In [10]:
```
import pandas as pd
import numpy as np
import seaborn as sns
from matplotlib import pyplot as plt
from scipy import stats
```

In [2]:
```
Mann_whitney = pd.read_excel("Mann_whitney.xlsx")
Mann_whitney
```

Out[2]:

	Without additive	With Additive
0	12.5	16.0
1	19.0	22.0
2	15.0	18.5
3	19.5	22.5
4	12.5	15.0
5	16.0	16.0
6	14.5	13.5
7	17.5	16.0
8	20.0	22.5
9	17.0	16.0

In [3]:
```
Mann_whitney.shape
```

Out[3]:
```
(10, 2)
```

In [4]:
```
unitA = pd.Series(Mann_whitney.iloc[:,0])
unitA
```

Out[4]:
```
0    12.5
1    19.0
2    15.0
3    19.5
4    12.5
5    16.0
6    14.5
7    17.5
8    20.0
9    17.0
Name: Without additive, dtype: float64
```

In [5]:
```
unitB = pd.Series(Mann_whitney.iloc[:,1])
unitB
```

Out[5]:
```
0    16.0
1    22.0
2    18.5
3    22.5
4    15.0
5    16.0
6    13.5
```

```
7    16.0
8    22.5
9    16.0
Name: With Additive, dtype: float64
```

In [6]:
```
stats.ttest_ind(unitA,unitB)
```

Out[6]:
```
Ttest_indResult(statistic=-1.0593226922639958, pvalue=0.3034617510889892)
```

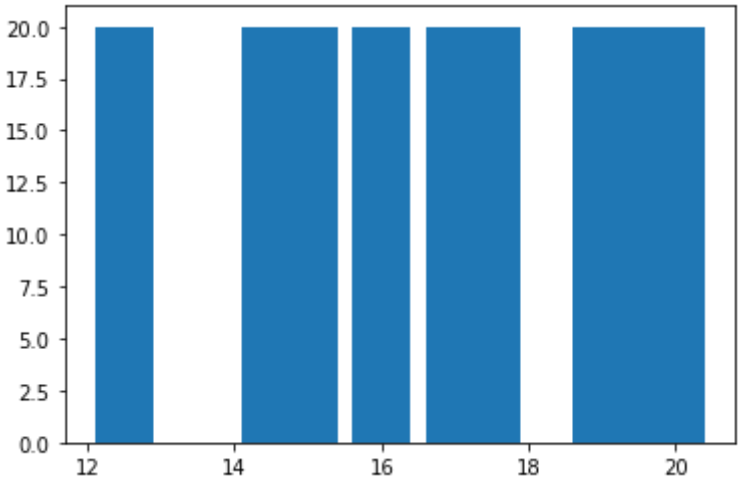
In [9]:
```
## Their are two numerical variable so we going to calculate correlation

np.corrcoef(unitA , y = unitB )
```

Out[9]:
```
array([[1.        , 0.79010049],
       [0.79010049, 1.        ]])
```

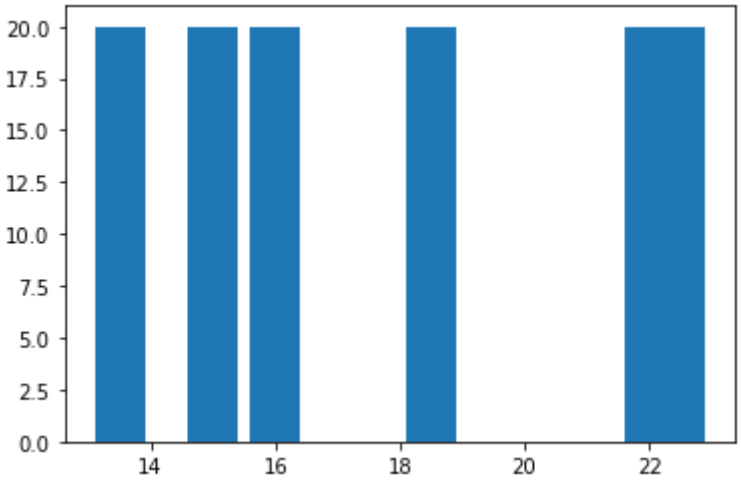
In [15]:
```
plt.bar(unitA ,data =  Mann_whitney,height = 20)
```

Out[15]:
```
<BarContainer object of 10 artists>
```



In [16]:
```
plt.bar(unitB,data = Mann_whitney,height = 20)
```

Out[16]:
```
<BarContainer object of 10 artists>
```



In [ ]: