In [1]:

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


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

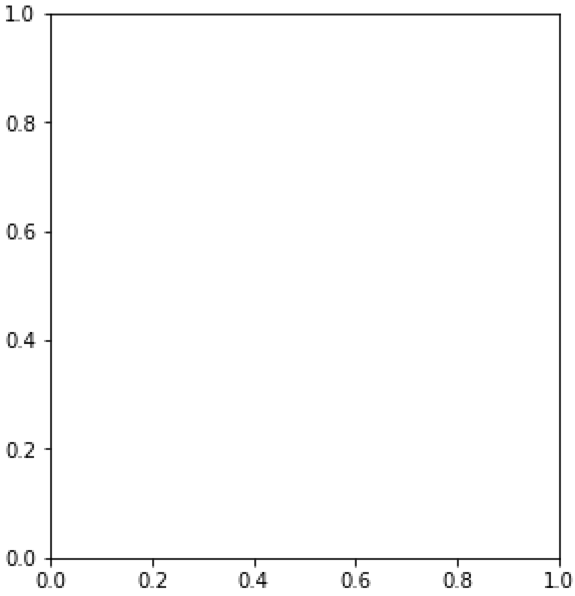
Out[1]:

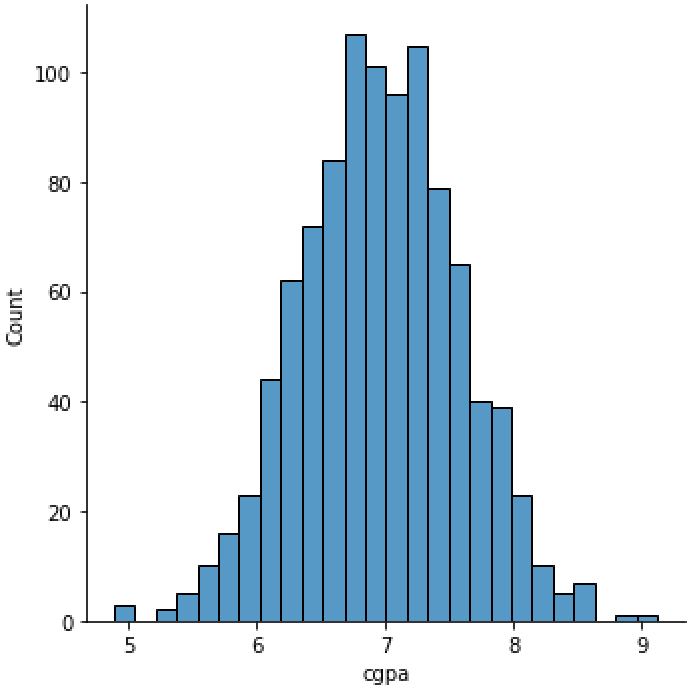
	cgpa	placement_exam_marks	placed
0	7.19	26	1
1	7.46	38	1
2	7.54	40	1
3	6.42	8	1
4	7.23	17	0
...	...	...	...
995	8.87	44	1
996	9.12	65	1
997	4.89	34	0
998	8.62	46	1
999	4.90	10	1

1000 rows × 3 columns

In [2]:
```
plt.figure(figsize=(10,5))
plt.subplot(1,2,1)
sns.displot(df['cgpa'])
```

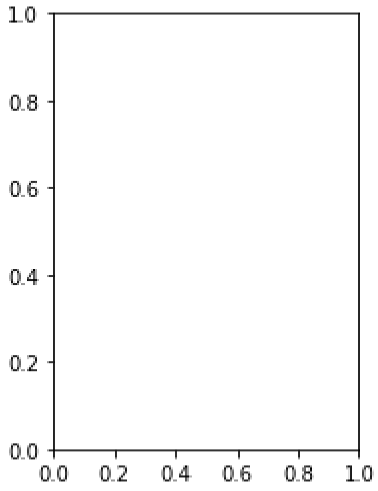
Out[2]:
```
<seaborn.axisgrid.FacetGrid at 0x215d9c41f70>
```

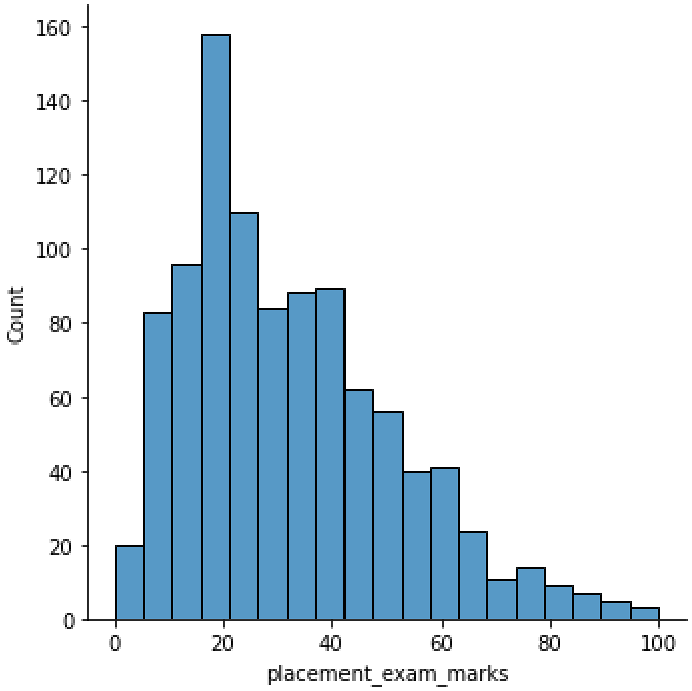




In [3]:
```
plt.subplot(1,2,2)
sns.displot(df['placement_exam_marks'])
```

Out[3]:
```
<seaborn.axisgrid.FacetGrid at 0x215d4449850>
```





In [4]:
```
df['placement_exam_marks'].describe()
```

Out[4]:
```
count    1000.000000
mean       32.225000
std        19.130822
min         0.000000
25%        17.000000
50%        28.000000
75%        44.000000
max       100.000000
Name: placement_exam_marks, dtype: float64
```

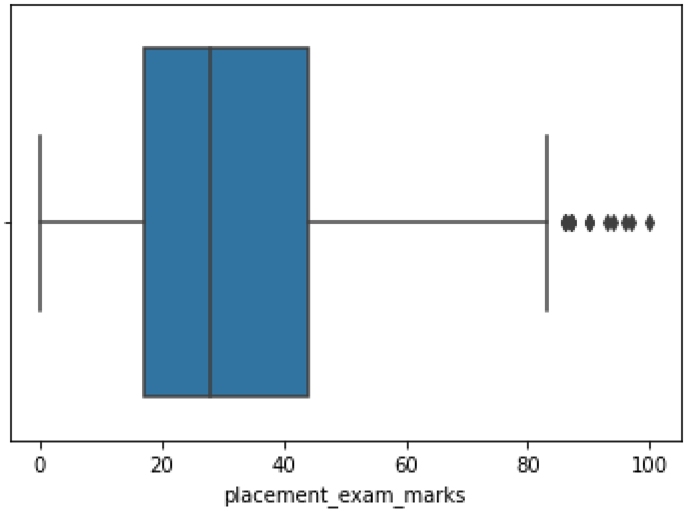
In [5]:

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

```
C:\ProgramData\Anaconda3\lib\site-packages\seaborn\_decorators.py:36: FutureW
arning: Pass the following variable as a keyword arg: x. From version 0.12, t
he only valid positional argument will be `data`, and passing other arguments
without an explicit keyword will result in an error or misinterpretation.
  warnings.warn(
```

Out[5]:

```
<AxesSubplot:xlabel='placement_exam_marks'>
```



In [6]:

```
# finding highest boundries values
print('Highest Boundary value of Cgpa',df['cgpa'].mean() + 3*df['cgpa'].std())
```

```
Highest Boundary value of Cgpa 8.808933625397177
```

In [7]:

```
# Finding lowest boundries value
print('Lowest Boundary value of Cgpa',df['cgpa'].mean() - 3*df['cgpa'].std())
```

```
Lowest Boundary value of Cgpa 5.113546374602842
```

In [8]:

```
# finding outliers
df[(df['cgpa']>8.80)| (df['cgpa']<5.11)]
```

Out[8]:

	cgpa	placement_exam_marks	placed
485	4.92	44	1
995	8.87	44	1
996	9.12	65	1
997	4.89	34	0
999	4.90	10	1

