```
pip install ydata-profiling

Requirement already satisfied: ydata-profiling in
/usr/local/lib/python3.11/dist-packages (4.16.1)
Requirement already satisfied: scipy<1.16,>=1.4.1 in
/usr/local/lib/python3.11/dist-packages (from ydata-profiling)
(1.15.3)
Requirement already satisfied: pandas!=1.4.0,<3.0,>1.1 in
/usr/local/lib/python3.11/dist-packages (from ydata-profiling) (2.2.2)
Requirement already satisfied: matplotlib<=3.10,>=3.5 in
/usr/local/lib/python3.11/dist-packages (from ydata-profiling)
(3.10.0)
Requirement already satisfied: pydantic>=2 in
/usr/local/lib/python3.11/dist-packages (from ydata-profiling)
(2.11.7)
Requirement already satisfied: PyYAML<6.1,>=5.0.0 in
/usr/local/lib/python3.11/dist-packages (from ydata-profiling) (6.0.2)
Requirement already satisfied: jinja2<3.2,>=2.11.1 in
/usr/local/lib/python3.11/dist-packages (from ydata-profiling) (3.1.6)
Requirement already satisfied: visions<0.8.2,>=0.7.5 in
/usr/local/lib/python3.11/dist-packages (from
visions[type_image_path]<0.8.2,>=0.7.5->ydata-profiling) (0.8.1)
Requirement already satisfied: numpy<2.2,>=1.16.0 in
/usr/local/lib/python3.11/dist-packages (from ydata-profiling) (2.0.2)
Requirement already satisfied: htmlmin==0.1.12 in
/usr/local/lib/python3.11/dist-packages (from ydata-profiling)
(0.1.12)
Requirement already satisfied: phik<0.13,>=0.11.1 in
/usr/local/lib/python3.11/dist-packages (from ydata-profiling)
(0.12.5)
Requirement already satisfied: requests<3,>=2.24.0 in
/usr/local/lib/python3.11/dist-packages (from ydata-profiling)
(2.32.3)
Requirement already satisfied: tqdm<5,>=4.48.2 in
/usr/local/lib/python3.11/dist-packages (from ydata-profiling)
(4.67.1)
Requirement already satisfied: seaborn<0.14,>=0.10.1 in
/usr/local/lib/python3.11/dist-packages (from ydata-profiling)
(0.13.2)
Requirement already satisfied: multimethod<2,>=1.4 in
/usr/local/lib/python3.11/dist-packages (from ydata-profiling) (1.12)
Requirement already satisfied: statsmodels<1,>=0.13.2 in
/usr/local/lib/python3.11/dist-packages (from ydata-profiling)
(0.14.5)
Requirement already satisfied: typeguard<5,>=3 in
/usr/local/lib/python3.11/dist-packages (from ydata-profiling) (4.4.4)
Requirement already satisfied: imagehash==4.3.1 in
/usr/local/lib/python3.11/dist-packages (from ydata-profiling) (4.3.1)
Requirement already satisfied: wordcloud>=1.9.3 in
/usr/local/lib/python3.11/dist-packages (from ydata-profiling) (1.9.4)
```

```
Requirement already satisfied: dacite>=1.8 in
/usr/local/lib/python3.11/dist-packages (from ydata-profiling) (1.9.2)
Requirement already satisfied: numba<=0.61,>=0.56.0 in
/usr/local/lib/python3.11/dist-packages (from ydata-profiling)
(0.61.0)
Requirement already satisfied: PyWavelets in
/usr/local/lib/python3.11/dist-packages (from imagehash==4.3.1->ydata-
profiling) (1.8.0)
Requirement already satisfied: pillow in
/usr/local/lib/python3.11/dist-packages (from imagehash==4.3.1->ydata-
profiling) (11.3.0)
Requirement already satisfied: MarkupSafe>=2.0 in
/usr/local/lib/python3.11/dist-packages (from jinja2<3.2,>=2.11.1-
>ydata-profiling) (2.1.5)
Requirement already satisfied: contourpy>=1.0.1 in
/usr/local/lib/python3.11/dist-packages (from matplotlib<=3.10,>=3.5-
>ydata-profiling) (1.3.2)
Requirement already satisfied: cycler>=0.10 in
/usr/local/lib/python3.11/dist-packages (from matplotlib<=3.10,>=3.5-
>ydata-profiling) (0.12.1)
Requirement already satisfied: fonttools>=4.22.0 in
/usr/local/lib/python3.11/dist-packages (from matplotlib<=3.10,>=3.5-
>ydata-profiling) (4.59.0)
Requirement already satisfied: kiwisolver>=1.3.1 in
/usr/local/lib/python3.11/dist-packages (from matplotlib<=3.10,>=3.5-
>ydata-profiling) (1.4.8)
Requirement already satisfied: packaging>=20.0 in
/usr/local/lib/python3.11/dist-packages (from matplotlib<=3.10,>=3.5-
>ydata-profiling) (25.0)
Requirement already satisfied: pyparsing>=2.3.1 in
/usr/local/lib/python3.11/dist-packages (from matplotlib<=3.10,>=3.5-
>ydata-profiling) (3.2.3)
Requirement already satisfied: python-dateutil>=2.7 in
/usr/local/lib/python3.11/dist-packages (from matplotlib<=3.10,>=3.5-
>ydata-profiling) (2.9.0.post0)
Requirement already satisfied: llvmlite<0.45,>=0.44.0dev0 in
/usr/local/lib/python3.11/dist-packages (from numba<=0.61,>=0.56.0-
>ydata-profiling) (0.44.0)
Requirement already satisfied: pytz>=2020.1 in
/usr/local/lib/python3.11/dist-packages (from pandas!=1.4.0,<3.0,>1.1-
>ydata-profiling) (2025.2)
Requirement already satisfied: tzdata>=2022.7 in
/usr/local/lib/python3.11/dist-packages (from pandas!=1.4.0,<3.0,>1.1-
>ydata-profiling) (2025.2)
Requirement already satisfied: joblib>=0.14.1 in
/usr/local/lib/python3.11/dist-packages (from phik<0.13,>=0.11.1-
>ydata-profiling) (1.1.1)
Requirement already satisfied: annotated-types>=0.6.0 in
/usr/local/lib/python3.11/dist-packages (from pydantic>=2->ydata-
```

```
profiling) (0.7.0)
Requirement already satisfied: pydantic-core==2.33.2 in
/usr/local/lib/python3.11/dist-packages (from pydantic>=2->ydata-
profiling) (2.33.2)
Requirement already satisfied: typing-extensions>=4.12.2 in
/usr/local/lib/python3.11/dist-packages (from pydantic>=2->ydata-
profiling) (4.14.1)
Requirement already satisfied: typing-inspection>=0.4.0 in
/usr/local/lib/python3.11/dist-packages (from pydantic>=2->ydata-
profiling) (0.4.1)
Requirement already satisfied: charset-normalizer<4,>=2 in
/usr/local/lib/python3.11/dist-packages (from requests<3,>=2.24.0-
>ydata-profiling) (3.4.2)
Requirement already satisfied: idna<4,>=2.5 in
/usr/local/lib/python3.11/dist-packages (from requests<3,>=2.24.0-
>ydata-profiling) (3.10)
Requirement already satisfied: urllib3<3,>=1.21.1 in
/usr/local/lib/python3.11/dist-packages (from requests<3,>=2.24.0-
>ydata-profiling) (2.5.0)
Requirement already satisfied: certifi>=2017.4.17 in
/usr/local/lib/python3.11/dist-packages (from requests<3,>=2.24.0-
>ydata-profiling) (2025.7.14)
Requirement already satisfied: patsy>=0.5.6 in
/usr/local/lib/python3.11/dist-packages (from statsmodels<1,>=0.13.2-
>ydata-profiling) (1.0.1)
Requirement already satisfied: attrs>=19.3.0 in
/usr/local/lib/python3.11/dist-packages (from visions<0.8.2,>=0.7.5-
>visions[type_image_path]<0.8.2,>=0.7.5->ydata-profiling) (25.3.0)
Requirement already satisfied: networkx>=2.4 in
/usr/local/lib/python3.11/dist-packages (from visions<0.8.2,>=0.7.5-
>visions[type_image_path]<0.8.2,>=0.7.5->ydata-profiling) (3.5)
Requirement already satisfied: puremagic in
/usr/local/lib/python3.11/dist-packages (from visions<0.8.2,>=0.7.5-
>visions[type_image_path]<0.8.2,>=0.7.5->ydata-profiling) (1.30)
Requirement already satisfied: six>=1.5 in
/usr/local/lib/python3.11/dist-packages (from python-dateutil>=2.7-
>matplotlib<=3.10,>=3.5->ydata-profiling) (1.17.0)
```

```python
import seaborn as sns
df=sns.load_dataset('titanic')
import pandas as pd
import matplotlib.pyplot as plt
from sklearn.preprocessing import OneHotEncoder
# from ydata_profiling import ProfileReport

print(df)
```

```
     survived  pclass     sex   age  sibsp  parch      fare embarked
class  \
0           0       3    male  22.0      1      0    7.2500        S
```

```
Third
1              1         1  female  38.0      1      0  71.2833       C
First
2              1         3  female  26.0      0      0   7.9250       S
Third
3              1         1  female  35.0      1      0  53.1000       S
First
4              0         3    male  35.0      0      0   8.0500       S
Third
..           ...       ...     ...   ...    ...    ...      ...     ...
...
886            0         2    male  27.0      0      0  13.0000       S
Second
887            1         1  female  19.0      0      0  30.0000       S
First
888            0         3  female   NaN      1      2  23.4500       S
Third
889            1         1    male  26.0      0      0  30.0000       C
First
890            0         3    male  32.0      0      0   7.7500       Q
Third

       who  adult_male deck   embark_town alive  alone
0      man        True  NaN   Southampton    no  False
1    woman       False    C     Cherbourg   yes  False
2    woman       False  NaN   Southampton   yes   True
3    woman       False    C   Southampton   yes  False
4      man        True  NaN   Southampton    no   True
..     ...         ...  ...           ...   ...    ...
886    man        True  NaN   Southampton    no   True
887  woman       False    B   Southampton   yes   True
888  woman       False  NaN   Southampton    no  False
889    man        True    C     Cherbourg   yes   True
890    man        True  NaN    Queenstown    no   True

[891 rows x 15 columns]

profile=ProfileReport(df)
profile.to_file("output.html")
```

{"model_id":"144bf80822e5406c96a2e06c99b55f7b","version_major":2,"version_minor":0}

```
  0%|            | 0/15 [00:00<?, ?it/s]
```

{"model_id":"a307bf673cf543a6b3729cb140e1baac","version_major":2,"version_minor":0}

{"model_id":"4722aa3ca2f44eec9e1dae367f7812b1","version_major":2,"version_minor":0}

{"model_id":"10d5c62b35ad43b59ad4a6163c342960","version_major":2,"version_minor":0}

```python
abs_freq=df['class'].value_counts().sort_index()
rel_freq=(abs_freq/abs_freq.sum())*100
cum_freq=abs_freq.cumsum()
freq_table={
    'abs_freq':abs_freq,
    'rel_freq':rel_freq,
    'cum_freq':cum_freq
}
freq_table=pd.DataFrame(freq_table)
print(freq_table)
```

```
        abs_freq    rel_freq   cum_freq
class
First        216   24.242424        216
Second       184   20.650954        400
Third        491   55.106622        891
```

```python
table=pd.crosstab(df['sex'],df['survived'])
table.coulomns=['survived = 0','survived = 1']
print(table)
```

```
survived      0      1
sex
female       81    233
male        468    109
```

```
/tmp/ipython-input-1472580412.py:2: UserWarning: Pandas doesn't allow
columns to be created via a new attribute name - see
https://pandas.pydata.org/pandas-docs/stable/indexing.html#attribute-
access
  table.coulomns=['survived = 0','survived = 1']
```

```python
total=table.values.sum()
joint_prob=table.loc['female',1]/total
print(joint_prob)
```

```
0.2615039281705948
```

```python
print(total)
```

```
891
```

```python
marg_prob=table.loc['female']/total
print(marg_prob.sum())
```

```
0.3524130190796857
```

```python
marg_prob=table[1].sum()/total
print(marg_prob)
```

```
0.3838383838383838
```

```python
cond_prob=table.loc['female',1]/table.loc['female'].sum()
print(cond_prob)
```

```
0.7420382165605095
```

```python
cond_prob=table.loc['female',1]/table[1].sum()
print(cond_prob)
```

```
0.6812865497076024
```

```python
table=pd.crosstab(df['sex'],df['survived'])
table.coulomns=['survived = 0','survived = 1']
print(table)
```

```
/tmp/ipython-input-1472580412.py:2: UserWarning: Pandas doesn't allow
columns to be created via a new attribute name - see
https://pandas.pydata.org/pandas-docs/stable/indexing.html#attribute-
access
  table.coulomns=['survived = 0','survived = 1']

survived     0     1
sex
female      81   233
male       468   109
```

```python
df.describe()
```

{"summary":"{\n \"name\": \"df\",\n \"rows\": 8,\n \"fields\": [\n   {\n   \"column\": \"survived\",\n   \"properties\": {\n   \"dtype\": \"number\",\n   \"std\": 314.8713661874558,\n   \"min\": 0.0,\n   \"max\": 891.0,\n   \"num_unique_values\": 5,\n   \"samples\": [\n   0.3838383838383838,\n   1.0,\n   0.4865924542648585\n   ],\n   \"semantic_type\": \"\",\n   \"description\": \"\"\n   }\n   },\n   {\n   \"column\": \"pclass\",\n   \"properties\": {\n   \"dtype\": \"number\",\n   \"std\": 314.2523437079693,\n   \"min\": 0.8360712409770513,\n   \"max\": 891.0,\n   \"num_unique_values\": 6,\n   \"samples\": [\n   891.0,\n   2.308641975308642,\n   3.0\n   ],\n   \"semantic_type\": \"\",\n   \"description\": \"\"\n   }\n   },\n   {\n   \"column\": \"age\",\n   \"properties\": {\n   \"dtype\": \"number\",\n   \"std\": 242.9056731818781,\n   \"min\": 0.42,\n   \"max\": 714.0,\n   \"num_unique_values\": 8,\n   \"samples\": [\n   29.69911764705882,\n   28.0,\n   714.0\n   ],\n   \"semantic_type\": \"\",\n   \"description\": \"\"\n   }\n   },\n   {\n   \"column\": \"sibsp\",\n   \"properties\": {\n   \"dtype\": \"number\",\n   \"std\": 314.4908277465442,\n   \"min\": 0.0,\n   \"max\": 891.0,\n   \"num_unique_values\":

6,\n   \"samples\": [\n   891.0,\n
0.5230078563411896,\n   8.0\n   ],\n
\"semantic_type\": \"\",\n   \"description\": \"\"\n   }\
n   },\n   {\n   \"column\": \"parch\",\n   \"properties\": {\
n   \"dtype\": \"number\",\n   \"std\": 314.65971717879,\n
\"min\": 0.0,\n   \"max\": 891.0,\n   \"num_unique_values\":
5,\n   \"samples\": [\n   0.38159371492704824,\n
6.0,\n   0.8060572211299559\n   ],\n
\"semantic_type\": \"\",\n   \"description\": \"\"\n   }\
n   },\n   {\n   \"column\": \"fare\",\n   \"properties\": {\n
\"dtype\": \"number\",\n   \"std\": 330.6256632228577,\n
\"min\": 0.0,\n   \"max\": 891.0,\n   \"num_unique_values\":
8,\n   \"samples\": [\n   32.204207968574636,\n
14.4542,\n   891.0\n   ],\n   \"semantic_type\":
\"\",\n   \"description\": \"\"\n   }\n   }\n]\
n}","type":"dataframe"}

```
df.isnull()
```

{"summary":"{\n \"name\": \"df\",\n \"rows\": 891,\n \"fields\": [\
n   {\n   \"column\": \"survived\",\n   \"properties\": {\n
\"dtype\": \"boolean\",\n   \"num_unique_values\": 1,\n
\"samples\": [\n   false\n   ],\n
\"semantic_type\": \"\",\n   \"description\": \"\"\n   }\
n   },\n   {\n   \"column\": \"pclass\",\n   \"properties\":
{\n   \"dtype\": \"boolean\",\n   \"num_unique_values\": 1,\
n   \"samples\": [\n   false\n   ],\n
\"semantic_type\": \"\",\n   \"description\": \"\"\n   }\
n   },\n   {\n   \"column\": \"sex\",\n   \"properties\": {\n
\"dtype\": \"boolean\",\n   \"num_unique_values\": 1,\n
\"samples\": [\n   false\n   ],\n
\"semantic_type\": \"\",\n   \"description\": \"\"\n   }\
n   },\n   {\n   \"column\": \"age\",\n   \"properties\": {\n
\"dtype\": \"boolean\",\n   \"num_unique_values\": 2,\n
\"samples\": [\n   true\n   ],\n   \"semantic_type\":
\"\",\n   \"description\": \"\"\n   }\n   },\n   {\n
\"column\": \"sibsp\",\n   \"properties\": {\n   \"dtype\":
\"boolean\",\n   \"num_unique_values\": 1,\n   \"samples\":
[\n   false\n   ],\n   \"semantic_type\": \"\",\n
\"description\": \"\"\n   }\n   },\n   {\n   \"column\":
\"parch\",\n   \"properties\": {\n   \"dtype\": \"boolean\",\n
\"num_unique_values\": 1,\n   \"samples\": [\n   false\n
],\n   \"semantic_type\": \"\",\n   \"description\": \"\"\n
}\n   },\n   {\n   \"column\": \"fare\",\n   \"properties\":
{\n   \"dtype\": \"boolean\",\n   \"num_unique_values\": 1,\
n   \"samples\": [\n   false\n   ],\n
\"semantic_type\": \"\",\n   \"description\": \"\"\n   }\
n   },\n   {\n   \"column\": \"embarked\",\n   \"properties\":
{\n   \"dtype\": \"boolean\",\n   \"num_unique_values\": 2,\
n   \"samples\": [\n   true\n   ],\n

\"semantic_type\": \"\",\n   \"description\": \"\"\n   }\
n   },\n   {\n   \"column\": \"class\",\n   \"properties\": {\
n   \"dtype\": \"boolean\",\n   \"num_unique_values\": 1,\n
\"samples\": [\n   false\n   ],\n
\"semantic_type\": \"\",\n   \"description\": \"\"\n   }\
n   },\n   {\n   \"column\": \"who\",\n   \"properties\": {\n
\"dtype\": \"boolean\",\n   \"num_unique_values\": 1,\n
\"samples\": [\n   false\n   ],\n
\"semantic_type\": \"\",\n   \"description\": \"\"\n   }\
n   },\n   {\n   \"column\": \"adult_male\",\n
\"properties\": {\n   \"dtype\": \"boolean\",\n
\"num_unique_values\": 1,\n   \"samples\": [\n   false\n
],\n   \"semantic_type\": \"\",\n   \"description\": \"\"\n
}\n   },\n   {\n   \"column\": \"deck\",\n   \"properties\":
{\n   \"dtype\": \"boolean\",\n   \"num_unique_values\": 2,\
n   \"samples\": [\n   false\n   ],\n
\"semantic_type\": \"\",\n   \"description\": \"\"\n   }\
n   },\n   {\n   \"column\": \"embark_town\",\n
\"properties\": {\n   \"dtype\": \"boolean\",\n
\"num_unique_values\": 2,\n   \"samples\": [\n   true\n
],\n   \"semantic_type\": \"\",\n   \"description\": \"\"\n
}\n   },\n   {\n   \"column\": \"alive\",\n   \"properties\":
{\n   \"dtype\": \"boolean\",\n   \"num_unique_values\": 1,\
n   \"samples\": [\n   false\n   ],\n
\"semantic_type\": \"\",\n   \"description\": \"\"\n   }\
n   },\n   {\n   \"column\": \"alone\",\n   \"properties\": {\
n   \"dtype\": \"boolean\",\n   \"num_unique_values\": 1,\n
\"samples\": [\n   false\n   ],\n
\"semantic_type\": \"\",\n   \"description\": \"\"\n   }\
n   }\n]\n}","type":"dataframe"}
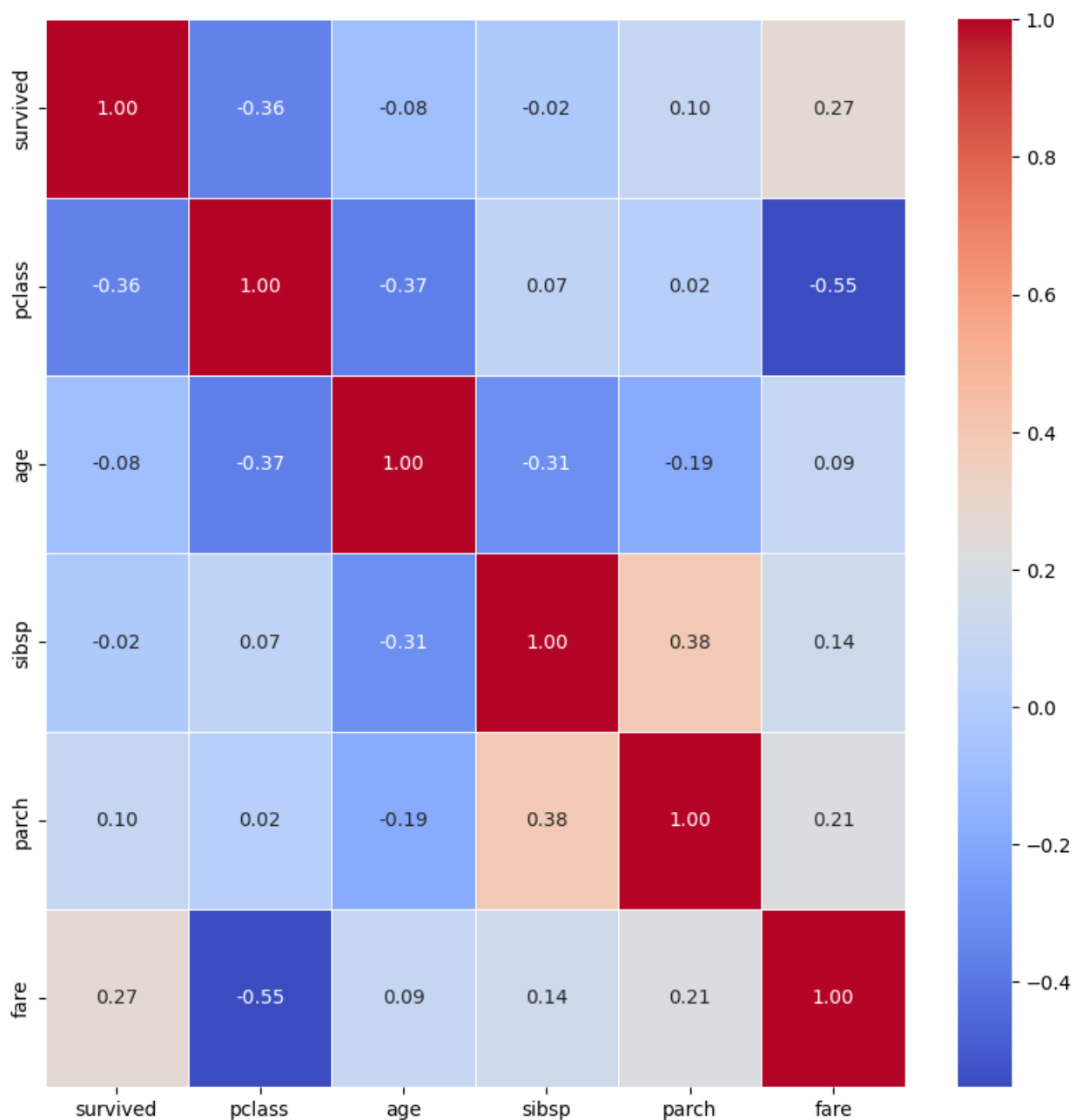
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 891 entries, 0 to 890
Data columns (total 15 columns):
 #   Column       Non-Null Count   Dtype
---  ------       --------------   -----
 0   survived     891 non-null     int64
 1   pclass       891 non-null     int64
 2   sex          891 non-null     object
 3   age          714 non-null     float64
 4   sibsp        891 non-null     int64
 5   parch        891 non-null     int64
 6   fare         891 non-null     float64
 7   embarked     889 non-null     object
 8   class        891 non-null     category
 9   who          891 non-null     object
 10  adult_male   891 non-null     bool
 11  deck         203 non-null     category
```

```
 12   embark_town  889 non-null     object
 13   alive        891 non-null     object
 14   alone        891 non-null     bool
dtypes: bool(2), category(2), float64(2), int64(4), object(5)
memory usage: 80.7+ KB
```

```
df.nunique()
```

```
survived         2
pclass           3
sex              2
age             88
sibsp            7
parch            7
fare           248
embarked         3
class            3
who              3
adult_male       2
deck             7
embark_town      3
alive            2
alone            2
dtype: int64
```

```
df.drop('deck',axis=1,inplace=True)
```

```
df.dropna(inplace=True)
```

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Index: 712 entries, 0 to 890
Data columns (total 14 columns):
 #    Column       Non-Null Count  Dtype
---   ------       --------------  -----
 0    survived     712 non-null    int64
 1    pclass       712 non-null    int64
 2    sex          712 non-null    object
 3    age          712 non-null    float64
 4    sibsp        712 non-null    int64
 5    parch        712 non-null    int64
 6    fare         712 non-null    float64
 7    embarked     712 non-null    object
 8    class        712 non-null    category
 9    who          712 non-null    object
 10   adult_male   712 non-null    bool
 11   embark_town  712 non-null    object
 12   alive        712 non-null    object
 13   alone        712 non-null    bool
```

```
dtypes: bool(2), category(1), float64(2), int64(4), object(5)
memory usage: 69.0+ KB

plt.figure(figsize=(10,10))
sns.heatmap(df.select_dtypes(exclude=['object','category','bool']).corr(),annot=True,cmap='coolwarm', fmt=".2f", linewidths=.5)

<Axes: >
```

```python
encoder=OneHotEncoder()
categoricol_columns=df.select_dtypes(include=['object','category','bool']).columns.tolist()
encoded_data=encoder.fit_transform(df[categoricol_columns])
onehot_df=pd.DataFrame(encoded_data.toarray(),columns=encoder.get_feature_names_out(categoricol_columns))
df=pd.concat([df,onehot_df],axis=1)
df.drop(categoricol_columns,axis=1,inplace=True)

print(df.corr)
```

```
<bound method DataFrame.corr of       survived  pclass   age  sibsp
parch     fare  sex_female  sex_male  \
0          0.0     3.0  22.0    1.0     0.0   7.2500            0.0
1.0
1          1.0     1.0  38.0    1.0     0.0  71.2833            1.0
0.0
2          1.0     3.0  26.0    0.0     0.0   7.9250            1.0
0.0
3          1.0     1.0  35.0    1.0     0.0  53.1000            1.0
0.0
4          0.0     3.0  35.0    0.0     0.0   8.0500            0.0
1.0
..         ...     ...   ...    ...     ...      ...            ...      .
..
680        NaN     NaN   NaN    NaN     NaN      NaN            1.0
0.0
692        NaN     NaN   NaN    NaN     NaN      NaN            0.0
1.0
697        NaN     NaN   NaN    NaN     NaN      NaN            1.0
0.0
709        NaN     NaN   NaN    NaN     NaN      NaN            1.0
0.0
711        NaN     NaN   NaN    NaN     NaN      NaN            0.0
1.0

     embarked_C  embarked_Q  ...  who_woman  adult_male_False  \
0           0.0         0.0  ...        0.0               0.0
1           1.0         0.0  ...        1.0               1.0
2           0.0         0.0  ...        1.0               1.0
