Praktikum Pemrosesan Data Suara

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```
In [ ]:  !pip install thinkx
```

```
Collecting thinkx
  Downloading thinkx-1.1.3.tar.gz (41 kB)
     ──────────────────────────────────── 41.2/41.2 kB 1.5 MB/s eta 0:00:00
  Preparing metadata (setup.py) ... done
Requirement already satisfied: matplotlib in /usr/local/lib/python3.10/dist-packag
es (from thinkx) (3.7.1)
Requirement already satisfied: numpy in /usr/local/lib/python3.10/dist-packages (f
rom thinkx) (1.25.2)
Requirement already satisfied: pandas in /usr/local/lib/python3.10/dist-packages
(from thinkx) (1.5.3)
Requirement already satisfied: scipy in /usr/local/lib/python3.10/dist-packages (f
rom thinkx) (1.11.4)
Requirement already satisfied: markdown in /usr/local/lib/python3.10/dist-packages
(from thinkx) (3.6)
Requirement already satisfied: contourpy>=1.0.1 in /usr/local/lib/python3.10/dist-
packages (from matplotlib->thinkx) (1.2.0)
Requirement already satisfied: cycler>=0.10 in /usr/local/lib/python3.10/dist-pack
ages (from matplotlib->thinkx) (0.12.1)
Requirement already satisfied: fonttools>=4.22.0 in /usr/local/lib/python3.10/dist
-packages (from matplotlib->thinkx) (4.50.0)
Requirement already satisfied: kiwisolver>=1.0.1 in /usr/local/lib/python3.10/dist
-packages (from matplotlib->thinkx) (1.4.5)
Requirement already satisfied: packaging>=20.0 in /usr/local/lib/python3.10/dist-p
ackages (from matplotlib->thinkx) (24.0)
Requirement already satisfied: pillow>=6.2.0 in /usr/local/lib/python3.10/dist-pac
kages (from matplotlib->thinkx) (9.4.0)
Requirement already satisfied: pyparsing>=2.3.1 in /usr/local/lib/python3.10/dist-
packages (from matplotlib->thinkx) (3.1.2)
Requirement already satisfied: python-dateutil>=2.7 in /usr/local/lib/python3.10/d
ist-packages (from matplotlib->thinkx) (2.8.2)
Requirement already satisfied: pytz>=2020.1 in /usr/local/lib/python3.10/dist-pack
ages (from pandas->thinkx) (2023.4)
Requirement already satisfied: six>=1.5 in /usr/local/lib/python3.10/dist-packages
(from python-dateutil>=2.7->matplotlib->thinkx) (1.16.0)
Building wheels for collected packages: thinkx
  Building wheel for thinkx (setup.py) ... done
  Created wheel for thinkx: filename=thinkx-1.1.3-py3-none-any.whl size=59925 sha2
56=f6fcc02896318ba9a484b8654c1abab26c36c7ae549977ddecbc6e018f11e163
  Stored in directory: /root/.cache/pip/wheels/0d/a9/cd/bee782abb2820a2345337043f9
ec653f843a7d9723f424a612
Successfully built thinkx
Installing collected packages: thinkx
Successfully installed thinkx-1.1.3
```

```
In [ ]:  import os

         if not os.path.exists('thinkdsp.py'):
             !wget https://github.com/AllenDowney/ThinkDSP/raw/master/code/thinkdsp.py
```

```
--2024-04-02 07:00:15--  https://github.com/AllenDowney/ThinkDSP/raw/master/code/t
hinkdsp.py
Resolving github.com (github.com)... 140.82.114.3
Connecting to github.com (github.com)|140.82.114.3|:443... connected.
HTTP request sent, awaiting response... 302 Found
Location: https://raw.githubusercontent.com/AllenDowney/ThinkDSP/master/code/think
dsp.py [following]
--2024-04-02 07:00:16--  https://raw.githubusercontent.com/AllenDowney/ThinkDSP/ma
ster/code/thinkdsp.py
Resolving raw.githubusercontent.com (raw.githubusercontent.com)... 185.199.108.13
3, 185.199.109.133, 185.199.110.133, ...
Connecting to raw.githubusercontent.com (raw.githubusercontent.com)|185.199.108.13
3|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 48574 (47K) [text/plain]
Saving to: 'thinkdsp.py'

thinkdsp.py          100%[===================>]  47.44K  --.-KB/s    in 0.01s

2024-04-02 07:00:17 (3.16 MB/s) - 'thinkdsp.py' saved [48574/48574]
```
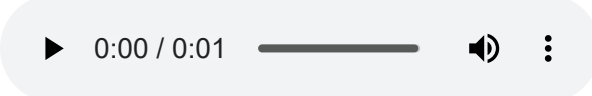
In [ ]:
```python
from thinkdsp import read_wave
import matplotlib.pyplot as plt

suka = read_wave("/content/wong-saya-suka-kok.wav")
suka.make_audio()
```
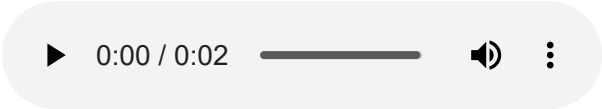
Out[ ]:

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In [ ]:
```python
import thinkplot

suka.plot()
```
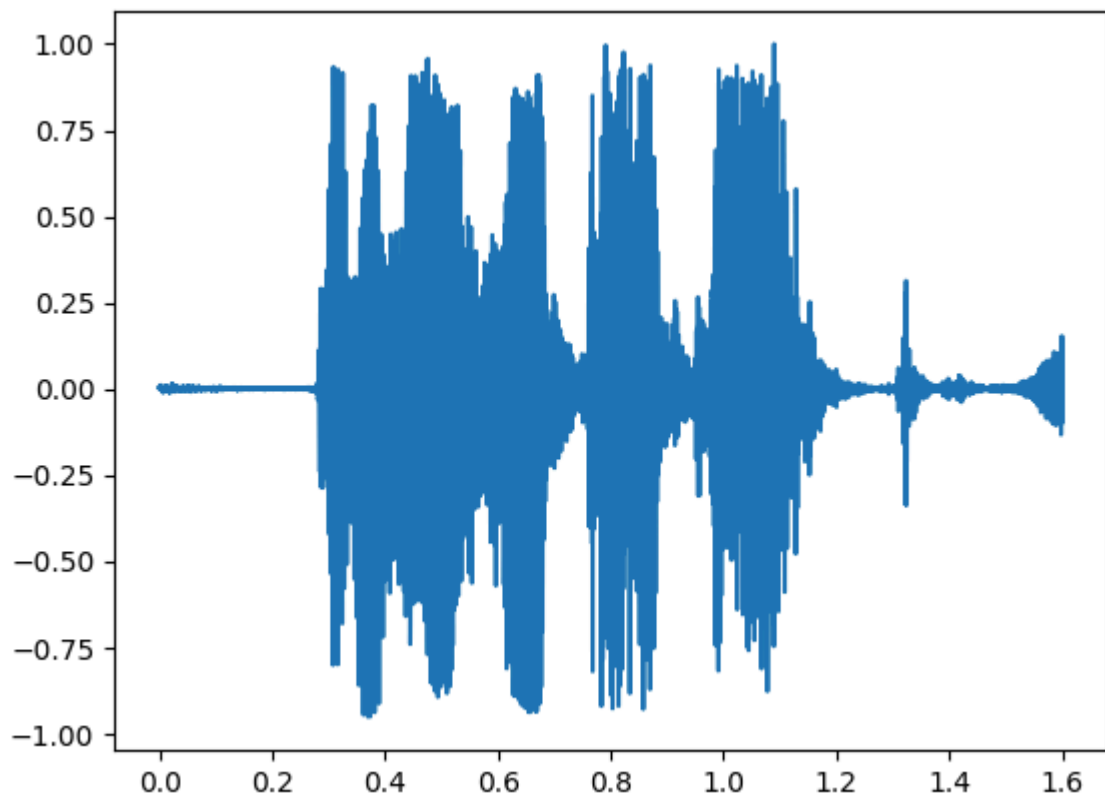
```
In [ ]: yare = read_wave("/content/yare-yare-daze_zAnWvX6.wav")

        yare.make_audio()
```

Out[ ]:

▶ 0:00 / 0:02 ━━━━━━━━━ 🔊 ⋮
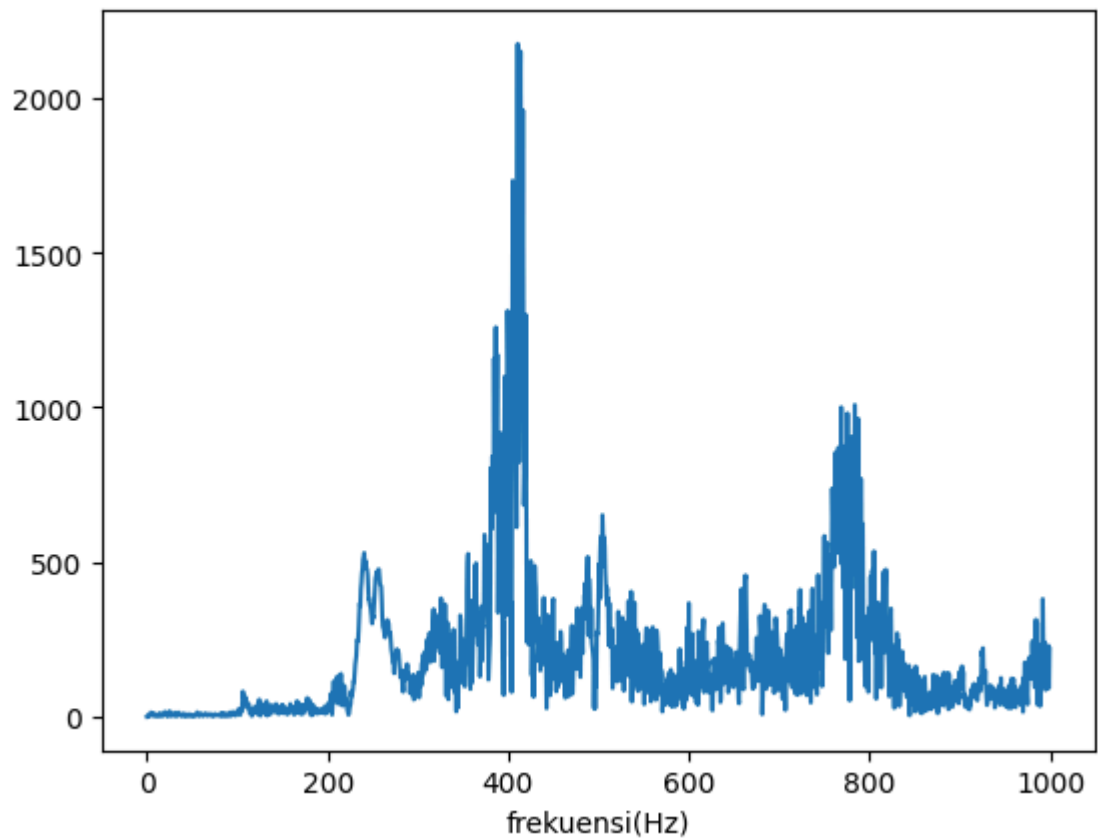
```
In [ ]: import thinkplot

        yare.plot()
```
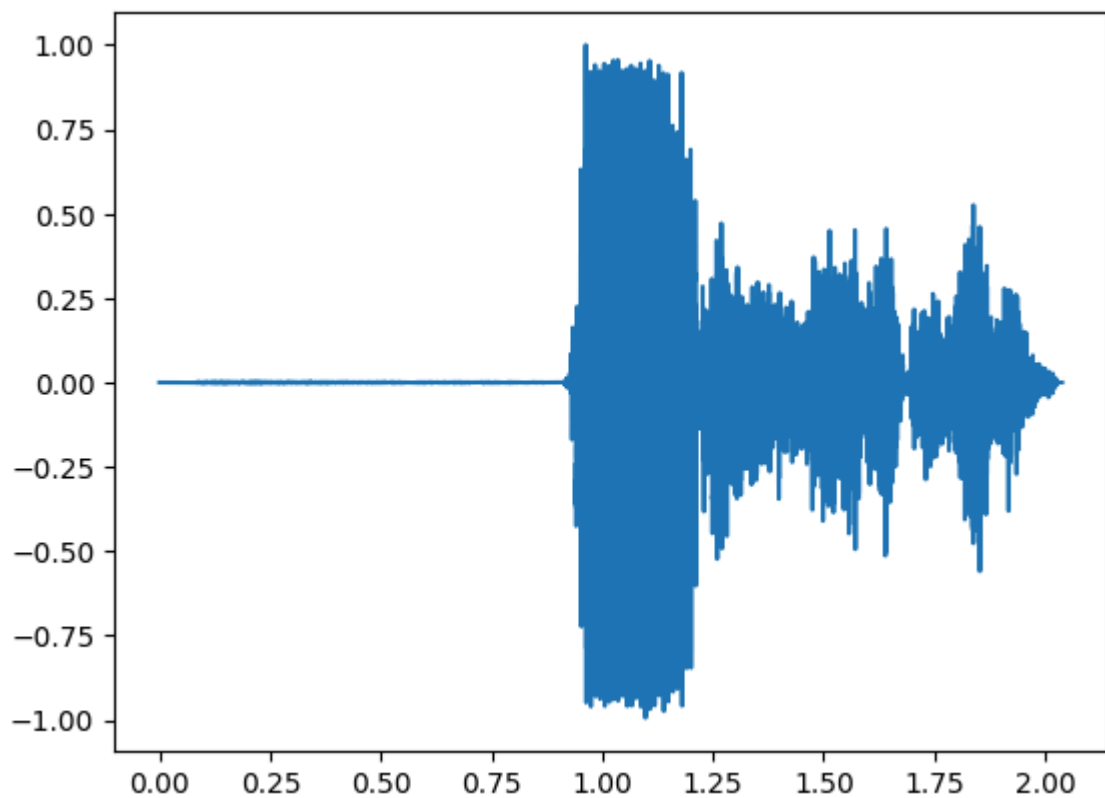


```
In [ ]: ara_sp = suka.make_spectrum()
        moshi_sp = yare.make_spectrum()
```
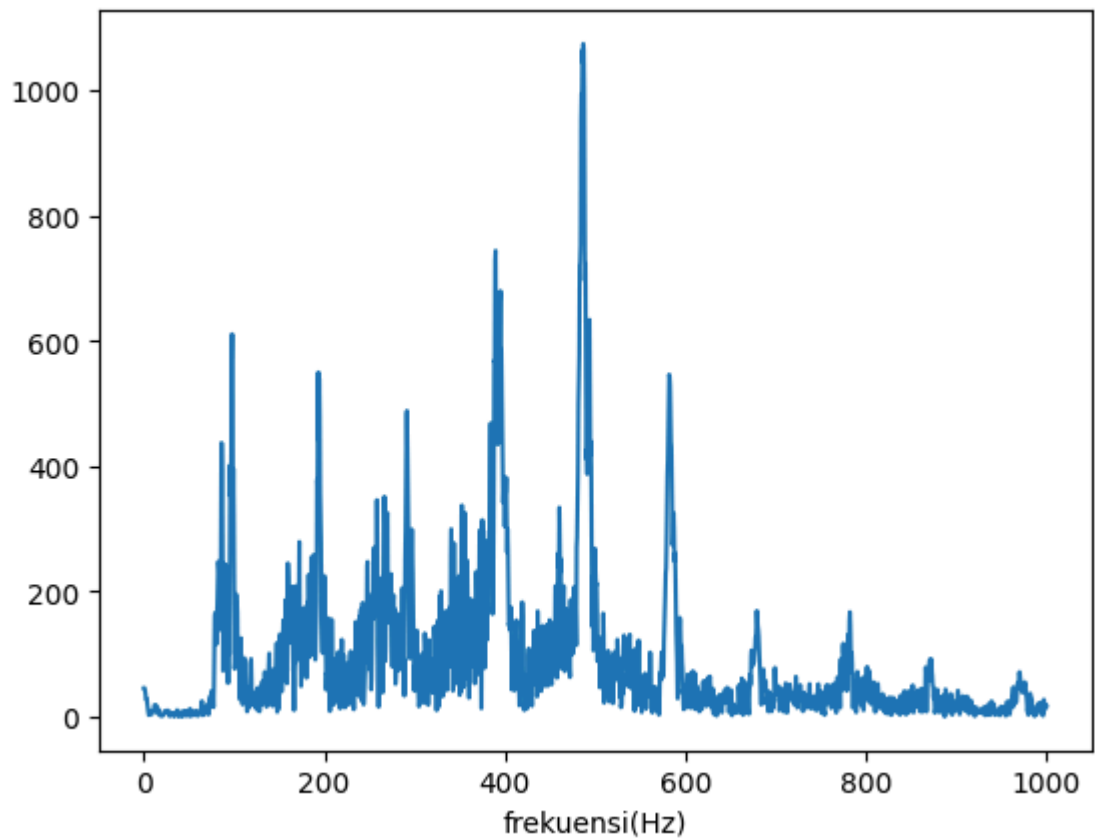
```
In [ ]: ara_sp.plot(high=1000)
        plt.xlabel("frekuensi(Hz)")
```

Out[ ]: Text(0.5, 0, 'frekuensi(Hz)')

```
In [ ]:  moshi_sp.plot(high=1000)
         plt.xlabel("frekuensi(Hz)")
```

```
Out[ ]:  Text(0.5, 0, 'frekuensi(Hz)')
```
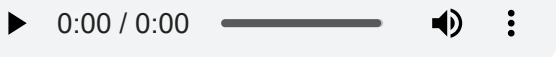


```
In [ ]:  segment_suka=suka.segment(start=1.5,duration=2)
         segment_yare=yare.segment(start=1.1,duration=2)
```
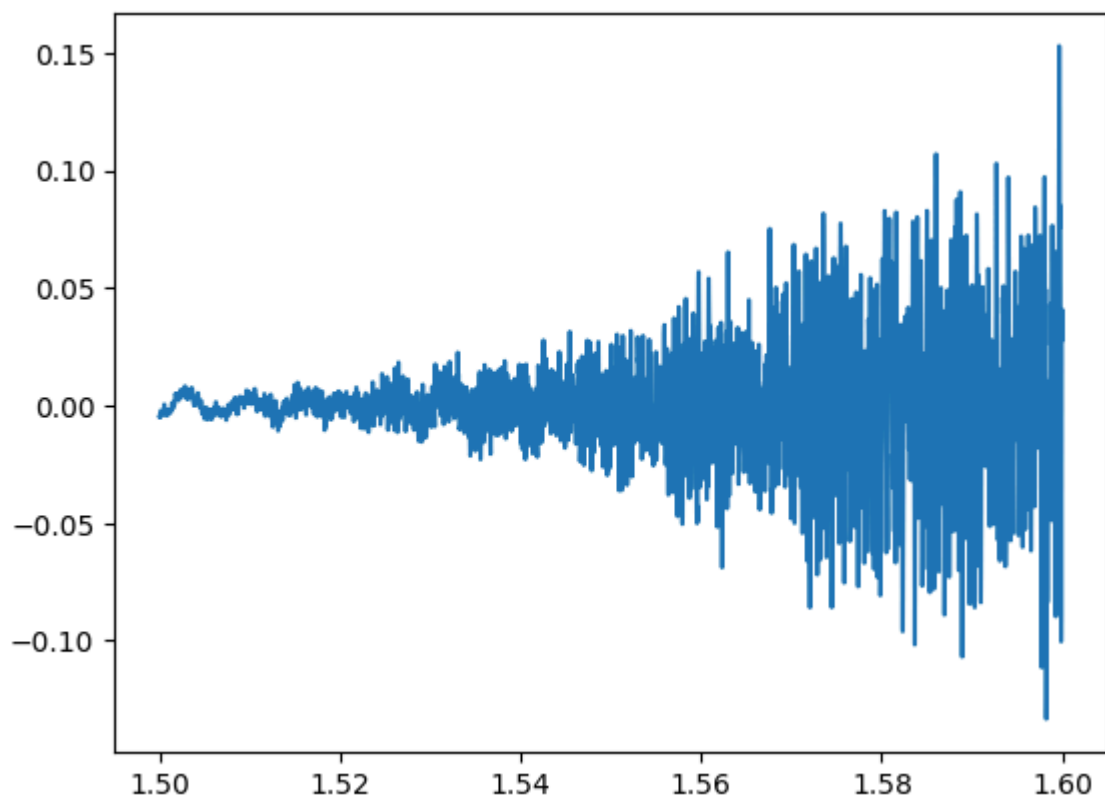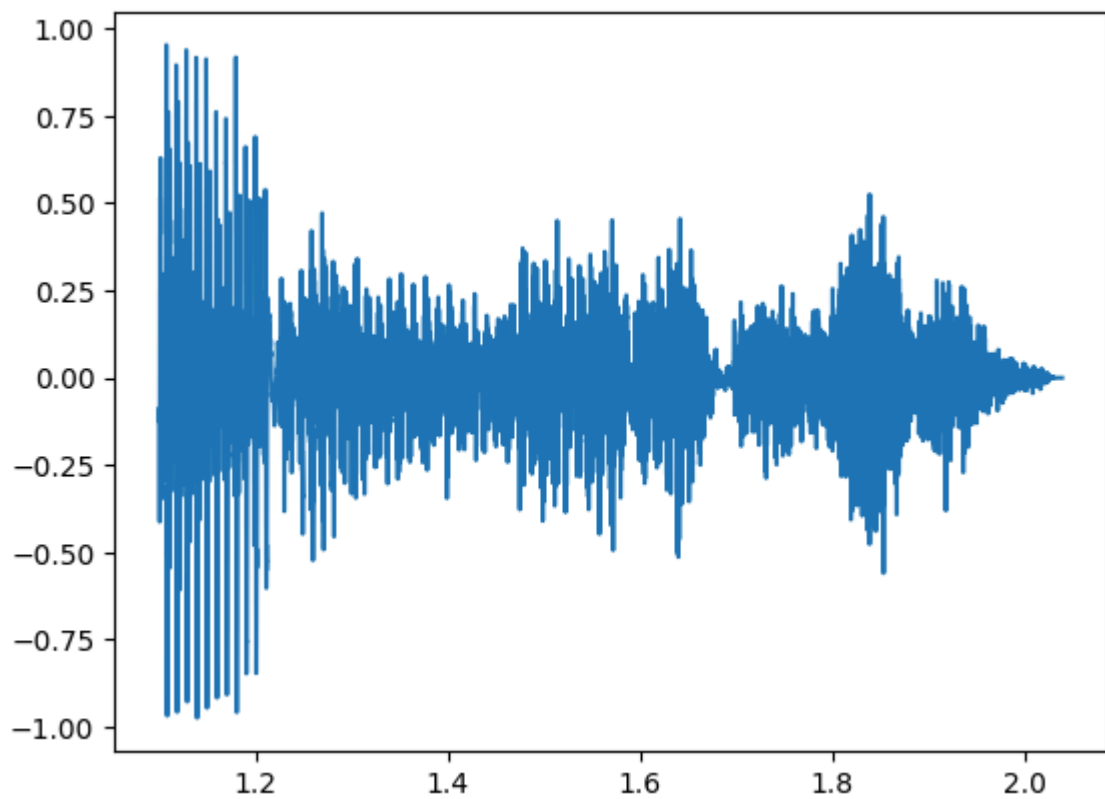
```
In [ ]:   segment_suka.make_audio()
```

Out[ ]:

> 0:00 / 0:00 ———————— 🔊 ⋮

```
In [ ]:   segment_yare.make_audio()
```

Out[ ]:

> 0:00 / 0:00 ———————— 🔊 ⋮

```
In [ ]:   segment_suka.plot()
```



```
In [ ]:   segment_yare.plot()
```
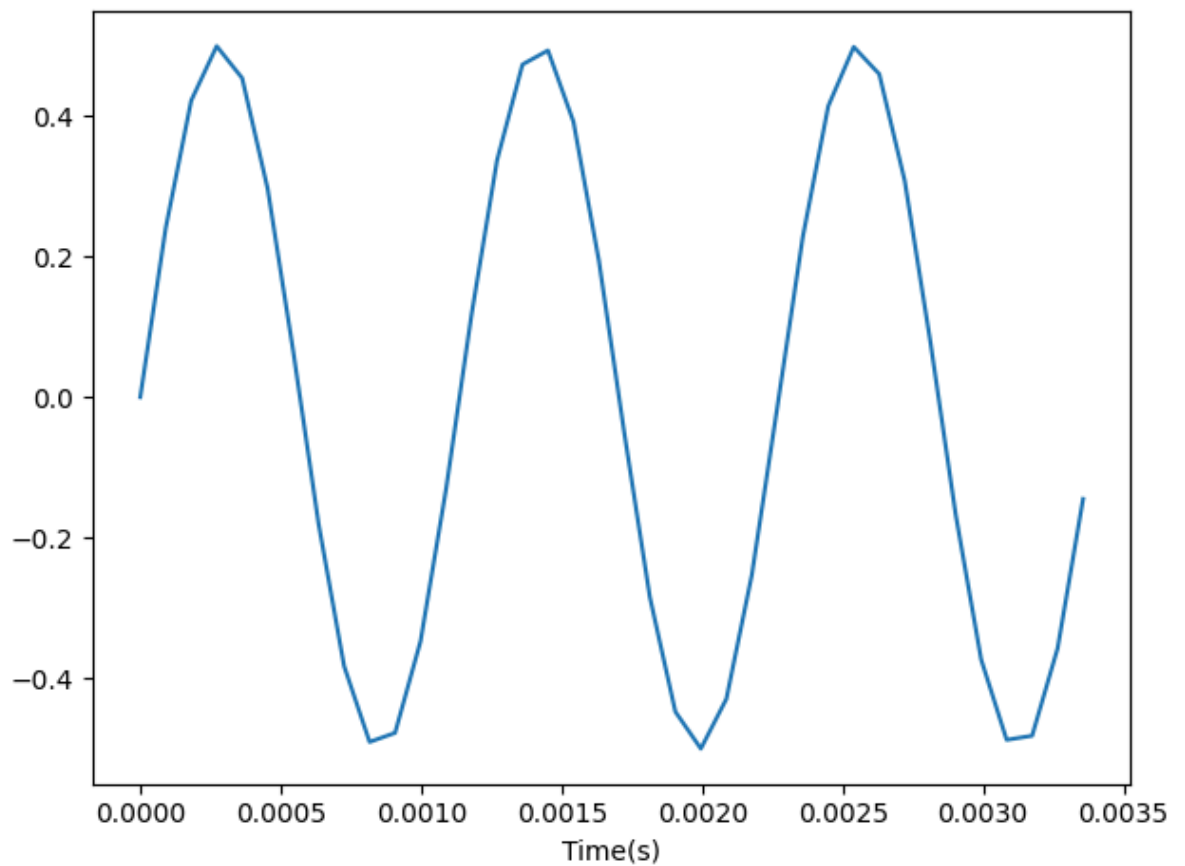
```
In [ ]:   from thinkdsp import CosSignal, SinSignal
          cos_sig = CosSignal(freq=440, amp=1.0, offset=0)
          sin_sig = SinSignal(freq=880, amp=0.5, offset=0)
```

