Untitled

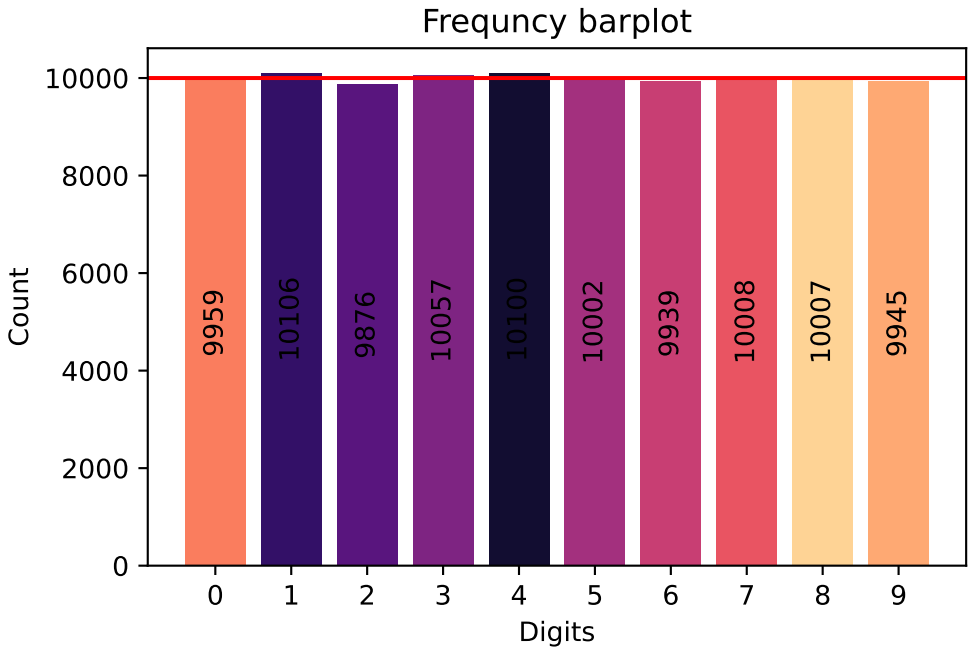
Frequency distribution of digits of square root of irrational number

````
::: {.cell execution_count=1}
``` {.python .cell-code}
import decimal
from collections import Counter
import matplotlib.pyplot as plt
import seaborn as sns
def Frequency(number, digits):
    d2 = decimal.Decimal(number)
    d = decimal.Context(prec = digits)
    value = d2.sqrt(d)
    div= str(value).split('.')
    vad = div[1]
    splt = [int(i) for i in str(vad)]
    v = Counter(splt)
    color = sns.color_palette("magma",len(v.keys()))
    gr = plt.bar(v.keys(),v.values(), color = color)
    plt.bar_label(gr, label = v.values(),label_type="center", rotation =   90)
    plt.axhline(y = digits//10, color = "red")
    plt.title("Frequncy barplot")
    plt.xlabel("Digits")
    plt.ylabel("Count")
    plt.xticks([0,1,2,3,4,5,6,7,8,9])
    plt.show()

```
:::
````

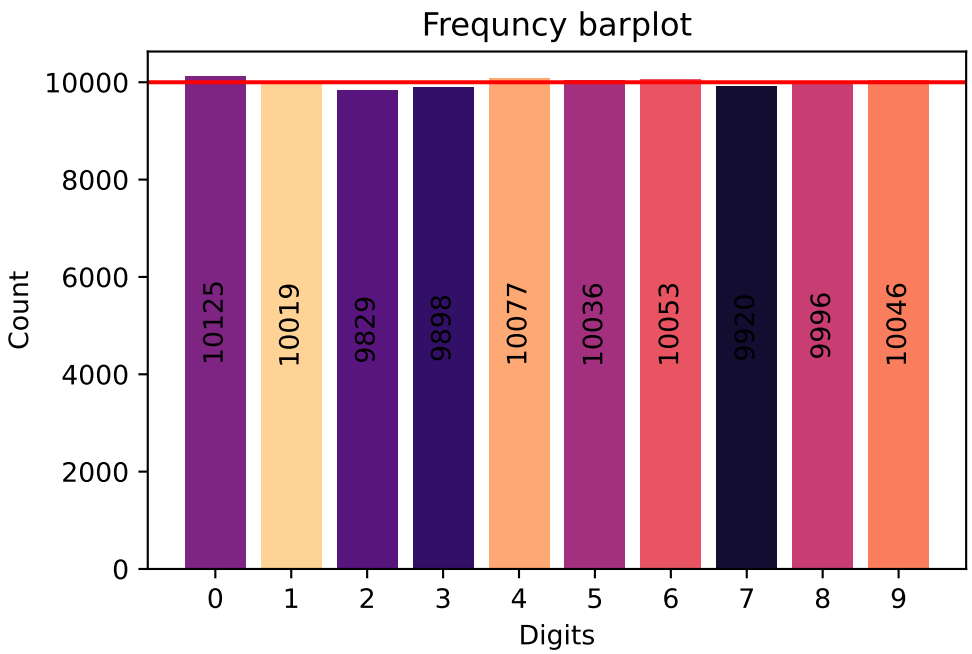
Frequency distribution for $\sqrt{2}$.

```
Frequency(2,100000)
```



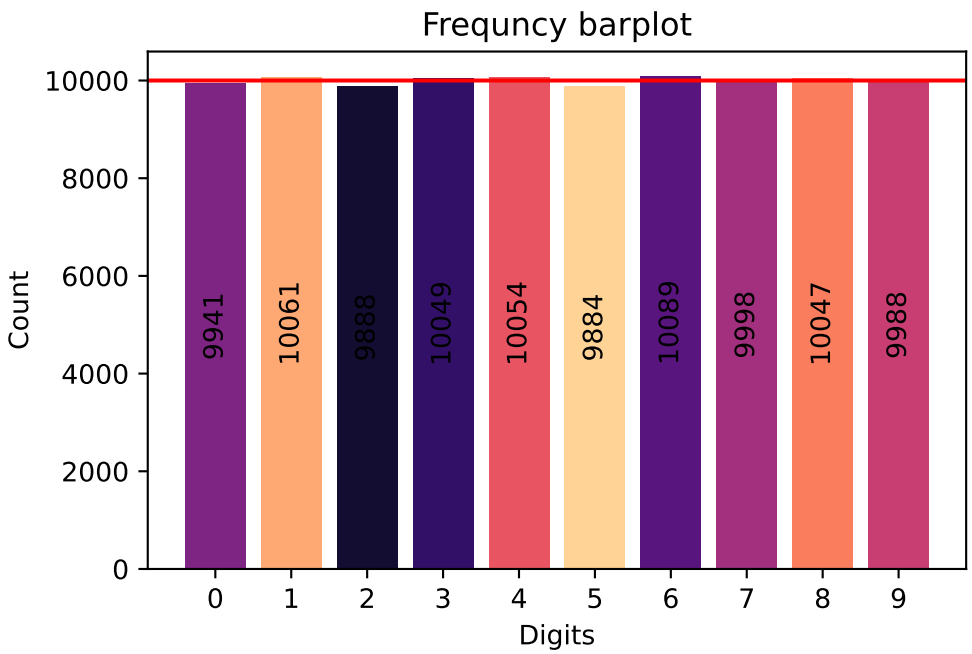
Frequency distribution of $\sqrt{3}$

```
Frequency(3,100000)
```



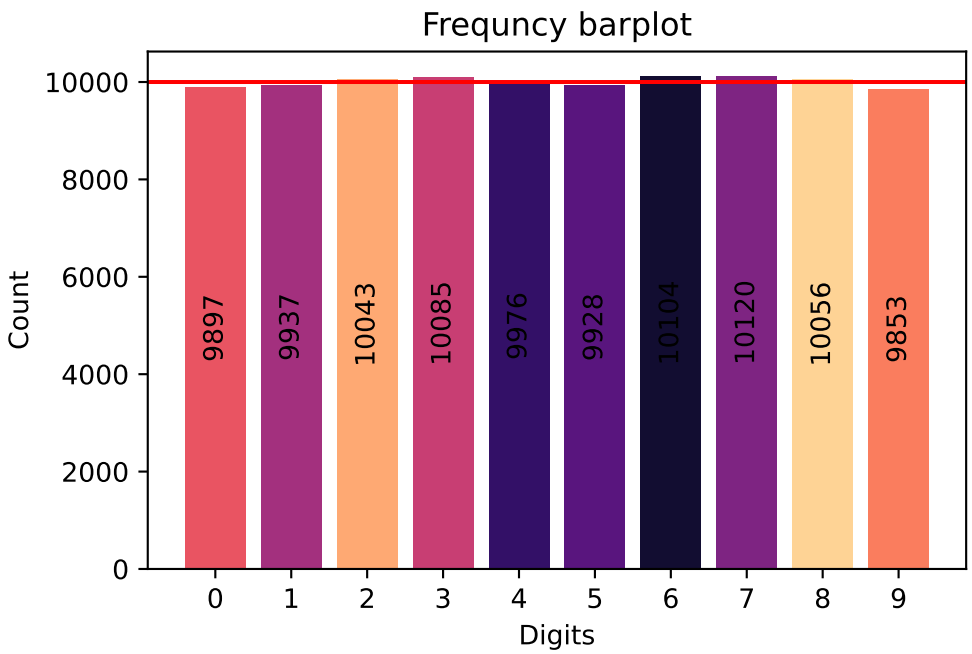
Frequency distribution of $\sqrt{5}$

```
Frequency(5,100000)
```



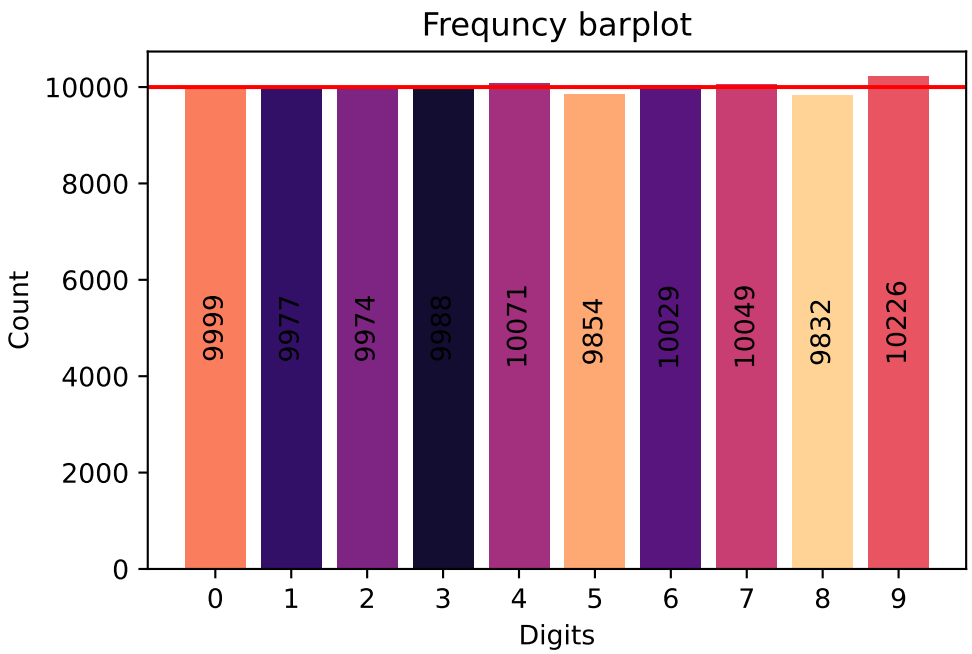
Frequency distribution of $\sqrt{7}$

```
Frequency(7,100000)
```



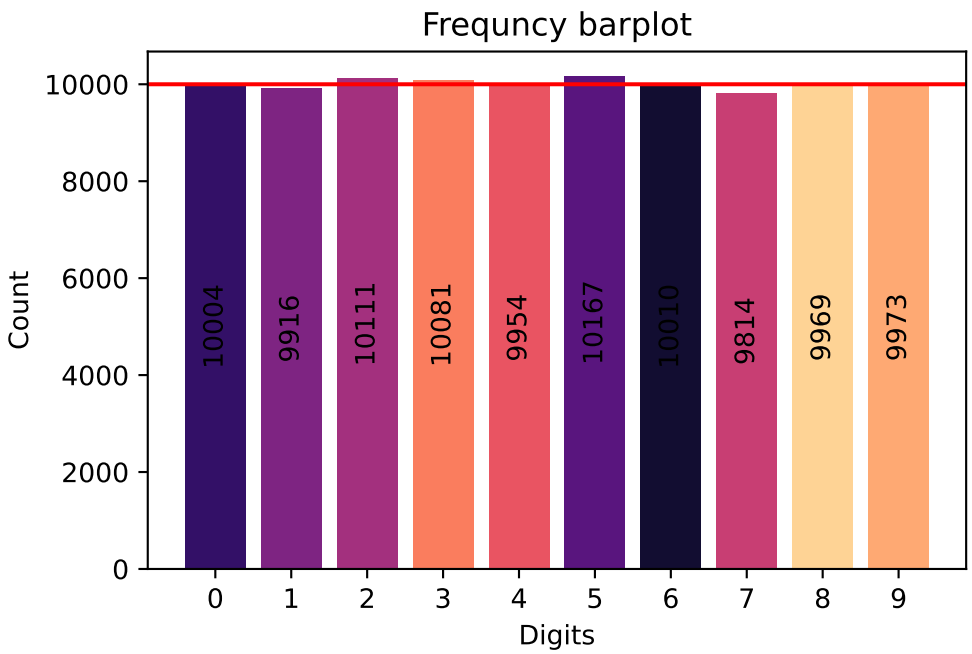
Frequency distribution of $\sqrt{11}$

```
Frequency(11,100000)
```



Frequency distribution of $\sqrt{5}$

```
Frequency(13,100000)
```


Frequncy barplot
Count
Digits
0
2000
4000
6000
8000
10000
0
1
2
3
4
5
6
7
8
9
10004
9916
10111
10081
9954
10167
10010
9814
9969
9973