```
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt
```

```
df=pd.read_csv('insurance.csv')
```

```
df
```

	age	sex	bmi	children	smoker	region	charges
0	19	female	27.900	0	yes	southwest	16884.92400
1	18	male	33.770	1	no	southeast	1725.55230
2	28	male	33.000	3	no	southeast	4449.46200
3	33	male	22.705	0	no	northwest	21984.47061
4	32	male	28.880	0	no	northwest	3866.85520
...	...	...	...	...	...	...	...
1333	50	male	30.970	3	no	northwest	10600.54830
1334	18	female	31.920	0	no	northeast	2205.98080
1335	18	female	36.850	0	no	southeast	1629.83350
1336	21	female	25.800	0	no	southwest	2007.94500
1337	61	female	29.070	0	yes	northwest	29141.36030

1338 rows × 7 columns

```
df.head()
```

	age	sex	bmi	children	smoker	region	charges
0	19	female	27.900	0	yes	southwest	16884.92400
1	18	male	33.770	1	no	southeast	1725.55230
2	28	male	33.000	3	no	southeast	4449.46200
3	33	male	22.705	0	no	northwest	21984.47061
4	32	male	28.880	0	no	northwest	3866.85520

```
df.tail()
```

	age	sex	bmi	children	smoker	region	charges
1333	50	male	30.97	3	no	northwest	10600.5483
1334	18	female	31.92	0	no	northeast	2205.9808
1335	18	female	36.85	0	no	southeast	1629.8335
1336	21	female	25.80	0	no	southwest	2007.9450
1337	61	female	29.07	0	yes	northwest	29141.3603

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 1338 entries, 0 to 1337
Data columns (total 7 columns):
 #   Column    Non-Null Count  Dtype  
---  ------    --------------  -----  
 0   age       1338 non-null   int64  
 1   sex       1338 non-null   object 
 2   bmi       1338 non-null   float64
 3   children  1338 non-null   int64  
 4   smoker    1338 non-null   object 
 5   region    1338 non-null   object 
 6   charges   1338 non-null   float64
dtypes: float64(2), int64(2), object(3)
memory usage: 73.3+ KB
```

```
df.describe()
```

	age	bmi	children	charges
count	1338.000000	1338.000000	1338.000000	1338.000000
mean	39.207025	30.663397	1.094918	13270.422265
std	14.049960	6.098187	1.205493	12110.011237
min	18.000000	15.960000	0.000000	1121.873900
25%	27.000000	26.296250	0.000000	4740.287150
50%	39.000000	30.400000	1.000000	9382.033000
75%	51.000000	34.693750	2.000000	16639.912515
max	64.000000	53.130000	5.000000	63770.428010

```
df.shape
```

```
(1338, 7)
```

```
df.isnull().sum()
```

	0
age	0
sex	0
bmi	0
children	0
smoker	0
region	0
charges	0

dtype: int64

```
df['children'].mean()
```

```
np.float64(1.0949177877429)
```

```
df['smoker'].value_counts()
```

smoker	count
no	1064
yes	274

dtype: int64

```
df.nunique()
```

	0
age	47
sex	2
bmi	548
children	6
smoker	2
region	4
charges	1337

dtype: int64

```
df['age'].value_counts()
```

age	count
18	69
19	68
52	29
50	29
51	29
45	29
24	28
27	28
28	28
26	28
23	28
49	28
54	28
57	26
55	26
56	26
35	25
58	25
37	25
59	25
39	25
36	25
38	25
62	23
60	23
63	23

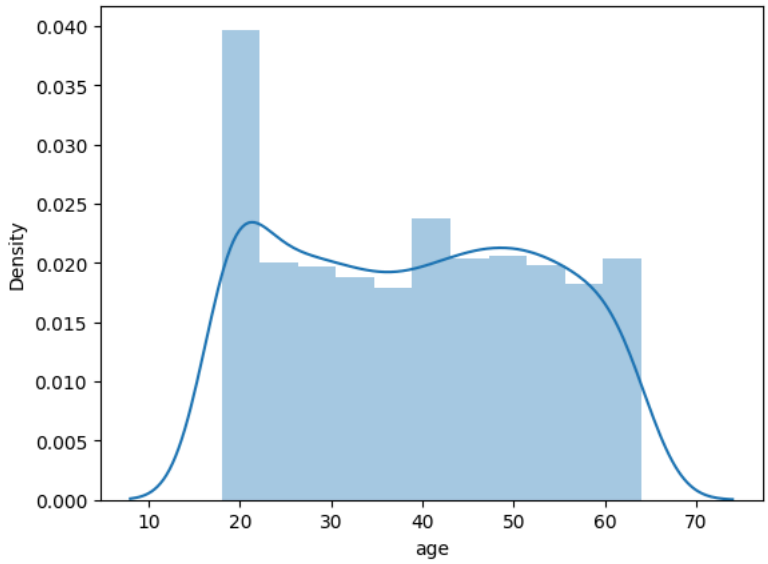
```
df['sex'].value_counts()
```

sex	count
male	676
female	662

dtype: int64

```
sns.distplot(df['age'])
```

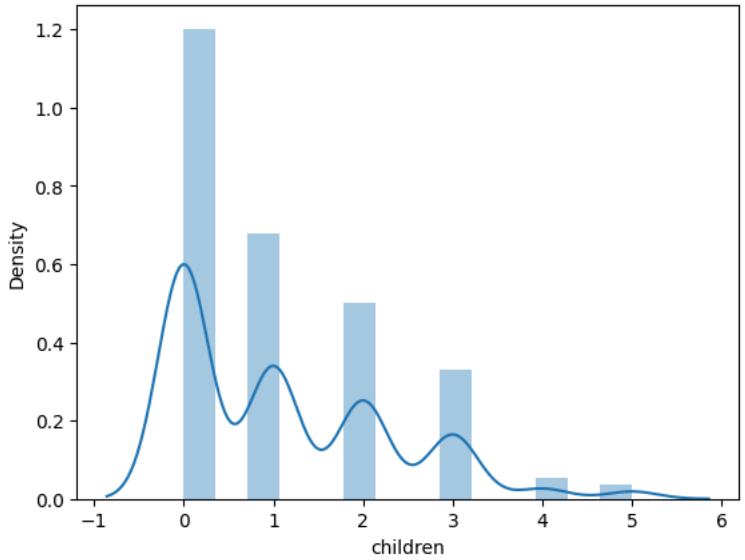
```
/tmp/ipython-input-3234920688.py:1: UserWarning:

`distplot` is a deprecated function and will be removed in seaborn v0.14.0.

Please adapt your code to use either `displot` (a figure-level function with
similar flexibility) or `histplot` (an axes-level function for histograms).

For a guide to updating your code to use the new functions, please see
https://gist.github.com/mwaskom/de44147ed2974457ad6372750bbe5751

  sns.distplot(df['age'])
<Axes: xlabel='age', ylabel='Density'>
```




```
sns.distplot(df['children'])
```

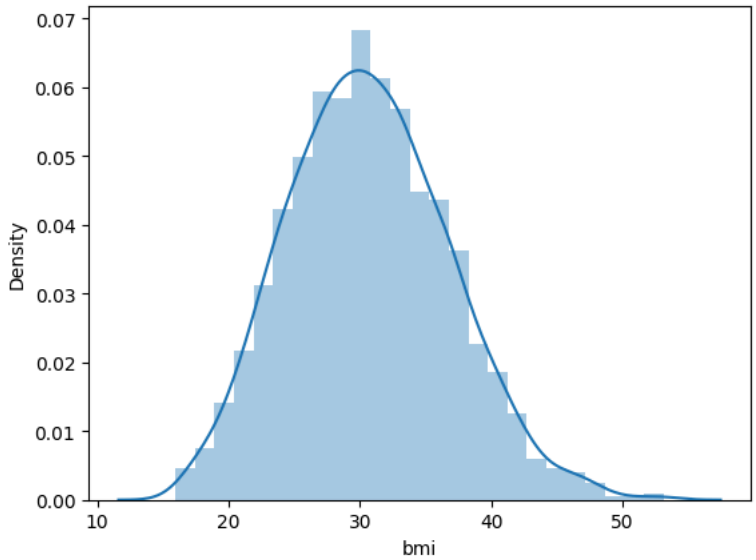
```
61    23
64    22
dtype: int64
```

```
/tmp/ipython-input-2914109155.py:1: UserWarning:

`distplot` is a deprecated function and will be removed in seaborn v0.14.0.

Please adapt your code to use either `displot` (a figure-level function with
similar flexibility) or `histplot` (an axes-level function for histograms).

For a guide to updating your code to use the new functions, please see
https://gist.github.com/mwaskom/de44147ed2974457ad6372750bbe5751

  sns.distplot(df['children'])
<Axes: xlabel='children', ylabel='Density'>
```



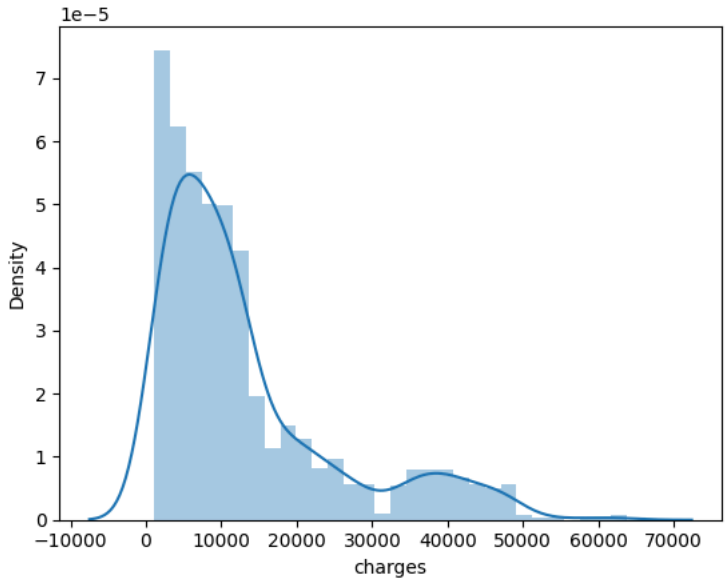

```
sns.distplot(df['bmi'])
```

```
/tmp/ipython-input-4168411822.py:1: UserWarning:

`distplot` is a deprecated function and will be removed in seaborn v0.14.0.

Please adapt your code to use either `displot` (a figure-level function with
similar flexibility) or `histplot` (an axes-level function for histograms).

For a guide to updating your code to use the new functions, please see
https://gist.github.com/mwaskom/de44147ed2974457ad6372750bbe5751

  sns.distplot(df['bmi'])
<Axes: xlabel='bmi', ylabel='Density'>
```



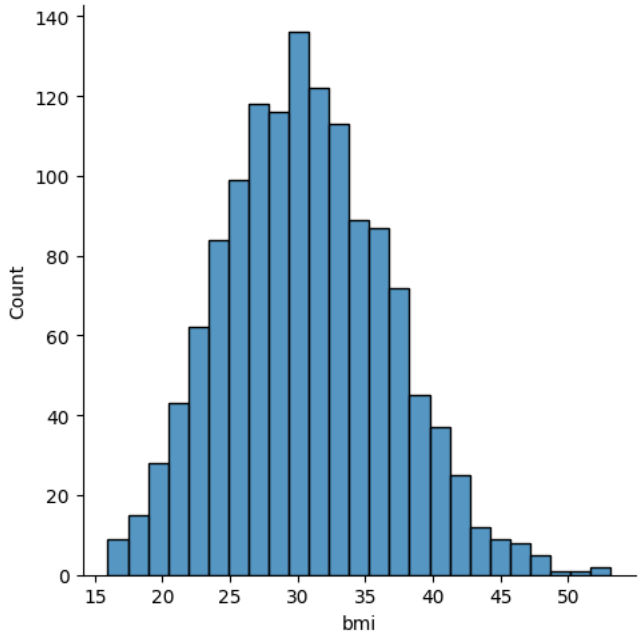

```
sns.distplot(df['charges'])
```

```
/tmp/ipython-input-1319113370.py:1: UserWarning:

`distplot` is a deprecated function and will be removed in seaborn v0.14.0.

Please adapt your code to use either `displot` (a figure-level function with
similar flexibility) or `histplot` (an axes-level function for histograms).

For a guide to updating your code to use the new functions, please see
https://gist.github.com/mwaskom/de44147ed2974457ad6372750bbe5751

  sns.distplot(df['charges'])
<Axes: xlabel='charges', ylabel='Density'>
```



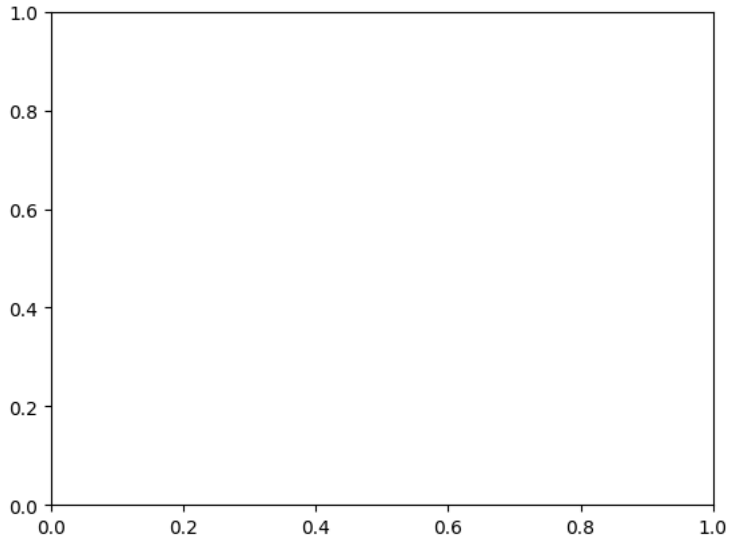

```
sns.displot(df['bmi'])
```

```
<seaborn.axisgrid.FacetGrid at 0x7ab1b2517050>
```



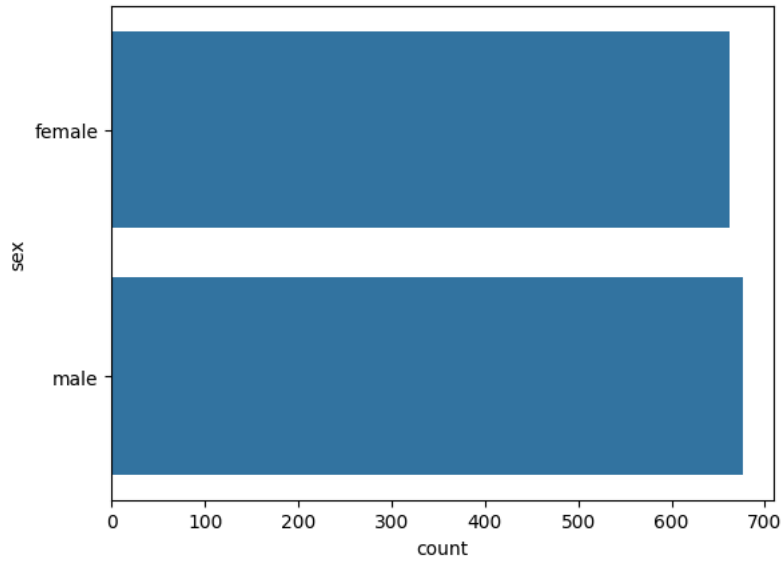

```
sns.distplot(df['smoker'])
```

```
/tmp/ipython-input-3810471177.py:1: UserWarning:

`distplot` is a deprecated function and will be removed in seaborn v0.14.0.

Please adapt your code to use either `displot` (a figure-level function with
similar flexibility) or `histplot` (an axes-level function for histograms).

For a guide to updating your code to use the new functions, please see
https://gist.github.com/mwaskom/de44147ed2974457ad6372750bbe5751

  sns.distplot(df['smoker'])
---------------------------------------------------------------------------
ValueError                                Traceback (most recent call last)
/tmp/ipython-input-3810471177.py in <cell line: 0>()
----> 1 sns.distplot(df['smoker'])

 1 frames
/usr/local/lib/python3.12/dist-packages/pandas/core/series.py in __array__(self, dtype, copy)
   1029         """
   1030         values = self._values
-> 1031         arr = np.asarray(values, dtype=dtype)
   1032         if using_copy_on_write() and astype_is_view(values.dtype, arr.dtype):
   1033             arr = arr.view()

ValueError: could not convert string to float: 'yes'
```



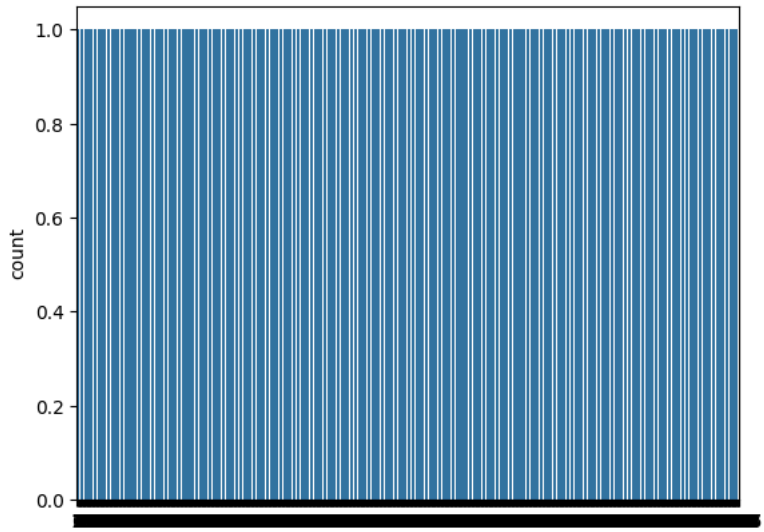

```
sns.countplot(df['sex'])
```

```
<Axes: xlabel='count', ylabel='sex'>
```



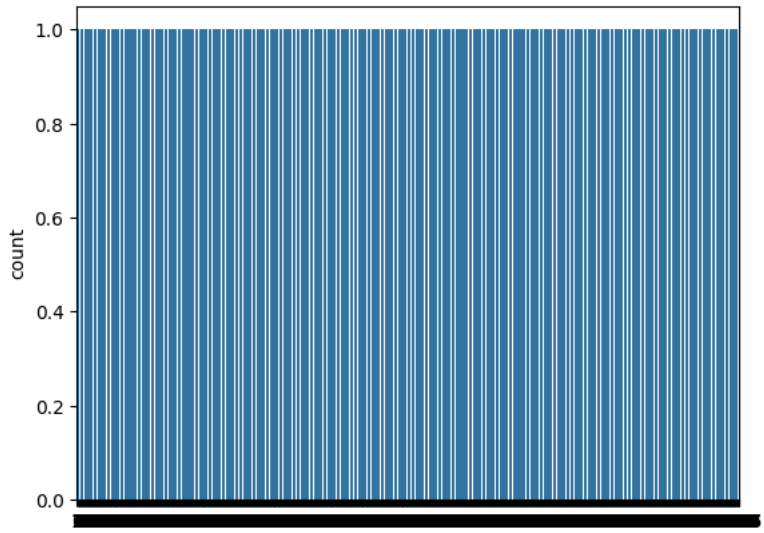

```
sns.countplot(df['children'])
```

```
<Axes: ylabel='count'>
```



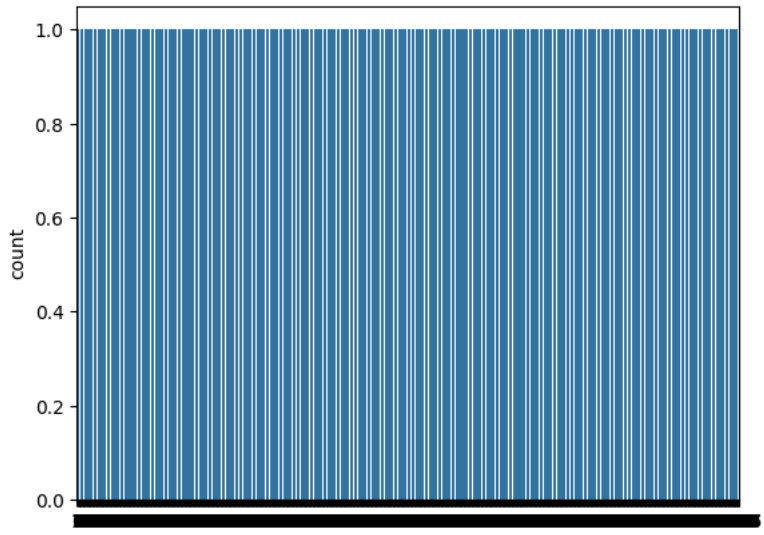

```
sns.countplot(df['age'])
```

```
<Axes: ylabel='count'>
```



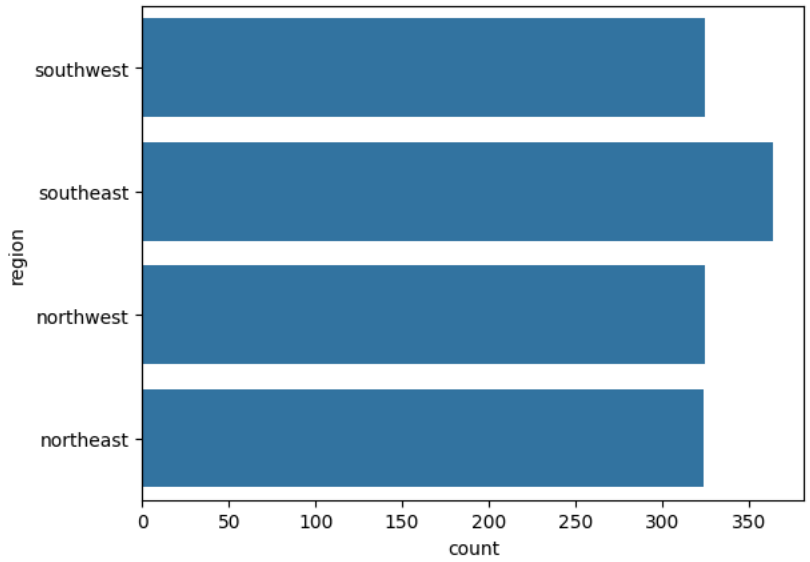

```
sns.countplot(df['bmi'])
```

```
<Axes: ylabel='count'>
```



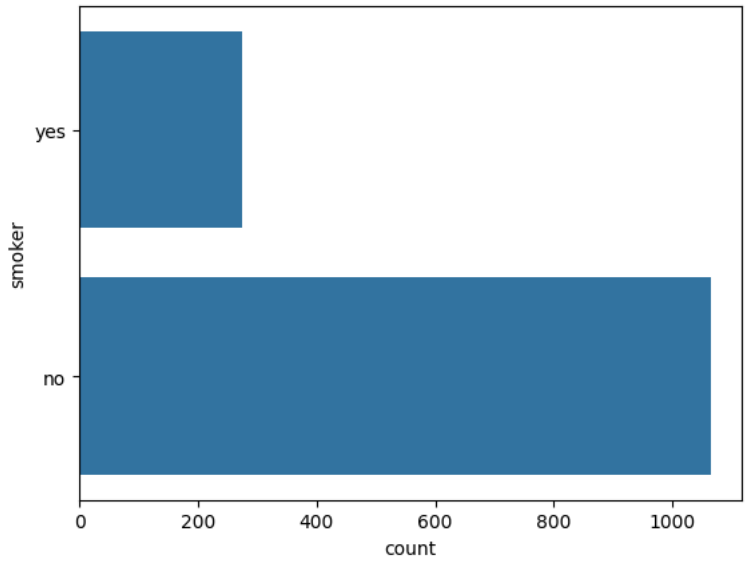
```
sns.countplot(df['region'])
```

```
<Axes: xlabel='count', ylabel='region'>
```



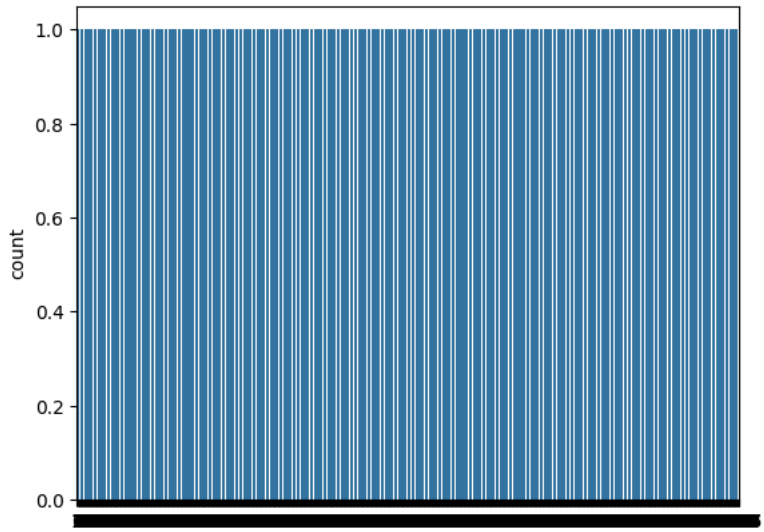

```
sns.countplot(df['smoker'])
```

```
<Axes: xlabel='count', ylabel='smoker'>
```



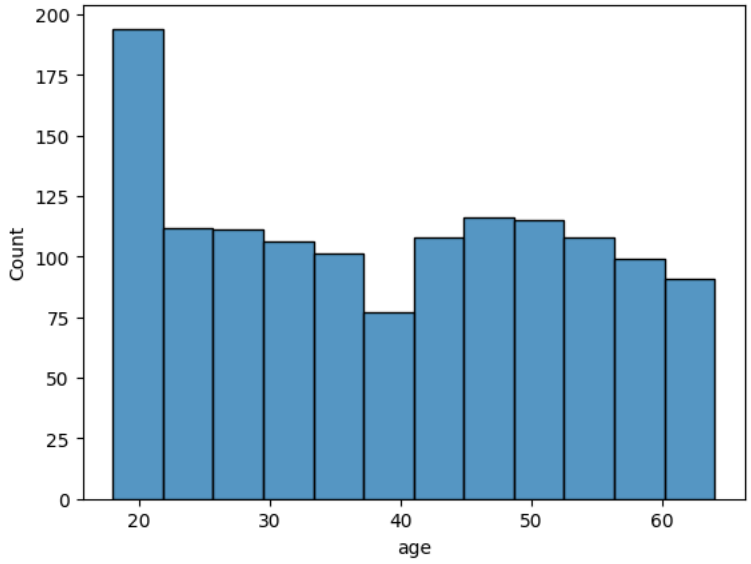

```
sns.countplot(df['charges'])
```

```
<Axes: ylabel='count'>
```



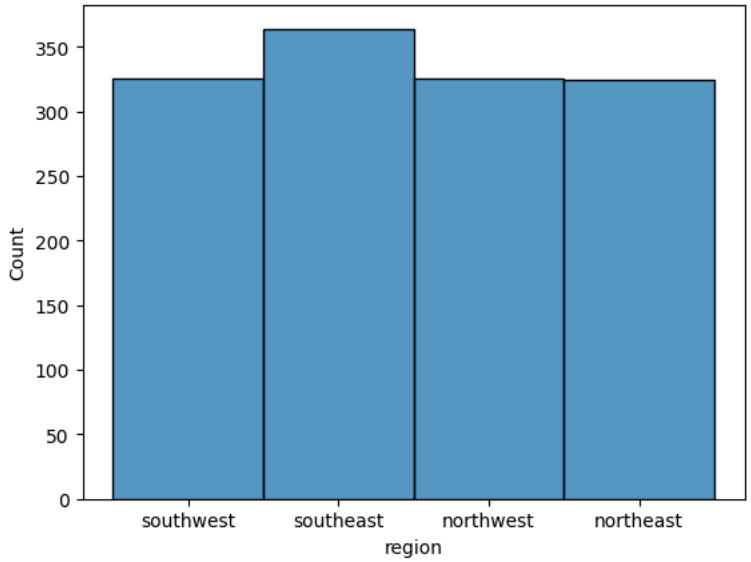

```
sns.histplot(df['age'])
```

```
<Axes: xlabel='age', ylabel='Count'>
```



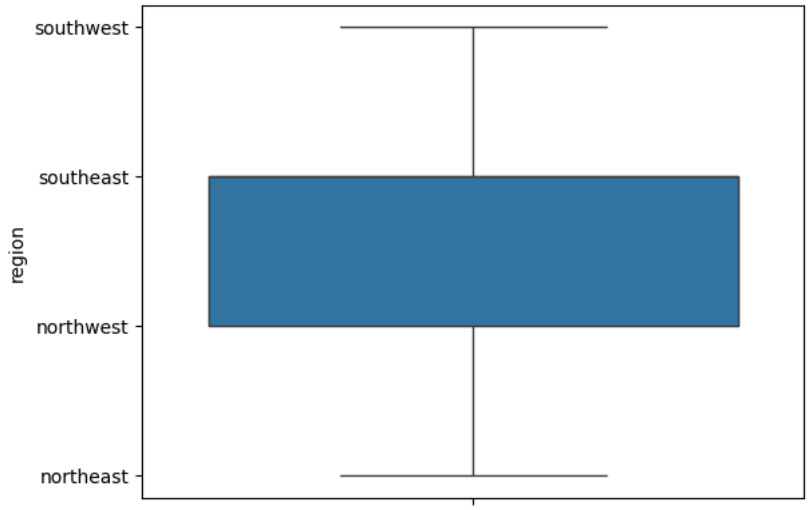

```
sns.histplot(df['region'])
```

```
<Axes: xlabel='region', ylabel='Count'>
```



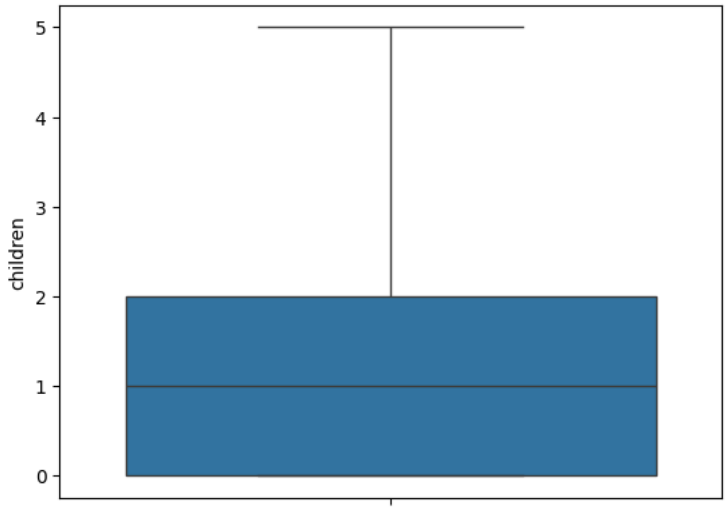

```
sns.boxplot(df['region'])
```

```
<Axes: ylabel='region'>
```



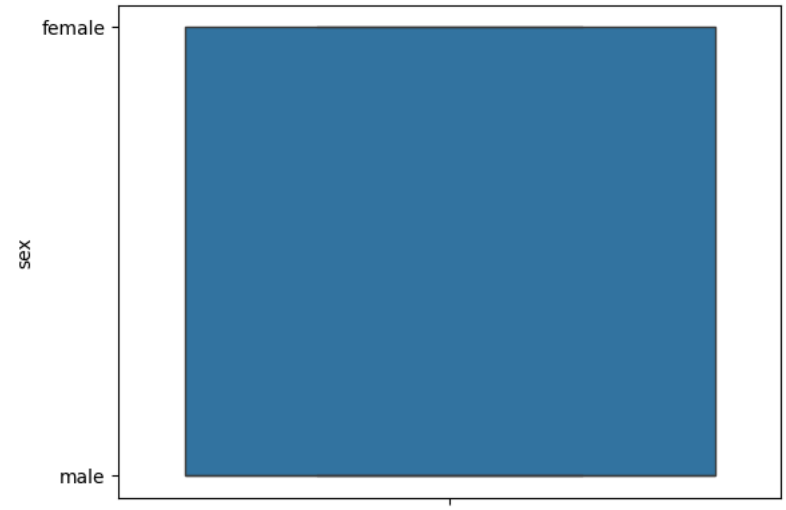

```
sns.boxplot(df['children'])
```

```
<Axes: ylabel='children'>
```



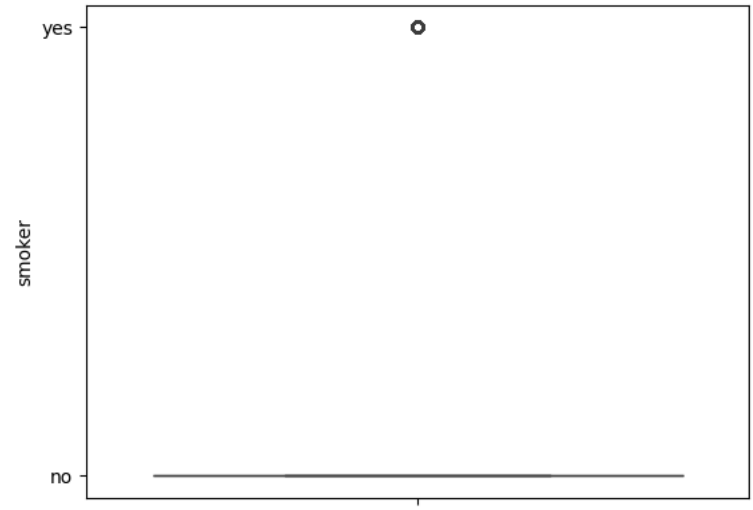
```
sns.boxplot(df['sex'])
```

```
<Axes: ylabel='sex'>
```



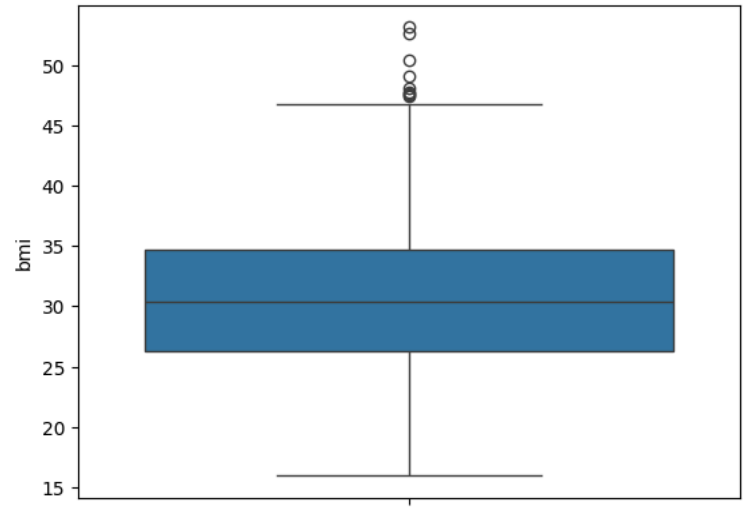

```
sns.boxplot(df['smoker'])
```

```
<Axes: ylabel='smoker'>
```




```
sns.boxplot(df['bmi'])
```

```
<Axes: ylabel='bmi'>
```



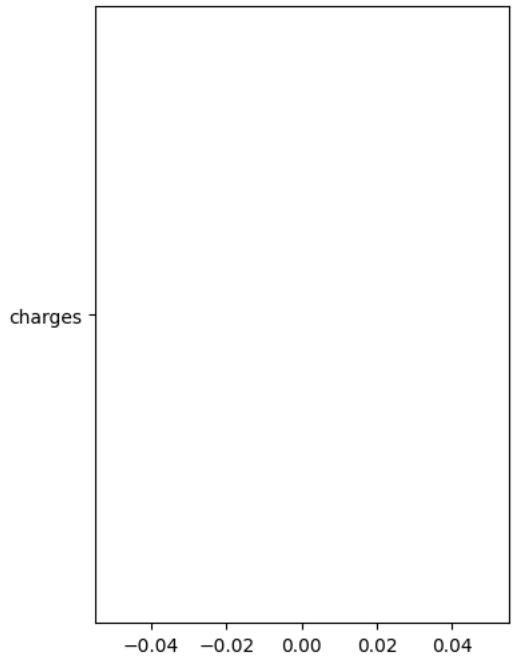
```
from sklearn.preprocessing import LabelEncoder
le=LabelEncoder()
df['sex']=le.fit_transform(df['sex'])
df['smoker']=le.fit_transform(df['smoker'])
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
/tmp/ipython-input-1182244122.py in <cell line: 0>()
      1 from sklearn.preprocessing import LabelEncoder
      2 le=LabelEncoder()
----> 3 df['sex']=le.fit_transform(df['sex'])
      4 df['smoker']=le.fit_transform(df['smoker'])

NameError: name 'df' is not defined
```

```
df.head()
```

```
from sklearn.preprocessing import labelEncoder
le=labelEncoder()
xcxxxbn
```

```
plt.figure(figsize=(4,6))
sns.lineplot("charges")
plt.show()
```




```
plt.figure(figsize=(4,6))
sns.lineplot(x="sex",y="charges",data as df)
plt.show()
```

```
  File "/tmp/ipython-input-2027948714.py", line 2
    sns.lineplot(x="sex",y="charges",data as df)
                                             ^
SyntaxError: positional argument follows keyword argument
```

```
plt.figure(figsize=(4,6))
sns.lineplot(x="sex",y="charges",data=df)
plt.show()
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
/tmp/ipython-input-3253847595.py in <cell line: 0>()
      1 plt.figure(figsize=(4,6))
----> 2 sns.lineplot(x="sex",y="charges",data=df)
      3 plt.show()
```