In [9]:
```
df.shape
```

Out[9]:
```
(1000, 3)
```

In [10]:
```
new_df = df[(df['cgpa']<8.80) & (df['cgpa']>5.11)]
new_df
```

Out[10]:

	cgpa	placement_exam_marks	placed
0	7.19	26	1
1	7.46	38	1
2	7.54	40	1
3	6.42	8	1
4	7.23	17	0
...	...	...	...
991	7.04	57	0
992	6.26	12	0
993	6.73	21	1
994	6.48	63	0
998	8.62	46	1

995 rows × 3 columns

In [11]:
```
new_df.shape
```

Out[11]:
```
(995, 3)
```

In [12]:

```
df['cgpa_score'] = (df['cgpa'] - df['cgpa'].mean())/df['cgpa'].std()
df
```

Out[12]:

	cgpa	placement_exam_marks	placed	cgpa_score
0	7.19	26	1	0.371425
1	7.46	38	1	0.809810
2	7.54	40	1	0.939701
3	6.42	8	1	-0.878782
4	7.23	17	0	0.436371
...	...	...	...	...
995	8.87	44	1	3.099150
996	9.12	65	1	3.505062
997	4.89	34	0	-3.362960
998	8.62	46	1	2.693239
999	4.90	10	1	-3.346724

1000 rows × 4 columns

In [13]:

```
df.describe()
```

Out[13]:

	cgpa	placement_exam_marks	placed	cgpa_score
count	1000.000000	1000.000000	1000.000000	1.000000e+03
mean	6.961240	32.225000	0.489000	-1.600275e-14
std	0.615898	19.130822	0.500129	1.000000e+00
min	4.890000	0.000000	0.000000	-3.362960e+00
25%	6.550000	17.000000	0.000000	-6.677081e-01
50%	6.960000	28.000000	0.000000	-2.013321e-03
75%	7.370000	44.000000	1.000000	6.636815e-01
max	9.120000	100.000000	1.000000	3.505062e+00

In [14]:

```
df['cgpa_score'].describe()
```

Out[14]:

```
count    1.000000e+03
mean    -1.600275e-14
std      1.000000e+00
min     -3.362960e+00
25%     -6.677081e-01
50%     -2.013321e-03
75%      6.636815e-01
max      3.505062e+00
Name: cgpa_score, dtype: float64
```

In [15]:

```
df[df['cgpa_score']>3]
```

Out[15]:

	cgpa	placement_exam_marks	placed	cgpa_score
995	8.87	44	1	3.099150
996	9.12	65	1	3.505062

In [16]:

```
df[df['cgpa_score']< -3]
```

Out[16]:

	cgpa	placement_exam_marks	placed	cgpa_score
485	4.92	44	1	-3.314251
997	4.89	34	0	-3.362960
999	4.90	10	1	-3.346724

In [17]:

```
new_df = df[(df['cgpa_score']<3) & (df['cgpa_score']>-3)]
new_df.shape
```

Out[17]:

```
(995, 4)
```

In [18]:

```
upper_limit = df['cgpa'].mean() + 3*df['cgpa'].std()
lower_limit = df['cgpa'].mean() - 3*df['cgpa'].std()
lower_limit
```

Out[18]:

```
5.113546374602842
```

In [19]:

```
df['cgpa_cap'] = np.where(
 df['cgpa']>upper_limit,
 upper_limit,
 np.where(
 df['cgpa']<lower_limit,
 lower_limit,df['cgpa']


 )
)

df.describe()
```

Out[19]:

	cgpa	placement_exam_marks	placed	cgpa_score	cgpa_cap
count	1000.000000	1000.000000	1000.000000	1.000000e+03	1000.000000
mean	6.961240	32.225000	0.489000	-1.600275e-14	6.961499
std	0.615898	19.130822	0.500129	1.000000e+00	0.612688
min	4.890000	0.000000	0.000000	-3.362960e+00	5.113546
25%	6.550000	17.000000	0.000000	-6.677081e-01	6.550000
50%	6.960000	28.000000	0.000000	-2.013321e-03	6.960000
75%	7.370000	44.000000	1.000000	6.636815e-01	7.370000
max	9.120000	100.000000	1.000000	3.505062e+00	8.808934

Conclusion: Detected Outlier using Trimming and Capping when the data is normally distributed.

In [ ]: