In [1]:
```
import matplotlib.pyplot as plt
import numpy as np
import seaborn as sns
import pandas as pd
```

In [2]:
```
# data=pd.read_csv("Startups.csv")
# data.head()
```

In [17]:
```
data1=sns.load_dataset("titanic")
```

```
sns.scatterplot(
    x=None,
    y=None,
    hue=None,
    style=None,
    size=None,
    data=None,
    palette=None,
    hue_order=None,
    hue_norm=None,
    sizes=None,
    size_order=None,
    size_norm=None,
    markers=True,
    style_order=None,
    x_bins=None,
    y_bins=None,
    units=None,
    estimator=None,
    ci=95,
    n_boot=1000,
    alpha='auto',
    x_jitter=None,
    y_jitter=None,
    legend='brief',
    ax=None,
```

```
    **kwargs,
)
Docstring:
Draw a scatter plot with possibility of several semantic groupings.

The relationship between ``x`` and ``y`` can be shown for different subsets
of the data using the ``hue``, ``size``, and ``style`` parameters. These
parameters control what visual semantics are used to identify the different
subsets. It is possible to show up to three dimensions independently by
using all three semantic types, but this style of plot can be hard to
interpret and is often ineffective. Using redundant semantics (i.e. both
``hue`` and ``style`` for the same variable) can be helpful for making
graphics more accessible.

See the :ref:`tutorial <relational_tutorial>` for more information.

The default treatment of the ``hue`` (and to a lesser extent, ``size``)
semantic, if present, depends on whether the variable is inferred to
represent "numeric" or "categorical" data. In particular, numeric variables
are represented with a sequential colormap by default, and the legend
entries show regular "ticks" with values that may or may not exist in the
data. This behavior can be controlled through various parameters, as
described and illustrated below.

Parameters
----------
x, y : names of variables in ``data`` or vector data, optional
    Input data variables; must be numeric. Can pass data directly or
    reference columns in ``data``.
hue : name of variables in ``data`` or vector data, optional
    Grouping variable that will produce points with different colors.
    Can be either categorical or numeric, although color mapping will
    behave differently in latter case.
size : name of variables in ``data`` or vector data, optional
    Grouping variable that will produce points with different sizes.
    Can be either categorical or numeric, although size mapping will
    behave differently in latter case.
style : name of variables in ``data`` or vector data, optional
    Grouping variable that will produce points with different markers.
```

```
    Can have a numeric dtype but will always be treated as categorical.
data : DataFrame
    Tidy ("long-form") dataframe where each column is a variable and each
    row is an observation.
palette : palette name, list, or dict, optional
    Colors to use for the different levels of the ``hue`` variable. Should
    be something that can be interpreted by :func:`color_palette`, or a
    dictionary mapping hue levels to matplotlib colors.
hue_order : list, optional
    Specified order for the appearance of the ``hue`` variable levels,
    otherwise they are determined from the data. Not relevant when the
    ``hue`` variable is numeric.
hue_norm : tuple or Normalize object, optional
    Normalization in data units for colormap applied to the ``hue``
    variable when it is numeric. Not relevant if it is categorical.
sizes : list, dict, or tuple, optional
    An object that determines how sizes are chosen when ``size`` is used.
    It can always be a list of size values or a dict mapping levels of the
    ``size`` variable to sizes. When ``size``  is numeric, it can also be
    a tuple specifying the minimum and maximum size to use such that other
    values are normalized within this range.
size_order : list, optional
    Specified order for appearance of the ``size`` variable levels,
    otherwise they are determined from the data. Not relevant when the
    ``size`` variable is numeric.
size_norm : tuple or Normalize object, optional
    Normalization in data units for scaling plot objects when the
    ``size`` variable is numeric.
markers : boolean, list, or dictionary, optional
    Object determining how to draw the markers for different levels of the
    ``style`` variable. Setting to ``True`` will use default markers, or
    you can pass a list of markers or a dictionary mapping levels of the
    ``style`` variable to markers. Setting to ``False`` will draw
    marker-less lines.  Markers are specified as in matplotlib.
style_order : list, optional
    Specified order for appearance of the ``style`` variable levels
    otherwise they are determined from the data. Not relevant when the
    ``style`` variable is numeric.
{x,y}_bins : lists or arrays or functions
```

```
    *Currently non-functional.*
units : {long_form_var}
    Grouping variable identifying sampling units. When used, a separate
    line will be drawn for each unit with appropriate semantics, but no
    legend entry will be added. Useful for showing distribution of
    experimental replicates when exact identities are not needed.

    *Currently non-functional.*
estimator : name of pandas method or callable or None, optional
    Method for aggregating across multiple observations of the ``y``
    variable at the same ``x`` level. If ``None``, all observations will
    be drawn.
    *Currently non-functional.*
ci : int or "sd" or None, optional
    Size of the confidence interval to draw when aggregating with an
    estimator. "sd" means to draw the standard deviation of the data.
    Setting to ``None`` will skip bootstrapping.
    *Currently non-functional.*
n_boot : int, optional
    Number of bootstraps to use for computing the confidence interval.
    *Currently non-functional.*
alpha : float
    Proportional opacity of the points.
{x,y}_jitter : booleans or floats
    *Currently non-functional.*
legend : "brief", "full", or False, optional
    How to draw the legend. If "brief", numeric ``hue`` and ``size``
    variables will be represented with a sample of evenly spaced values.
    If "full", every group will get an entry in the legend. If ``False``,
    no legend data is added and no legend is drawn.
ax : matplotlib Axes, optional
    Axes object to draw the plot onto, otherwise uses the current Axes.
kwargs : key, value mappings
    Other keyword arguments are passed down to
    :meth:`matplotlib.axes.Axes.scatter`.

Returns
-------
ax : matplotlib Axes
```

```
    Returns the Axes object with the plot drawn onto it.

See Also
--------
lineplot : Show the relationship between two variables connected with
           lines to emphasize continuity.
swarmplot : Draw a scatter plot with one categorical variable, arranging
            the points to show the distribution of values.

Examples
--------

Draw a simple scatter plot between two variables:

.. plot::
    :context: close-figs

    >>> import seaborn as sns; sns.set()
    >>> import matplotlib.pyplot as plt
    >>> tips = sns.load_dataset("tips")
    >>> ax = sns.scatterplot(x="total_bill", y="tip", data=tips)

Group by another variable and show the groups with different colors:

.. plot::
    :context: close-figs

    >>> ax = sns.scatterplot(x="total_bill", y="tip", hue="time",
    ...                      data=tips)

Show the grouping variable by varying both color and marker:

.. plot::
    :context: close-figs

    >>> ax = sns.scatterplot(x="total_bill", y="tip",
    ...                      hue="time", style="time", data=tips)

Vary colors and markers to show two different grouping variables:
```

```
.. plot::
    :context: close-figs

    >>> ax = sns.scatterplot(x="total_bill", y="tip",
    ...                      hue="day", style="time", data=tips)

Show a quantitative variable by varying the size of the points:

.. plot::
    :context: close-figs

    >>> ax = sns.scatterplot(x="total_bill", y="tip", size="size",
    ...                      data=tips)

Also show the quantitative variable by also using continuous colors:

.. plot::
    :context: close-figs

    >>> ax = sns.scatterplot(x="total_bill", y="tip",
    ...                      hue="size", size="size",
    ...                      data=tips)

Use a different continuous color map:

.. plot::
    :context: close-figs

    >>> cmap = sns.cubehelix_palette(dark=.3, light=.8, as_cmap=True)
    >>> ax = sns.scatterplot(x="total_bill", y="tip",
    ...                      hue="size", size="size",
    ...                      palette=cmap,
    ...                      data=tips)

Change the minimum and maximum point size and show all sizes in legend:

.. plot::
    :context: close-figs
```

```
    >>> cmap = sns.cubehelix_palette(dark=.3, light=.8, as_cmap=True)
    >>> ax = sns.scatterplot(x="total_bill", y="tip",
    ...                      hue="size", size="size",
    ...                      sizes=(20, 200), palette=cmap,
    ...                      legend="full", data=tips)

Use a narrower range of color map intensities:

.. plot::
    :context: close-figs

    >>> cmap = sns.cubehelix_palette(dark=.3, light=.8, as_cmap=True)
    >>> ax = sns.scatterplot(x="total_bill", y="tip",
    ...                      hue="size", size="size",
    ...                      sizes=(20, 200), hue_norm=(0, 7),
    ...                      legend="full", data=tips)

Vary the size with a categorical variable, and use a different palette:

.. plot::
    :context: close-figs

    >>> cmap = sns.cubehelix_palette(dark=.3, light=.8, as_cmap=True)
    >>> ax = sns.scatterplot(x="total_bill", y="tip",
    ...                      hue="day", size="smoker",
    ...                      palette="Set2",
    ...                      data=tips)

Use a specific set of markers:

.. plot::
    :context: close-figs

    >>> markers = {"Lunch": "s", "Dinner": "X"}
    >>> ax = sns.scatterplot(x="total_bill", y="tip", style="time",
    ...                      markers=markers,
    ...                      data=tips)
```

```
Control plot attributes using matplotlib parameters:

.. plot::
    :context: close-figs

    >>> ax = sns.scatterplot(x="total_bill", y="tip",
    ...                      s=100, color=".2", marker="+",
    ...                      data=tips)

Pass data vectors instead of names in a data frame:

.. plot::
    :context: close-figs

    >>> iris = sns.load_dataset("iris")
    >>> ax = sns.scatterplot(x=iris.sepal_length, y=iris.sepal_width,
    ...                      hue=iris.species, style=iris.species)

Pass a wide-form dataset and plot against its index:

.. plot::
    :context: close-figs

    >>> import numpy as np, pandas as pd; plt.close("all")
    >>> index = pd.date_range("1 1 2000", periods=100,
    ...                       freq="m", name="date")
    >>> data = np.random.randn(100, 4).cumsum(axis=0)
    >>> wide_df = pd.DataFrame(data, index, ["a", "b", "c", "d"])
    >>> ax = sns.scatterplot(data=wide_df)

Use :func:`relplot` to combine :func:`scatterplot` and :class:`FacetGrid`:
This allows grouping within additional categorical variables. Using
:func:`relplot` is safer than using :class:`FacetGrid` directly, as it
ensures synchronization of the semantic mappings across facets.

.. plot::
    :context: close-figs

    >>> g = sns.relplot(x="total_bill", y="tip",
```

```
...                 col="time", hue="day", style="day",
...                 kind="scatter", data=tips)
```

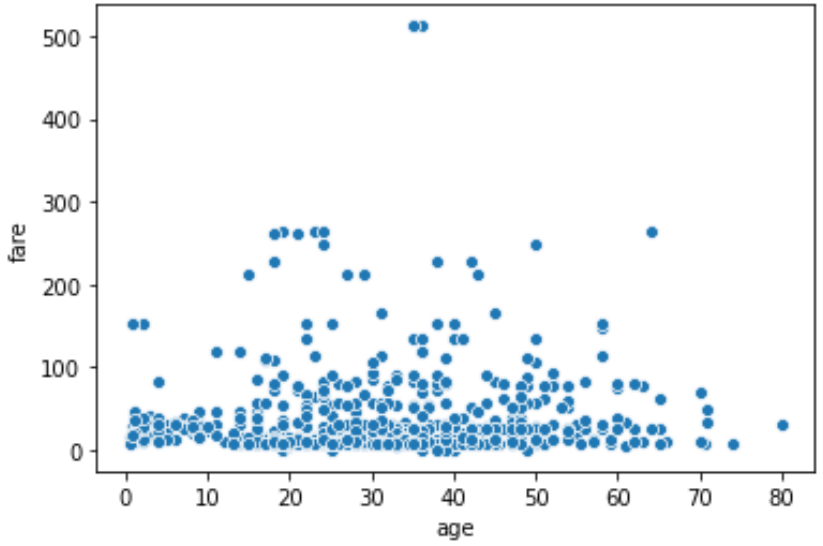
In [18]:
```
data1.head()
```

Out[18]:

	survived	pclass	sex	age	sibsp	parch	fare	embarked	class	who	adult_male	deck	embark_town	alive	alone
0	0	3	male	22.0	1	0	7.2500	S	Third	man	True	NaN	Southampton	no	False
1	1	1	female	38.0	1	0	71.2833	C	First	woman	False	C	Cherbourg	yes	False
2	1	3	female	26.0	0	0	7.9250	S	Third	woman	False	NaN	Southampton	yes	True
3	1	1	female	35.0	1	0	53.1000	S	First	woman	False	C	Southampton	yes	False
4	0	3	male	35.0	0	0	8.0500	S	Third	man	True	NaN	Southampton	no	True

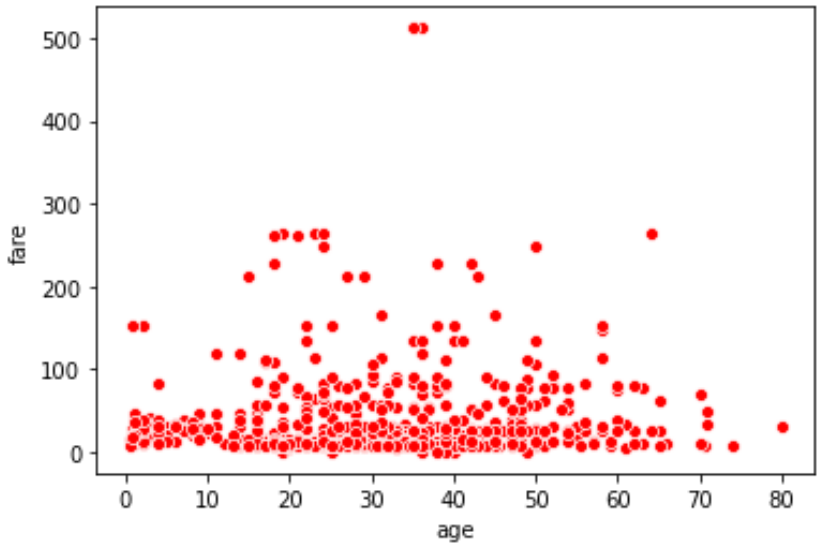
In [5]:
```
# sns.scatterplot(x=data["Administration"],y=data["Profit"])  # setp-1
sns.scatterplot(x="age",y="fare",data=data1)    #step -2
```

Out[5]: <AxesSubplot:xlabel='age', ylabel='fare'>



In [19]:
```
sns.scatterplot(x="age",y="fare",data=data1,color="red")
```

Out[19]: <AxesSubplot:xlabel='age', ylabel='fare'>



In [12]:
```
# sns.scatterplot(x="age",y="fare",data=data,hue="sex",style="who")
```

In [20]:
```
sns.scatterplot(x="age",y="fare",data=data1,sizes=(100,400))
```

Out[20]:
```
<AxesSubplot:xlabel='age', ylabel='fare'>
```