2.336\t2.328\t2.281\t2.  
32\t2.328\t2.305\t2.352\t2.383\t2.391\t2.352\t2.305\t2.328\t2.352\t2.383\t2.383\t  
t2.391\t2.445\t2.461\t2.414\t2.336\t2.219\t2.219\t2.281\t2.273\t2.242\t2.266\t2.  
281\t2.281\t2.305\t2.281\t2.25\t2.266\t2.273\t2.266\t2.227\t2.242\t2.305\t2.359\t  
t2.391\t2.437\t2.406\t2.352\t2.383\t2.375\t2.352\t2.414\t2.383\t2.281\t2.273\t2.  
32\t2.336\t2.352\t2.359\t2.32\t2.273\t2.227\t2.187\t2.266\t2.273\t2.227\t2.211\t\t  
2.219\t2.273\t2.328\t2.352\t2.391\t2.43\t2.43\t2.359\t2.273\t2.305\t2.297\t2.297  
\t2.32\t2.297\t2.352\t2.383\t2.359\t2.32\t2.297\t2.336\t2.297\t2.172\t2.187\t2.2  
27\t2.172\t2.172\t2.227\t2.297\t2.391\t2.406\t2.43\t2.43\t2.336\t2.273\t2.305\t2  
.297\t2.227\t2.172\t2.187\t2.242\t2.172\t2.164\t2.227\t2.227\t2.211\t2.227\t2.25  
\t2.281\t2.383\t2.414\t2.375\t2.375\t2.406\t2.375\t2.391\t2.414\t2.383\t2.414\t2  
.461\t2.469\t2.461\t2.383\t2.297\t2.281\t2.305\t2.328\t2.32\t2.305\t2.375\t2.383  
\t2.32\t2.297\t2.32\t2.281\t2.25\t2.273\t2.281\t2.266\t2.25\t2.305\t2.359\t2.305  
\t2.297\t2.336\t2.352\t2.32\t2.328\t2.336\t2.273\t2.25\t2.25\t2.273\t2.359\t2.41  
4\t2.43\t2.406\t2.383\t2.352\t2.32\t2.297\t2.305\t2.297\t2.281\t2.336\t2.383\t2.  
406\t2.437\t2.383\t2.359\t2.352\t2.352\t2.297\t2.242\t2.227\t2.25\t2.281\t2.242\t  
t2.227\t2.242\t2.242\t2.25\t2.242\t2.219\t2.211\t2.187\t2.172\t2.117\t2.102\t2.2  
19\t2.273\t2.211\t2.273\t2.352\t2.328\t2.297\t2.297\t2.273\t2.195\t2.219\t2.273\t  
t2.281\t2.305\t2.336\t2.305\t2.297\t2.328\t2.273\t2.297\t2.297\t2.227\t2.25\t2.2  
73\t2.281\t2.336\t2.32\t2.273\t2.359\t2.375\t2.414\t2.445\t2.359\t2.375\t2.336\t\t  
2.32\t2.336\t2.352\t2.359\t2.383\t2.406\t2.359\t2.242\t2.141\t2.164\t2.172\t2.17  
2\t2.211\t2.187\t2.172\t2.242\t2.187\t2.164\t2.25\t2.352\t2.32\t2.242\t2.227\t2.  
227\t2.297\t2.297\t2.25\t2.266\t2.266\t2.211\t2.211\t2.219\t2.227\t2.273\t2.273\t  
t2.266\t2.25\t2.242\t2.328\t2.375\t2.32\t2.281\t2.32\t2.328\t2.383\t2.484\t2.492  
\t2.43\t2.375\t2.437\t2.461\t2.336\t2.273\t2.273\t2.266\t2.25\t2.281\t2.273\t2.2  
19\t2.266\t2.25\t2.172\t2.187\t2.172\t2.219\t2.227\t2.164\t2.164\t2.25\t2.32\t2.  
383\t2.391\t2.406\t2.461\t2.391\t2.273\t2.273\t2.297\t2.281\t2.273\t2.266\t2.305  
\t2.305\t2.32\t2.305\t2.297\t2.266\t2.25\t2.297\t2.242\t2.211\t2.25\t2.305\t2.32  
8\t2.32\t2.359\t2.375\t2.375\t2.406\t2.383\t2.359\t2.336\t2.328\t2.328\t2.32\t2.

336\t2.336\t2.25\t2.273\t2.305\t2.297\t2.336\t2.297\t2.25\t2.281\t2.281\t2.328\t2.328\t2.32\t2.375\t2.469\t2.437\t2.414\t2.469\t2.43\t2.43\t2.437\t2.391\t2.328\t2.297\t2.273\t2.266\t2.297\t2.281\t2.328\t2.305\t2.219\t2.25\t2.219\t2.172\t2.187\t2.187\t2.219\t2.273\t2.297\t2.328\t2.336\t2.391\t2.406\t2.437\t2.469\t2.469\t2.5\t2.445\t2.336\t2.273\t2.281\t2.391\t2.484\t2.43\t2.328\t2.297\t2.297\t2.266\t2.219\t2.273\t2.305\t2.25\t2.195\t2.227\t2.297\t2.297\t2.328\t2.43\t2.43\t2.383\t2.383\t2.383\t2.375\t2.336\t2.281\t2.25\t2.273\t2.328\t2.328\t2.25\t2.266\t2.297\t2.266\t2.219\t2.211\t2.211\t2.25\t2.281\t2.25\t2.242\t2.273\t2.328\t2.359\t2.375\t2.352\t2.375\t2.406\t2.336\t2.305\t2.328\t2.383\t2.43\t2.359\t2.336\t2.359\t2.359\t2.336\t2.328\t2.336\t2.328\t2.336\t2.328\t2.32\t2.305\t2.25\t2.266\t2.383\t2.445\t2.414\t2.414\t2.43\t2.406\t2.383\t2.352\t2.352\t2.328\t2.281\t2.297\t2.32\t2.328\t2.352\t2.336\t2.305\t2.25\t2.273\t2.336\t2.352\t2.266\t2.164\t2.211\t2.305\t2.375\t2.359\t2.352\t2.391\t2.375\t2.297\t2.297\t2.273\t2.242\t2.25\t2.242\t2.219\t2.219\t2.242\t2.25\t2.227\t2.211\t2.211\t2.156\t2.172\t2.187\t2.187\t2.219\t2.195\t2.273\t2.273\t2.273\t2.352\t2.391\t2.43\t2.383\t2.352\t2.352\t2.328\t2.359\t2.328\t2.227\t2.227\t2.266\t2.227\t2.219\t2.266\t2.297\t2.273\t2.219\t2.195\t2.25\t2.227\t2.219\t2.25\t2.227\t2.219\t2.305\t2.383\t2.359\t2.375\t2.43\t2.391\t2.32\t2.297\t2.273\t2.227\t2.266\t2.32\t2.297\t2.297\t2.328\t2.305\t2.297\t2.32\t2.328\t2.297\t2.25\t2.211\t2.195\t2.211\t2.227\t2.328\t2.375\t2.359\t2.375\t2.383\t2.391\t2.43\t2.406\t2.336\t2.328\t2.352\t2.391\t2.391\t2.352\t2.391\t2.414\t2.383\t2.375\t2.328\t2.273\t2.273\t2.297\t2.273\t2.242\t2.266\t2.273\t2.297\t2.375\t2.414\t2.352\t2.352\t2.406\t2.375\t2.328\t2.336\t2.336\t2.281\t2.297\t2.297\t2.305\t2.359\t2.375\t2.336\t2.273\t2.281\t2.305\t2.242\t2.187\t2.172\t2.273\t2.336\t2.406\t2.43\t2.336\t2.406\t2.43\t2.391\t2.375\t2.305\t2.281\t2.281\t2.25\t2.266\t2.266\t2.281\t2.328\t2.352\t2.305\t2.273\t2.32\t2.281\t2.242\t2.266\t2.273\t2.266\t2.305\t2.359\t2.359\t2.43\t2.437\t2.43\t2.383\t2.359\t2.359\t2.305\t2.328\t2.32\t2.25\t2.281\t2.328\t2.297\t2.273\t2.266\t2.273\t2.297\t2.227\t2.219\t2.297\t2.297\t2.297\t2.328\t2.352\t2.391\t2.437\t2.484\t2.445\t2.391\t2.375\t2.375\t2.461\t2.43\t2.352\t2.336\t2.328\t2.32\t2.305\t2.273\t2.266\t2.281\t2.273\t2.219\t2.242\t2.273\t2.25\t2.242\t2.281\t2.32\t2.297\t2.352\t2.437\t2.437\t2.445\t2.469\t2.43\t2.383\t2.375\t2.352\t2.375\t2.359\t2.328\t2.391\t2.375\t2.359\t2.391\t2.32\t2.25\t2.266\t2.242\t2.187\t2.195\t2.242\t2.195\t2.32\t2.383\t2.414\t2.414\t2.406\t2.375\t2.32\t2.281\t2.328\t2.305\t2.25\t2.281\t2.281\t2.352\t2.328\t2.25\t2.273\t2.219\t2.25\t2.266\t2.211\t2.242\t2.375\t2.437\t2.383\t2.414\t2.5\t2.523\t2.555\t2.578\t2.555\t2.57\t2.82\t2.3.281\t2.3.578\t2.3.602\t2.3.531\t2.3.508\t2.3.312\t2.3.195\t2.3.234\t2.3.203\t2.3.094\t2.3.039\t2.3.016\t2.2.961\t2.2.906\t2.2.898\t2.2.93\t2.2.945\t2.2.898\t2.2.836\t2.2.836\t2.2.844\t2.2.758\t2.2.711\t2.2.766\t2.2.711\t2.2.687\t2.2.664\t2.2.633\t2.2.664\t2.2.555\t2.2.437\t2.2.484\t2.2.547\t2.2.555\t2.2.547\t2.2.469\t2.2.461\t2.2.5\t2.2.5\t2.2.492\t2.2.5\t2.2.469\t2.2.484\t2.2.461\t2.2.375\t2.2.414\t2.2.437\t2.2.375\t2.2.375\t2.2.391\t2.2.359\t2.2.383\t2.2.461\t2.2.469\t2.2.43\t2.2.406\t2.2.43\t2.2.484\t2.2.484\t2.2.406\t2.2.375\t2.2.375\t2.2.352\t2.2.352\t2.2.414\t2.2.383\t2.2.352\t2.2.406\t2.2.383\t2.2.305\t2.2.336\t2.2.383\t2.2.352\t2.2.359\t2.2.375\t2.2.359\t2.2.383\t2.2.437\t2.2.516\t2.2.523\t2.2.484\t2.2.437\t2.2.375\t2.2.297\t2.2.266\t2.2.211\t2.2.242\t2.2.281\t2.2.219\t2.2.242\t2.2.32\t2.2.336\t2.2.273\t2.2.227\t2.2.227\t2.2.211\t2.2.195\t2.2.227\t2.2.266\t2.2.242\t2.2.227\t2.2.273\t2.2.266\t2.2.305\t2.2.375\t2.2.375\t2.2.352\t2.2.328\t2.2.328\t2.2.352\t2.2.375\t2.2.305\t2.2.242\t2.2.211\t2.2.25\t2.2.305\t2.2.297\t2.2.227\t2.2.227\t2.2.281\t2.2.242\t2.2.219\t2.2.273\t2.2.273\t2.2.242\t2.2.219\t2.2.156\t2.2.187\t2.2.328\t2.2.352\t2.2.375\t2.2.445\t2.2.516\t2.2.5\t2.2.406\t2.2.391\t2.2.391\t2.2.336\t2.2.328\t2.2.391\t2.2.328\t2.2.352\t2.2.391\t2.3

2\t2.273\t2.336\t2.375\t2.305\t2.227\t2.195\t2.211\t2.273\t2.273\t2.273\t2.273\t2.273\t2.32\t2.336\t2.32\t2.352\t2.391\t2.391\t2.437\t2.375\t2.266\t2.227\t2.219\t2.25\t2.266\t2.25\t2.25\t2.336\t2.328\t2.281\t2.305\t2.281\t2.297\t2.328\t2.305\t2.328\t2.359\t2.328\t2.32\t2.328\t2.336\t2.43\t2.469\t2.43\t2.43\t2.437\t2.375\t2.305\t2.336\t2.305\t2.25\t2.281\t2.273\t2.242\t2.266\t2.266\t2.227\t2.211\t2.172\t2.211\t2.305\t2.359\t2.328\t2.297\t2.305\t2.328\t2.328\t2.375\t2.359\t2.359\t2.414\t2.445\t2.43\t2.391\t2.43\t2.359\t2.281\t2.281\t2.242\t2.25\t2.25\t2.242\t2.266\t2.211\t2.164\t2.172\t2.211\t2.219\t2.219\t2.219\t2.195\t2.211\t2.266\t2.266\t2.336\t2.406\t2.383\t2.375\t2.375\t2.32\t2.297\t2.32\t2.273\t2.266\t2.266\t2.336\t2.336\t2.297\t2.359\t2.406\t2.383\t2.336\t2.352\t2.305\t2.266\t2.297\t2.328\t2.281\t2.281\t2.375\t2.414\t2.406\t2.375\t2.391\t2.461\t2.414\t2.391\t2.43\t2.437\t2.391\t2.383\t2.359\t2.328\t2.375\t2.406\t2.391\t2.352\t2.328\t2.328\t2.32\t2.328\t2.328\t2.32\t2.359\t2.375\t2.375\t2.414\t2.437\t2.437\t2.43\t2.43\t2.461\t2.406\t2.336\t2.32\t2.305\t2.281\t2.281\t2.297\t2.305\t2.336\t2.32\t2.242\t2.281\t2.32\t2.273\t2.227\t2.25\t2.273\t2.25\t2.195\t2.164\t2.187\t2.273\t2.328\t2.328\t2.297\t2.227\t2.219\t2.297\t2.227\t2.187\t2.172\t2.164\t2.266\t2.281\t2.25\t2.273\t2.305\t2.328\t2.305\t2.242\t2.211\t2.242\t2.227\t2.195\t2.187\t2.187\t2.273\t2.406\t2.492\t2.5\t2.484\t2.414\t2.375\t2.336\t2.273\t2.297\t2.305\t2.328\t2.375\t2.328\t2.281\t2.328\t2.406\t2.391\t2.359\t2.328\t2.336\t2.297\t2.266\t2.305\t2.266\t2.25\t2.328\t2.383\t2.391\t2.437\t2.492\t2.406\t2.328\t2.297\t2.273\t2.281\t2.297\t2.266\t2.242\t2.32\t2.305\t2.305\t2.328\t2.281\t2.305\t2.32\t2.273\t2.242\t2.219\t2.227\t2.242\t2.297\t2.297\t2.297\t2.336\t2.375\t2.437\t2.391\t2.359\t2.406\t2.375\t2.336\t2.32\t2.281\t2.281\t2.305\t2.281\t2.266\t2.336\t2.414\t2.391\t2.352\t2.297\t2.211\t2.219\t2.242\t2.211\t2.242\t2.227\t2.281\t2.305\t2.25\t2.305\t2.328\t2.336\t2.375\t2.375\t2.359\t2.359\t2.352\t2.32\t2.305\t2.273\t2.281\t2.391\t2.391\t2.359\t2.375\t2.305\t2.305\t2.336\t2.266\t2.266\t2.305\t2.328\t2.375\t2.406\t2.414\t2.469\t2.516\t2.445\t2.406\t2.445\t2.461\t2.414\t2.391\t2.297\t2.305\t2.43\t2.414\t2.359\t2.359\t2.359\t2.297\t2.227\t2.195\t2.227\t2.25\t2.281\t2.328\t2.281\t2.281\t2.352\t2.383\t2.414\t2.391\t2.328\t2.359\t2.281\t2.305\t2.414\t2.336\t2.281\t2.305\t2.352\t2.336\t2.32\t2.297\t2.297\t2.328\t2.297\t2.281\t2.305\t2.273\t2.219\t2.211\t2.25\t2.281\t2.328\t2.352\t2.359\t2.43\t2.43\t2.414\t2.43\t2.375\t2.305\t2.32\t2.359\t2.328\t2.297\t2.273\t2.281\t2.328\t2.352\t2.32\t2.242\t2.25\t2.266\t2.219\t2.266\t2.305\t2.281\t2.227\t2.242\t2.297\t2.328\t2.375\t2.414\t2.414\t2.359\t2.297\t2.273\t2.336\t2.336\t2.281\t2.25\t2.25\t2.32\t2.352\t2.328\t2.336\t2.391\t2.328\t2.281\t2.32\t2.305\t2.32\t2.336\t2.305\t2.352\t2.391\t2.414\t2.5\t2.445\t2.359\t2.406\t2.43\t2.406\t2.43\t2.406\t2.359\t2.406\t2.359\t2.336\t2.406\t2.359\t2.359\t2.383\t2.375\t2.383\t2.383\t2.359\t2.281\t2.305\t2.352\t2.305\t2.305\t2.359\t2.414\t2.461\t2.523\t2.523\t2.484\t2.437\t2.414\t2.352\t2.281\t2.281\t2.297\t2.242\t2.242\t2.32\t2.305\t2.266\t2.266\t2.25\t2.242\t2.219\t2.242\t2.242\t2.195\t2.242\t2.273\t2.266\t2.266\t2.328\t2.406\t2.375\t2.328\t2.359\t2.352\t2.32\t2.281\t2.242\t2.219\t2.305\t2.383\t2.336\t2.328\t2.305\t2.297\t2.32\t2.336\t2.305\t2.266\t2.242\t2.242\t2.266\t2.281\t2.32\t2.336\t2.375\t2.352\t2.359\t2.391\t2.336\t2.32\t2.328\t2.328\t2.32\t2.328\t2.336\t2.359\t2.328\t2.297\t2.336\t2.328\t2.305\t2.352\t2.32\t2.242\t2.195\t2.195\t2.227\t2.242\t2.25\t2.32\t2.375\t2.359\t2.359\t2.375\t2.336\t2.336\t2.336\t2.32\t2.32\t2.297\t2.242\t2.297\t2.328\t2.273\t2.25\t2.281\t2.297\t2.328\t2.352\t2.266\t2.195\t2.195\t2.172\t2.156\t2.164\t2.187\t2.266\t2.266\t2.352\t2.445\t2.



375\t2.273\t2.266\t2.336\t2.352\t2.281\t2.297\t2.305\t2.32\t2.336\t2.328\t2.297\t  
 t2.297\t2.32\t2.297\t2.273\t2.305\t2.281\t2.25\t2.266\t2.211\t2.242\t2.281\t2.35  
 9\t2.43\t2.391\t2.406\t2.414\t2.391\t2.375\t2.336\t2.281\t2.25\t2.305\t2.32\t2.2  
 73\t2.32\t2.352\t2.414\t2.375\t2.32\t2.273\t2.273\t2.32\t2.297\t2.328\t2.32\t2.2  
 27\t2.227\t2.273\t2.305\t2.375\t2.414\t2.43\t2.43\t2.43\t2.406\t2.391\t2.359\t2.  
 281\t2.305\t2.375\t2.391\t2.336\t2.352\t2.391\t2.383\t2.328\t2.227\t2.219\t2.227  
 \t2.219\t2.242\t2.242\t2.25\t2.25\t2.336\t2.391\t2.336\t2.352\t2.375\t2.375\t2.3  
 83\t2.414\t2.359\t2.305\t2.328\t2.328\t2.336\t2.32\t2.297\t2.32\t2.328\t2.32\t2.  
 32\t2.375\t2.359\t2.32\t2.266\t2.227\t2.281\t2.336\t2.305\t2.25\t2.305\t2.336\t2  
 .328\t2.359\t2.32\t2.266\t2.328\t2.297\t2.242\t2.273\t2.32\t2.352\t2.336\t2.32\t  
 2.328\t2.281\t2.211\t2.227\t2.281\t2.273\t2.227\t2.25\t2.25\t2.211\t2.266\t2.25\t  
 t2.227\t2.273\t2.273\t2.297\t2.281\t2.273\t2.305\t2.227\t2.195\t2.211\t2.195\t2.  
 242\t2.211\t2.195\t2.281\t2.328\t2.305\t2.297\t2.25\t2.242\t2.281\t2.242\t2.211\t  
 t2.273\t2.281\t2.273\t2.281\t2.273\t2.305\t2.352\t2.336\t2.32\t2.32\t2.281\t2.27  
 3\t2.297\t2.305\t2.273\t2.227\t2.219\t2.273\t2.328\t2.297\t2.187\t2.211\t2.219\t  
 2.219\t2.227\t2.172\t2.164\t2.187\t2.195\t2.273\t2.305\t2.281\t2.336\t2.43\t2.39  
 1\t2.391\t2.375\t2.273\t2.281\t2.297\t2.281\t2.305\t2.336\t2.352\t2.32\t2.32\t2.  
 375\t2.359\t2.25\t2.195\t2.266\t2.273\t2.227\t2.242\t2.273\t2.297\t2.336\t2.359\t  
 t2.336\t2.391\t2.391\t2.328\t2.297\t2.305\t2.273\t2.25\t2.328\t2.383\t2.281\t2.1  
 95\t2.219\t2.227\t2.242\t2.227\t2.219\t2.195\t2.117\t2.109\t2.164\t2.117\t2.086\t  
 t2.156\t2.211\t2.219\t2.297\t2.43\t2.406\t2.359\t2.375\t2.305\t2.273\t2.242\t2.1  
 95\t2.227\t2.242\t2.266\t2.273\t2.25\t2.219\t2.273\t2.32\t2.219\t2.172\t2.187\t2  
 .187\t2.156\t2.164\t2.219\t2.242\t2.25\t2.266\t2.227\t2.242\t2.242\t2.305\t2.336  
 \t2.297\t2.242\t2.266\t2.305\t2.281\t2.266\t2.25\t2.305\t2.328\t2.266\t2.266\t2.  
 227\t2.266\t2.281\t2.242\t2.273\t2.266\t2.164\t2.211\t2.32\t2.305\t2.32\t2.383\t  
 2.383\t2.359\t2.32\t2.352\t2.383\t2.328\t2.273\t2.219\t2.219\t2.281\t2.297\t2.22  
 7\t2.227\t2.227\t2.195\t2.172\t2.164\t2.117\t2.117\t2.133\t2.164\t2.219\t2.25\t2  
 .219\t2.242\t2.336\t2.375\t2.305\t2.297\t2.336\t2.336\t2.25\t2.219\t2.266\t2.266  
 \t2.281\t2.297\t2.32\t2.336\t2.328\t2.281\t2.227\t2.211\t2.227\t2.242\t2.25\t2.2  
 27\t2.219\t2.273\t2.281\t2.328\t2.336\t2.25\t2.297\t2.359\t2.281\t2.25\t2.281\t2  
 .32\t2.305\t2.25\t2.227\t2.227\t2.273\t2.227\t2.273\t2.273\t2.25\t2.297\t2.266\t  
 2.219\t2.195\t2.219\t2.266\t2.281\t2.266\t2.273\t2.328\t2.336\t2.375\t2.406\t2.3  
 75\t2.32\t2.281\t2.32\t2.336\t2.297\t2.281\t2.297\t2.328\t2.32\t2.281\t2.227\t2.  
 211\t2.242\t2.211\t2.25\t2.281\t2.227\t2.273\t2.297\t2.227\t2.25\t2.336\t2.336\t  
 2.391\t2.375\t2.297\t2.328\t2.383\t2.328\t2.25\t2.25\t2.211  
 0 2.281\t2.32\t2.305\t2.578\t2.945\t3.164\t2.328...  
 1 2.227\t2.187\t2.156\t2.406\t2.852\t3.109\t2.21...  
 2 2.32\t2.352\t2.297\t2.5\t2.977\t3.227\t2.328\t...  
 3 2.25\t2.25\t2.242\t2.383\t2.758\t3.031\t2.227\t...  
 4 2.266\t2.266\t2.273\t2.523\t2.984\t3.172\t2.21...  
 .. ...  
 195 2.141\t2.164\t2.109\t2.156\t2.141\t2.055\t1.32...  
 196 1.937\t1.969\t2.008\t2.117\t2.109\t1.945\t1.18...  
 197 2.055\t2.086\t2.055\t2.211\t2.195\t2.008\t1.21...  
 198 2.047\t2.102\t2.156\t2.164\t2.102\t1.945\t1.14...  
 199 1.945\t2.047\t1.977\t2.062\t2.062\t1.969\t1.25...

[200 rows x 1 columns]