3           0.0         0.0  ...        1.0               1.0
4           0.0         0.0  ...        0.0               0.0
..          ...         ...  ...        ...               ...
680         0.0         0.0  ...        1.0               1.0
692         0.0         0.0  ...        0.0               1.0
697         1.0         0.0  ...        1.0               1.0
709         0.0         0.0  ...        1.0               1.0
711         0.0         1.0  ...        0.0               0.0

     adult_male_True  embark_town_Cherbourg  embark_town_Queenstown  \
```

```
0                    1.0                        0.0                      0.0
1                    0.0                        1.0                      0.0
2                    0.0                        0.0                      0.0
3                    0.0                        0.0                      0.0
4                    1.0                        0.0                      0.0
..                   ...                        ...                      ...
680                  0.0                        0.0                      0.0
692                  0.0                        0.0                      0.0
697                  0.0                        1.0                      0.0
709                  0.0                        0.0                      0.0
711                  1.0                        0.0                      1.0

     embark_town_Southampton  alive_no  alive_yes  alone_False
alone_True
0                        1.0       1.0        0.0          1.0
0.0
1                        0.0       0.0        1.0          1.0
0.0
2                        1.0       0.0        1.0          0.0
1.0
3                        1.0       0.0        1.0          1.0
0.0
4                        1.0       1.0        0.0          0.0
1.0
..                       ...       ...        ...          ...
...
680                      1.0       1.0        0.0          1.0
0.0
692                      1.0       0.0        1.0          1.0
0.0
697                      0.0       0.0        1.0          1.0
0.0
709                      1.0       0.0        1.0          0.0
1.0
711                      0.0       1.0        0.0          0.0
1.0

[860 rows x 26 columns]>
```
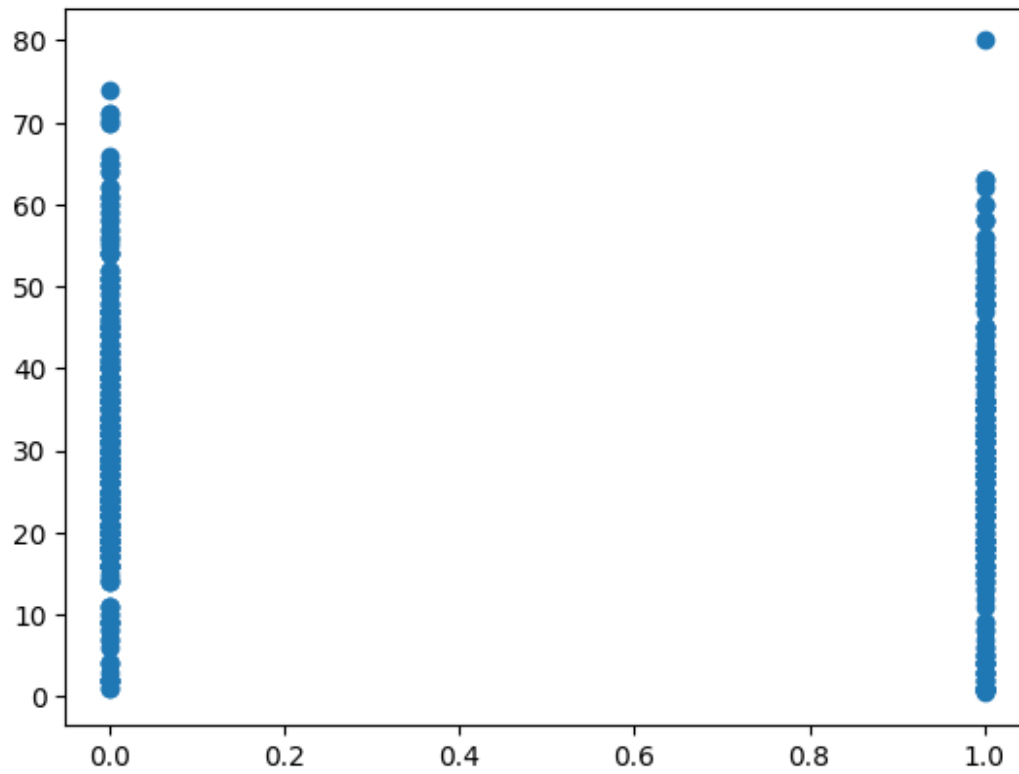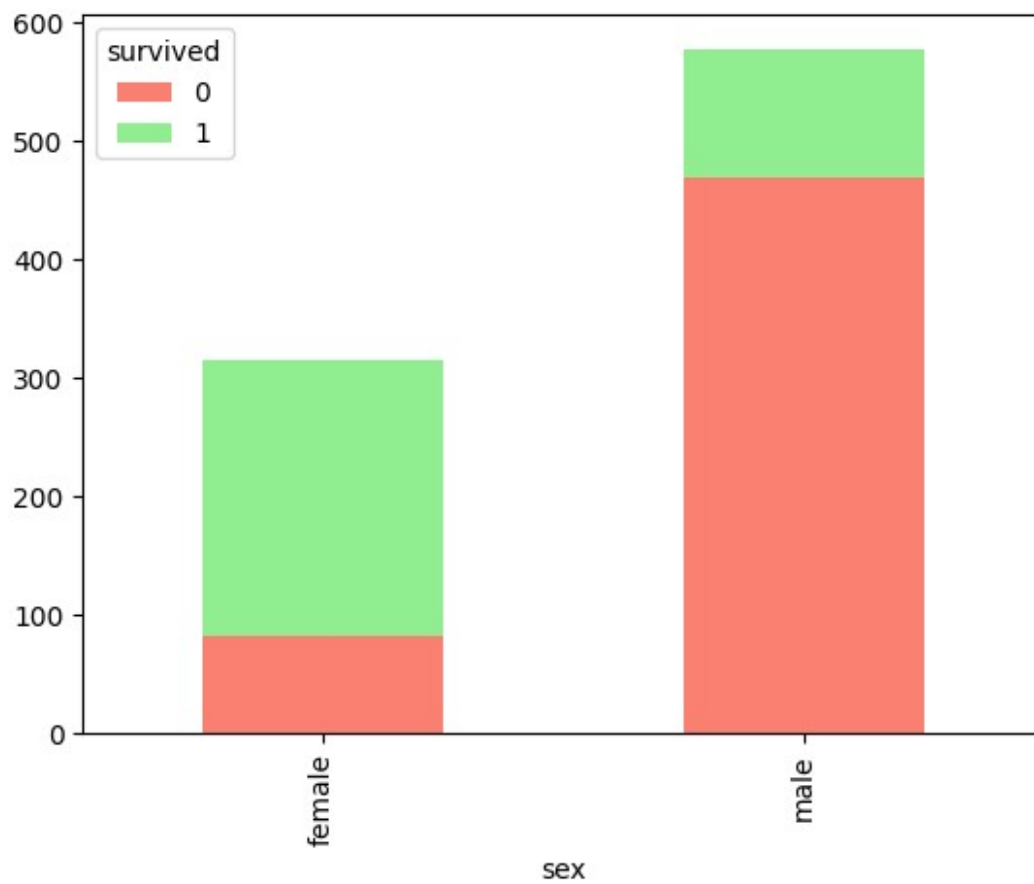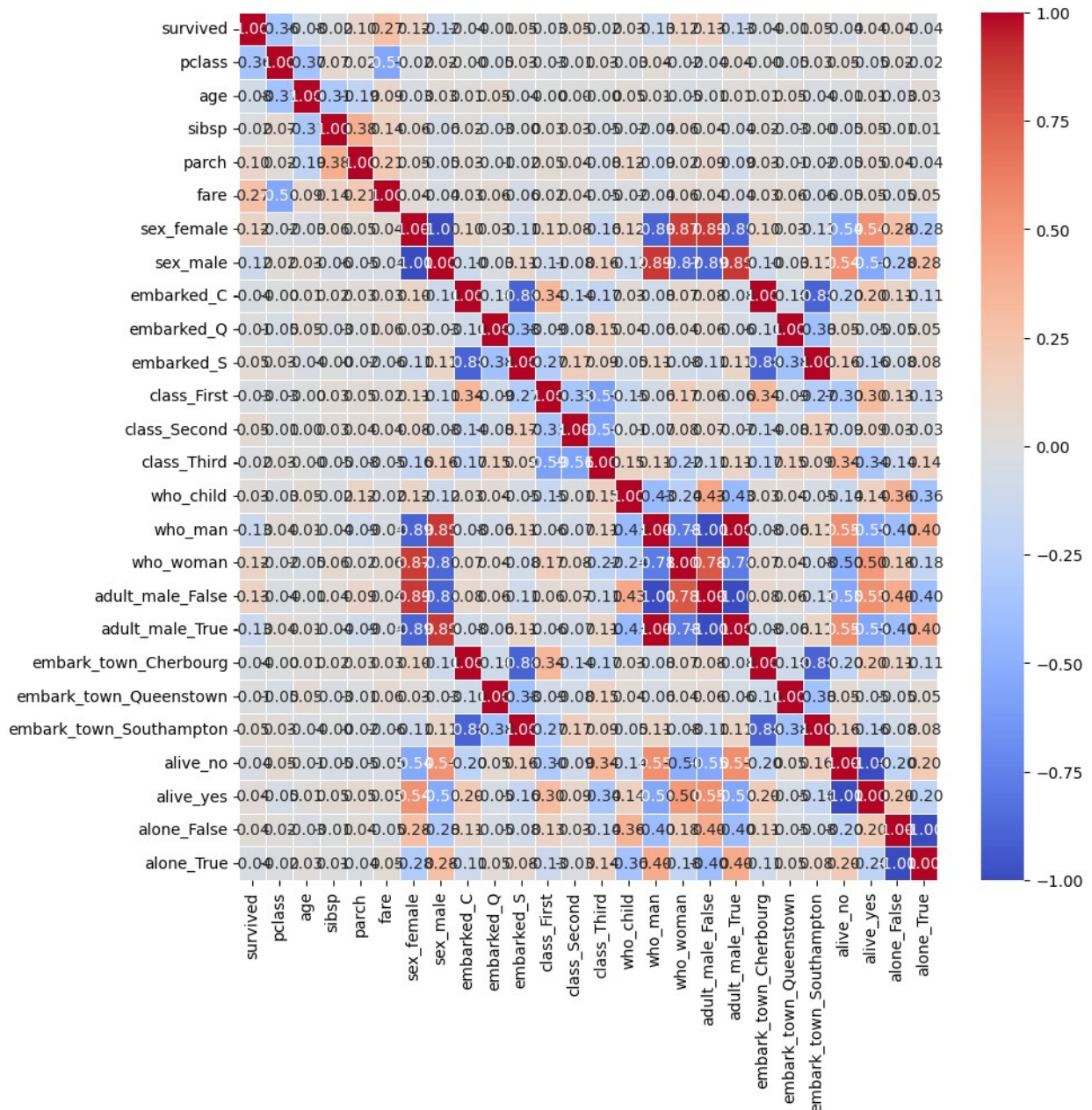
```python
plt.scatter(df['survived'],df['age'])
```

```
<matplotlib.collections.PathCollection at 0x7d6725a75d10>
```

```
table.plot(kind='bar', stacked=True, color=['salmon', 'lightgreen'])
plt.show()
```

```
plt.figure(figsize=(10,10))
sns.heatmap(df.corr(),annot=True,cmap='coolwarm', fmt=".2f",
linewidths=.5)
```

<Axes: >

```
!apt-get install texlive-xetex texlive-fonts-recommended texlive-
plain-generic

Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  dvisvgm fonts-droid-fallback fonts-lato fonts-lmodern fonts-noto-
mono
  fonts-texgyre fonts-urw-base35 libapache-pom-java libcommons-
logging-java
```

```
  libcommons-parent-java libfontbox-java libgs9 libgs9-common libidn12
  libijs-0.35 libjbig2dec0 libkpathsea6 libpdfbox-java libptexenc1
libruby3.0
  libsynctex2 libteckit0 libtexlua53 libtexluajit2 libwoff1 libzzip-0-
13
  lmodern poppler-data preview-latex-style rake ruby ruby-net-telnet
  ruby-rubygems ruby-webrick ruby-xmlrpc ruby3.0 rubygems-integration
t1utils
  teckit tex-common tex-gyre texlive-base texlive-binaries texlive-
latex-base
  texlive-latex-extra texlive-latex-recommended texlive-pictures tipa
  xfonts-encodings xfonts-utils
Suggested packages:
  fonts-noto fonts-freefont-otf | fonts-freefont-ttf libavalon-
framework-java
  libcommons-logging-java-doc libexcalibur-logkit-java liblog4j1.2-
java
  poppler-utils ghostscript fonts-japanese-mincho | fonts-ipafont-
mincho
  fonts-japanese-gothic | fonts-ipafont-gothic fonts-arphic-ukai
  fonts-arphic-uming fonts-nanum ri ruby-dev bundler debhelper gv
  | postscript-viewer perl-tk xpdf | pdf-viewer xzdec
  texlive-fonts-recommended-doc texlive-latex-base-doc python3-
pygments
  icc-profiles libfile-which-perl libspreadsheet-parseexcel-perl
  texlive-latex-extra-doc texlive-latex-recommended-doc texlive-luatex
  texlive-pstricks dot2tex prerex texlive-pictures-doc vprerex
  default-jre-headless tipa-doc
The following NEW packages will be installed:
  dvisvgm fonts-droid-fallback fonts-lato fonts-lmodern fonts-noto-
mono
  fonts-texgyre fonts-urw-base35 libapache-pom-java libcommons-
logging-java
  libcommons-parent-java libfontbox-java libgs9 libgs9-common libidn12
  libijs-0.35 libjbig2dec0 libkpathsea6 libpdfbox-java libptexenc1
libruby3.0
  libsynctex2 libteckit0 libtexlua53 libtexluajit2 libwoff1 libzzip-0-
13
  lmodern poppler-data preview-latex-style rake ruby ruby-net-telnet
  ruby-rubygems ruby-webrick ruby-xmlrpc ruby3.0 rubygems-integration
t1utils
  teckit tex-common tex-gyre texlive-base texlive-binaries
  texlive-fonts-recommended texlive-latex-base texlive-latex-extra
  texlive-latex-recommended texlive-pictures texlive-plain-generic
  texlive-xetex tipa xfonts-encodings xfonts-utils
0 upgraded, 53 newly installed, 0 to remove and 35 not upgraded.
Need to get 182 MB of archives.
After this operation, 571 MB of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu jammy/main amd64 fonts-droid-
```

```
fallback all 1:6.0.1r16-1.1build1 [1,805 kB]
Get:2 http://archive.ubuntu.com/ubuntu jammy/main amd64 fonts-lato all
2.0-2.1 [2,696 kB]
Get:3 http://archive.ubuntu.com/ubuntu jammy/main amd64 poppler-data
all 0.4.11-1 [2,171 kB]
Get:4 http://archive.ubuntu.com/ubuntu jammy/universe amd64 tex-common
all 6.17 [33.7 kB]
Get:5 http://archive.ubuntu.com/ubuntu jammy/main amd64 fonts-urw-
base35 all 20200910-1 [6,367 kB]
Get:6 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64
libgs9-common all 9.55.0~dfsg1-0ubuntu5.12 [753 kB]
Get:7 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64
libidn12 amd64 1.38-4ubuntu1 [60.0 kB]
Get:8 http://archive.ubuntu.com/ubuntu jammy/main amd64 libijs-0.35
amd64 0.35-15build2 [16.5 kB]
Get:9 http://archive.ubuntu.com/ubuntu jammy/main amd64 libjbig2dec0
amd64 0.19-3build2 [64.7 kB]
Get:10 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64
libgs9 amd64 9.55.0~dfsg1-0ubuntu5.12 [5,031 kB]
Get:11 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64
libkpathsea6 amd64 2021.20210626.59705-1ubuntu0.2 [60.4 kB]
Get:12 http://archive.ubuntu.com/ubuntu jammy/main amd64 libwoff1
amd64 1.0.2-1build4 [45.2 kB]
Get:13 http://archive.ubuntu.com/ubuntu jammy/universe amd64 dvisvgm
amd64 2.13.1-1 [1,221 kB]
Get:14 http://archive.ubuntu.com/ubuntu jammy/universe amd64 fonts-
lmodern all 2.004.5-6.1 [4,532 kB]
Get:15 http://archive.ubuntu.com/ubuntu jammy/main amd64 fonts-noto-
mono all 20201225-1build1 [397 kB]
Get:16 http://archive.ubuntu.com/ubuntu jammy/universe amd64 fonts-
texgyre all 20180621-3.1 [10.2 MB]
Get:17 http://archive.ubuntu.com/ubuntu jammy/universe amd64
libapache-pom-java all 18-1 [4,720 B]
Get:18 http://archive.ubuntu.com/ubuntu jammy/universe amd64
libcommons-parent-java all 43-1 [10.8 kB]
Get:19 http://archive.ubuntu.com/ubuntu jammy/universe amd64
libcommons-logging-java all 1.2-2 [60.3 kB]
Get:20 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64
libptexenc1 amd64 2021.20210626.59705-1ubuntu0.2 [39.1 kB]
Get:21 http://archive.ubuntu.com/ubuntu jammy/main amd64 rubygems-
integration all 1.18 [5,336 B]
Get:22 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64
ruby3.0 amd64 3.0.2-7ubuntu2.10 [50.1 kB]
Get:23 http://archive.ubuntu.com/ubuntu jammy/main amd64 ruby-rubygems
all 3.3.5-2 [228 kB]
Get:24 http://archive.ubuntu.com/ubuntu jammy/main amd64 ruby amd64
1:3.0~exp1 [5,100 B]
Get:25 http://archive.ubuntu.com/ubuntu jammy/main amd64 rake all
13.0.6-2 [61.7 kB]
```

```
Get:26 http://archive.ubuntu.com/ubuntu jammy/main amd64 ruby-net-
telnet all 0.1.1-2 [12.6 kB]
Get:27 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 ruby-
webrick all 1.7.0-3ubuntu0.1 [52.1 kB]
Get:28 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 ruby-
xmlrpc all 0.3.2-1ubuntu0.1 [24.9 kB]
Get:29 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64
libruby3.0 amd64 3.0.2-7ubuntu2.10 [5,114 kB]
Get:30 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64
libsynctex2 amd64 2021.20210626.59705-1ubuntu0.2 [55.6 kB]
Get:31 http://archive.ubuntu.com/ubuntu jammy/universe amd64
libteckit0 amd64 2.5.11+ds1-1 [421 kB]
Get:32 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64
libtexlua53 amd64 2021.20210626.59705-1ubuntu0.2 [120 kB]
Get:33 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64
libtexluajit2 amd64 2021.20210626.59705-1ubuntu0.2 [267 kB]
Get:34 http://archive.ubuntu.com/ubuntu jammy/universe amd64 libzzip-
0-13 amd64 0.13.72+dfsg.1-1.1 [27.0 kB]
Get:35 http://archive.ubuntu.com/ubuntu jammy/main amd64 xfonts-
encodings all 1:1.0.5-0ubuntu2 [578 kB]
Get:36 http://archive.ubuntu.com/ubuntu jammy/main amd64 xfonts-utils
amd64 1:7.7+6build2 [94.6 kB]
Get:37 http://archive.ubuntu.com/ubuntu jammy/universe amd64 lmodern
all 2.004.5-6.1 [9,471 kB]
Get:38 http://archive.ubuntu.com/ubuntu jammy/universe amd64 preview-
latex-style all 12.2-1ubuntu1 [185 kB]
Get:39 http://archive.ubuntu.com/ubuntu jammy/main amd64 t1utils amd64
1.41-4build2 [61.3 kB]
Get:40 http://archive.ubuntu.com/ubuntu jammy/universe amd64 teckit
amd64 2.5.11+ds1-1 [699 kB]
Get:41 http://archive.ubuntu.com/ubuntu jammy/universe amd64 tex-gyre
all 20180621-3.1 [6,209 kB]
Get:42 http://archive.ubuntu.com/ubuntu jammy-updates/universe amd64
texlive-binaries amd64 2021.20210626.59705-1ubuntu0.2 [9,860 kB]
Get:43 http://archive.ubuntu.com/ubuntu jammy/universe amd64 texlive-
base all 2021.20220204-1 [21.0 MB]
Get:44 http://archive.ubuntu.com/ubuntu jammy/universe amd64 texlive-
fonts-recommended all 2021.20220204-1 [4,972 kB]
Get:45 http://archive.ubuntu.com/ubuntu jammy/universe amd64 texlive-
latex-base all 2021.20220204-1 [1,128 kB]
Get:46 http://archive.ubuntu.com/ubuntu jammy/universe amd64
libfontbox-java all 1:1.8.16-2 [207 kB]
Get:47 http://archive.ubuntu.com/ubuntu jammy/universe amd64
libpdfbox-java all 1:1.8.16-2 [5,199 kB]
Get:48 http://archive.ubuntu.com/ubuntu jammy/universe amd64 texlive-
latex-recommended all 2021.20220204-1 [14.4 MB]
Get:49 http://archive.ubuntu.com/ubuntu jammy/universe amd64 texlive-
pictures all 2021.20220204-1 [8,720 kB]
Get:50 http://archive.ubuntu.com/ubuntu jammy/universe amd64 texlive-
```

```
latex-extra all 2021.20220204-1 [13.9 MB]
Get:51 http://archive.ubuntu.com/ubuntu jammy/universe amd64 texlive-
plain-generic all 2021.20220204-1 [27.5 MB]
Get:52 http://archive.ubuntu.com/ubuntu jammy/universe amd64 tipa all
2:1.3-21 [2,967 kB]
Get:53 http://archive.ubuntu.com/ubuntu jammy/universe amd64 texlive-
xetex all 2021.20220204-1 [12.4 MB]
Fetched 182 MB in 4s (44.6 MB/s)
Extracting templates from packages: 100%
Preconfiguring packages ...
Selecting previously unselected package fonts-droid-fallback.
(Reading database ... 126284 files and directories currently
installed.)
Preparing to unpack .../00-fonts-droid-fallback_1%3a6.0.1r16-
1.1build1_all.deb ...
Unpacking fonts-droid-fallback (1:6.0.1r16-1.1build1) ...
Selecting previously unselected package fonts-lato.
Preparing to unpack .../01-fonts-lato_2.0-2.1_all.deb ...
Unpacking fonts-lato (2.0-2.1) ...
Selecting previously unselected package poppler-data.
Preparing to unpack .../02-poppler-data_0.4.11-1_all.deb ...
Unpacking poppler-data (0.4.11-1) ...
Selecting previously unselected package tex-common.
Preparing to unpack .../03-tex-common_6.17_all.deb ...
Unpacking tex-common (6.17) ...
Selecting previously unselected package fonts-urw-base35.
Preparing to unpack .../04-fonts-urw-base35_20200910-1_all.deb ...
Unpacking fonts-urw-base35 (20200910-1) ...
Selecting previously unselected package libgs9-common.
Preparing to unpack .../05-libgs9-common_9.55.0~dfsg1-
0ubuntu5.12_all.deb ...
Unpacking libgs9-common (9.55.0~dfsg1-0ubuntu5.12) ...
Selecting previously unselected package libidn12:amd64.
Preparing to unpack .../06-libidn12_1.38-4ubuntu1_amd64.deb ...
Unpacking libidn12:amd64 (1.38-4ubuntu1) ...
Selecting previously unselected package libijs-0.35:amd64.
Preparing to unpack .../07-libijs-0.35_0.35-15build2_amd64.deb ...
Unpacking libijs-0.35:amd64 (0.35-15build2) ...
Selecting previously unselected package libjbig2dec0:amd64.
Preparing to unpack .../08-libjbig2dec0_0.19-3build2_amd64.deb ...
Unpacking libjbig2dec0:amd64 (0.19-3build2) ...
Selecting previously unselected package libgs9:amd64.
Preparing to unpack .../09-libgs9_9.55.0~dfsg1-
0ubuntu5.12_amd64.deb ...
Unpacking libgs9:amd64 (9.55.0~dfsg1-0ubuntu5.12) ...
Selecting previously unselected package libkpathsea6:amd64.
Preparing to unpack .../10-libkpathsea6_2021.20210626.59705-
1ubuntu0.2_amd64.deb ...
Unpacking libkpathsea6:amd64 (2021.20210626.59705-1ubuntu0.2) ...
```

```
Selecting previously unselected package libwoff1:amd64.
Preparing to unpack .../11-libwoff1_1.0.2-1build4_amd64.deb ...
Unpacking libwoff1:amd64 (1.0.2-1build4) ...
Selecting previously unselected package dvisvgm.
Preparing to unpack .../12-dvisvgm_2.13.1-1_amd64.deb ...
Unpacking dvisvgm (2.13.1-1) ...
Selecting previously unselected package fonts-lmodern.
Preparing to unpack .../13-fonts-lmodern_2.004.5-6.1_all.deb ...
Unpacking fonts-lmodern (2.004.5-6.1) ...
Selecting previously unselected package fonts-noto-mono.
Preparing to unpack .../14-fonts-noto-mono_20201225-
1build1_all.deb ...
Unpacking fonts-noto-mono (20201225-1build1) ...
Selecting previously unselected package fonts-texgyre.
Preparing to unpack .../15-fonts-texgyre_20180621-3.1_all.deb ...
Unpacking fonts-texgyre (20180621-3.1) ...
Selecting previously unselected package libapache-pom-java.
Preparing to unpack .../16-libapache-pom-java_18-1_all.deb ...
Unpacking libapache-pom-java (18-1) ...
Selecting previously unselected package libcommons-parent-java.
Preparing to unpack .../17-libcommons-parent-java_43-1_all.deb ...
Unpacking libcommons-parent-java (43-1) ...
Selecting previously unselected package libcommons-logging-java.
Preparing to unpack .../18-libcommons-logging-java_1.2-2_all.deb ...
Unpacking libcommons-logging-java (1.2-2) ...
Selecting previously unselected package libptexenc1:amd64.
Preparing to unpack .../19-libptexenc1_2021.20210626.59705-
1ubuntu0.2_amd64.deb ...
Unpacking libptexenc1:amd64 (2021.20210626.59705-1ubuntu0.2) ...
Selecting previously unselected package rubygems-integration.
Preparing to unpack .../20-rubygems-integration_1.18_all.deb ...
Unpacking rubygems-integration (1.18) ...
Selecting previously unselected package ruby3.0.
Preparing to unpack .../21-ruby3.0_3.0.2-7ubuntu2.10_amd64.deb ...
Unpacking ruby3.0 (3.0.2-7ubuntu2.10) ...
Selecting previously unselected package ruby-rubygems.
Preparing to unpack .../22-ruby-rubygems_3.3.5-2_all.deb ...
Unpacking ruby-rubygems (3.3.5-2) ...
Selecting previously unselected package ruby.
Preparing to unpack .../23-ruby_1%3a3.0~exp1_amd64.deb ...
Unpacking ruby (1:3.0~exp1) ...
Selecting previously unselected package rake.
Preparing to unpack .../24-rake_13.0.6-2_all.deb ...
Unpacking rake (13.0.6-2) ...
Selecting previously unselected package ruby-net-telnet.
Preparing to unpack .../25-ruby-net-telnet_0.1.1-2_all.deb ...
Unpacking ruby-net-telnet (0.1.1-2) ...
Selecting previously unselected package ruby-webrick.
Preparing to unpack .../26-ruby-webrick_1.7.0-3ubuntu0.1_all.deb ...
```

```
Unpacking ruby-webrick (1.7.0-3ubuntu0.1) ...
Selecting previously unselected package ruby-xmlrpc.
Preparing to unpack .../27-ruby-xmlrpc_0.3.2-1ubuntu0.1_all.deb ...
Unpacking ruby-xmlrpc (0.3.2-1ubuntu0.1) ...
Selecting previously unselected package libruby3.0:amd64.
Preparing to unpack .../28-libruby3.0_3.0.2-7ubuntu2.10_amd64.deb ...
Unpacking libruby3.0:amd64 (3.0.2-7ubuntu2.10) ...
Selecting previously unselected package libsynctex2:amd64.
Preparing to unpack .../29-libsynctex2_2021.20210626.59705-
1ubuntu0.2_amd64.deb ...
Unpacking libsynctex2:amd64 (2021.20210626.59705-1ubuntu0.2) ...
Selecting previously unselected package libteckit0:amd64.
Preparing to unpack .../30-libteckit0_2.5.11+ds1-1_amd64.deb ...
Unpacking libteckit0:amd64 (2.5.11+ds1-1) ...
Selecting previously unselected package libtexlua53:amd64.
Preparing to unpack .../31-libtexlua53_2021.20210626.59705-
1ubuntu0.2_amd64.deb ...
Unpacking libtexlua53:amd64 (2021.20210626.59705-1ubuntu0.2) ...
Selecting previously unselected package libtexluajit2:amd64.
Preparing to unpack .../32-libtexluajit2_2021.20210626.59705-
1ubuntu0.2_amd64.deb ...
Unpacking libtexluajit2:amd64 (2021.20210626.59705-1ubuntu0.2) ...
Selecting previously unselected package libzzip-0-13:amd64.
Preparing to unpack .../33-libzzip-0-13_0.13.72+dfsg.1-
1.1_amd64.deb ...
Unpacking libzzip-0-13:amd64 (0.13.72+dfsg.1-1.1) ...
Selecting previously unselected package xfonts-encodings.
Preparing to unpack .../34-xfonts-encodings_1%3a1.0.5-0ubuntu2_all.deb
...
Unpacking xfonts-encodings (1:1.0.5-0ubuntu2) ...
Selecting previously unselected package xfonts-utils.
Preparing to unpack .../35-xfonts-utils_1%3a7.7+6build2_amd64.deb ...
Unpacking xfonts-utils (1:7.7+6build2) ...
Selecting previously unselected package lmodern.
Preparing to unpack .../36-lmodern_2.004.5-6.1_all.deb ...
Unpacking lmodern (2.004.5-6.1) ...
Selecting previously unselected package preview-latex-style.
Preparing to unpack .../37-preview-latex-style_12.2-
1ubuntu1_all.deb ...
Unpacking preview-latex-style (12.2-1ubuntu1) ...
Selecting previously unselected package t1utils.
Preparing to unpack .../38-t1utils_1.41-4build2_amd64.deb ...
Unpacking t1utils (1.41-4build2) ...
Selecting previously unselected package teckit.
Preparing to unpack .../39-teckit_2.5.11+ds1-1_amd64.deb ...
Unpacking teckit (2.5.11+ds1-1) ...
Selecting previously unselected package tex-gyre.
Preparing to unpack .../40-tex-gyre_20180621-3.1_all.deb ...
Unpacking tex-gyre (20180621-3.1) ...
```

```
Selecting previously unselected package texlive-binaries.
Preparing to unpack .../41-texlive-binaries_2021.20210626.59705-
1ubuntu0.2_amd64.deb ...
Unpacking texlive-binaries (2021.20210626.59705-1ubuntu0.2) ...
Selecting previously unselected package texlive-base.
Preparing to unpack .../42-texlive-base_2021.20220204-1_all.deb ...
Unpacking texlive-base (2021.20220204-1) ...
Selecting previously unselected package texlive-fonts-recommended.
Preparing to unpack .../43-texlive-fonts-recommended_2021.20220204-
1_all.deb ...
Unpacking texlive-fonts-recommended (2021.20220204-1) ...
Selecting previously unselected package texlive-latex-base.
Preparing to unpack .../44-texlive-latex-base_2021.20220204-
1_all.deb ...
Unpacking texlive-latex-base (2021.20220204-1) ...
Selecting previously unselected package libfontbox-java.
Preparing to unpack .../45-libfontbox-java_1%3a1.8.16-2_all.deb ...
Unpacking libfontbox-java (1:1.8.16-2) ...
Selecting previously unselected package libpdfbox-java.
Preparing to unpack .../46-libpdfbox-java_1%3a1.8.16-2_all.deb ...
Unpacking libpdfbox-java (1:1.8.16-2) ...
Selecting previously unselected package texlive-latex-recommended.
Preparing to unpack .../47-texlive-latex-recommended_2021.20220204-
1_all.deb ...
Unpacking texlive-latex-recommended (2021.20220204-1) ...
Selecting previously unselected package texlive-pictures.
Preparing to unpack .../48-texlive-pictures_2021.20220204-
1_all.deb ...
Unpacking texlive-pictures (2021.20220204-1) ...
Selecting previously unselected package texlive-latex-extra.
Preparing to unpack .../49-texlive-latex-extra_2021.20220204-1_all.deb
...
Unpacking texlive-latex-extra (2021.20220204-1) ...
Selecting previously unselected package texlive-plain-generic.
Preparing to unpack .../50-texlive-plain-generic_2021.20220204-
1_all.deb ...
Unpacking texlive-plain-generic (2021.20220204-1) ...
Selecting previously unselected package tipa.
Preparing to unpack .../51-tipa_2%3a1.3-21_all.deb ...
Unpacking tipa (2:1.3-21) ...
Selecting previously unselected package texlive-xetex.
Preparing to unpack .../52-texlive-xetex_2021.20220204-1_all.deb ...
Unpacking texlive-xetex (2021.20220204-1) ...
Setting up fonts-lato (2.0-2.1) ...
Setting up fonts-noto-mono (20201225-1build1) ...
Setting up libwoff1:amd64 (1.0.2-1build4) ...
Setting up libtexlua53:amd64 (2021.20210626.59705-1ubuntu0.2) ...
Setting up libijs-0.35:amd64 (0.35-15build2) ...
Setting up libtexluajit2:amd64 (2021.20210626.59705-1ubuntu0.2) ...
```

```
Setting up libfontbox-java (1:1.8.16-2) ...
Setting up rubygems-integration (1.18) ...
Setting up libzzip-0-13:amd64 (0.13.72+dfsg.1-1.1) ...
Setting up fonts-urw-base35 (20200910-1) ...
Setting up poppler-data (0.4.11-1) ...
Setting up tex-common (6.17) ...
update-language: texlive-base not installed and configured, doing
nothing!
Setting up libjbig2dec0:amd64 (0.19-3build2) ...
Setting up libteckit0:amd64 (2.5.11+ds1-1) ...
Setting up libapache-pom-java (18-1) ...
Setting up ruby-net-telnet (0.1.1-2) ...
Setting up xfonts-encodings (1:1.0.5-0ubuntu2) ...
Setting up t1utils (1.41-4build2) ...
Setting up libidn12:amd64 (1.38-4ubuntu1) ...
Setting up fonts-texgyre (20180621-3.1) ...
Setting up libkpathsea6:amd64 (2021.20210626.59705-1ubuntu0.2) ...
Setting up ruby-webrick (1.7.0-3ubuntu0.1) ...
Setting up fonts-lmodern (2.004.5-6.1) ...
Setting up fonts-droid-fallback (1:6.0.1r16-1.1build1) ...
Setting up ruby-xmlrpc (0.3.2-1ubuntu0.1) ...
Setting up libsynctex2:amd64 (2021.20210626.59705-1ubuntu0.2) ...
Setting up libgs9-common (9.55.0~dfsg1-0ubuntu5.12) ...
Setting up teckit (2.5.11+ds1-1) ...
Setting up libpdfbox-java (1:1.8.16-2) ...
Setting up libgs9:amd64 (9.55.0~dfsg1-0ubuntu5.12) ...
Setting up preview-latex-style (12.2-1ubuntu1) ...
Setting up libcommons-parent-java (43-1) ...
Setting up dvisvgm (2.13.1-1) ...
Setting up libcommons-logging-java (1.2-2) ...
Setting up xfonts-utils (1:7.7+6build2) ...
Setting up libptexenc1:amd64 (2021.20210626.59705-1ubuntu0.2) ...
Setting up texlive-binaries (2021.20210626.59705-1ubuntu0.2) ...
update-alternatives: using /usr/bin/xdvi-xaw to provide
/usr/bin/xdvi.bin (xdvi.bin) in auto mode
update-alternatives: using /usr/bin/bibtex.original to provide
/usr/bin/bibtex (bibtex) in auto mode
Setting up lmodern (2.004.5-6.1) ...
Setting up texlive-base (2021.20220204-1) ...
/usr/bin/ucfr
/usr/bin/ucfr
/usr/bin/ucfr
/usr/bin/ucfr
mktexlsr: Updating /var/lib/texmf/ls-R-TEXLIVEDIST...
mktexlsr: Updating /var/lib/texmf/ls-R-TEXMFMAIN...
mktexlsr: Updating /var/lib/texmf/ls-R...
mktexlsr: Done.
tl-paper: setting paper size for dvips to a4:
/var/lib/texmf/dvips/config/config-paper.ps
```

```
tl-paper: setting paper size for dvipdfmx to a4:
/var/lib/texmf/dvipdfmx/dvipdfmx-paper.cfg
tl-paper: setting paper size for xdvi to a4: /var/lib/texmf/xdvi/XDvi-
paper
tl-paper: setting paper size for pdftex to a4:
/var/lib/texmf/tex/generic/tex-ini-files/pdftexconfig.tex
Setting up tex-gyre (20180621-3.1) ...
Setting up texlive-plain-generic (2021.20220204-1) ...
Setting up texlive-latex-base (2021.20220204-1) ...
Setting up texlive-latex-recommended (2021.20220204-1) ...
Setting up texlive-pictures (2021.20220204-1) ...
Setting up texlive-fonts-recommended (2021.20220204-1) ...
Setting up tipa (2:1.3-21) ...
Setting up texlive-latex-extra (2021.20220204-1) ...
Setting up texlive-xetex (2021.20220204-1) ...
Setting up rake (13.0.6-2) ...
Setting up libruby3.0:amd64 (3.0.2-7ubuntu2.10) ...
Setting up ruby3.0 (3.0.2-7ubuntu2.10) ...
Setting up ruby (1:3.0~exp1) ...
Setting up ruby-rubygems (3.3.5-2) ...
Processing triggers for man-db (2.10.2-1) ...
Processing triggers for mailcap (3.70+nmu1ubuntu1) ...
Processing triggers for fontconfig (2.13.1-4.2ubuntu5) ...
Processing triggers for libc-bin (2.35-0ubuntu3.8) ...
/sbin/ldconfig.real: /usr/local/lib/libtbbbind_2_0.so.3 is not a
symbolic link

/sbin/ldconfig.real: /usr/local/lib/libtbbmalloc.so.2 is not a
symbolic link

/sbin/ldconfig.real: /usr/local/lib/libumf.so.0 is not a symbolic link

/sbin/ldconfig.real: /usr/local/lib/libtbb.so.12 is not a symbolic
link

/sbin/ldconfig.real: /usr/local/lib/libtcm.so.1 is not a symbolic link

/sbin/ldconfig.real: /usr/local/lib/libur_adapter_opencl.so.0 is not a
symbolic link

/sbin/ldconfig.real: /usr/local/lib/libur_adapter_level_zero_v2.so.0
is not a symbolic link

/sbin/ldconfig.real: /usr/local/lib/libtcm_debug.so.1 is not a
symbolic link

/sbin/ldconfig.real: /usr/local/lib/libtbbbind.so.3 is not a symbolic
link

/sbin/ldconfig.real: /usr/local/lib/libhwloc.so.15 is not a symbolic
```

```
link

/sbin/ldconfig.real: /usr/local/lib/libtbbbind_2_5.so.3 is not a
symbolic link

/sbin/ldconfig.real: /usr/local/lib/libur_loader.so.0 is not a
symbolic link

/sbin/ldconfig.real: /usr/local/lib/libur_adapter_level_zero.so.0 is
not a symbolic link

/sbin/ldconfig.real: /usr/local/lib/libtbbmalloc_proxy.so.2 is not a
symbolic link

Processing triggers for tex-common (6.17) ...
Running updmap-sys. This may take some time... done.
Running mktexlsr /var/lib/texmf ... done.
Building format(s) --all.
      This may take some time... done.

!jupyter nbconvert --to pdf ds_lab1.ipynb

[NbConvertApp] Converting notebook ds_lab1.ipynb to pdf
[NbConvertApp] Support files will be in ds_lab1_files/
[NbConvertApp] Making directory ./ds_lab1_files
[NbConvertApp] Writing 55924 bytes to notebook.tex
[NbConvertApp] Building PDF
[NbConvertApp] Running xelatex 3 times: ['xelatex', 'notebook.tex', '-
quiet']
[NbConvertApp] Running bibtex 1 time: ['bibtex', 'notebook']
[NbConvertApp] WARNING | bibtex had problems, most likely because
there were no citations
[NbConvertApp] PDF successfully created
[NbConvertApp] Writing 429632 bytes to ds_lab1.pdf
```

```python
import pandas as pd
import matplotlib.pyplot as plt
survival_counts = pd.crosstab(df['class'], df['survived'])
survival_counts.plot(kind='bar', stacked=True, color=['salmon',
'lightgreen'])
plt.xlabel("Passenger Class")
plt.ylabel("Number of Passengers")
plt.title("Survival by Passenger Class (Stacked)")
plt.legend(["Did not survive", "Survived"])
plt.show()
```

Survival by Passenger Class (Stacked)