```
In [ ]:   from thinkdsp import decorate

          cos_sig.plot()
          decorate(xlabel='Time(s)')
```
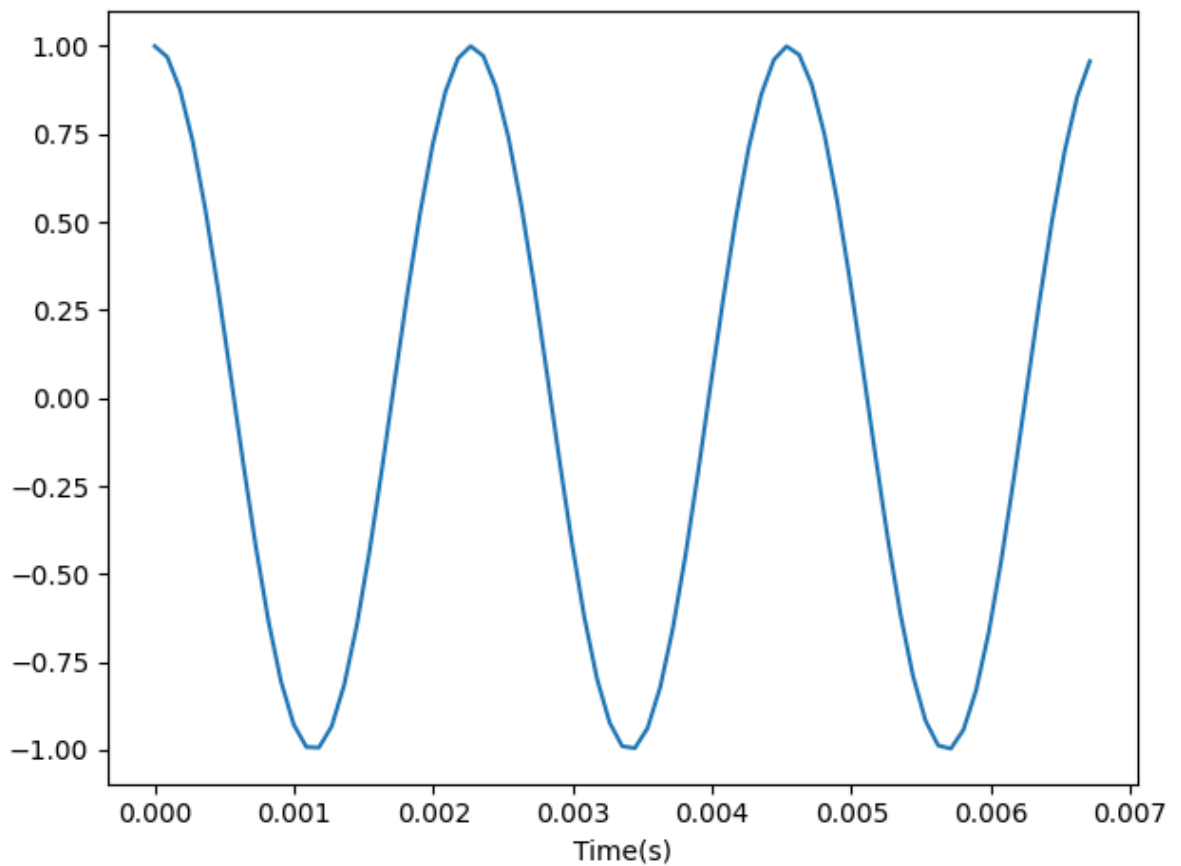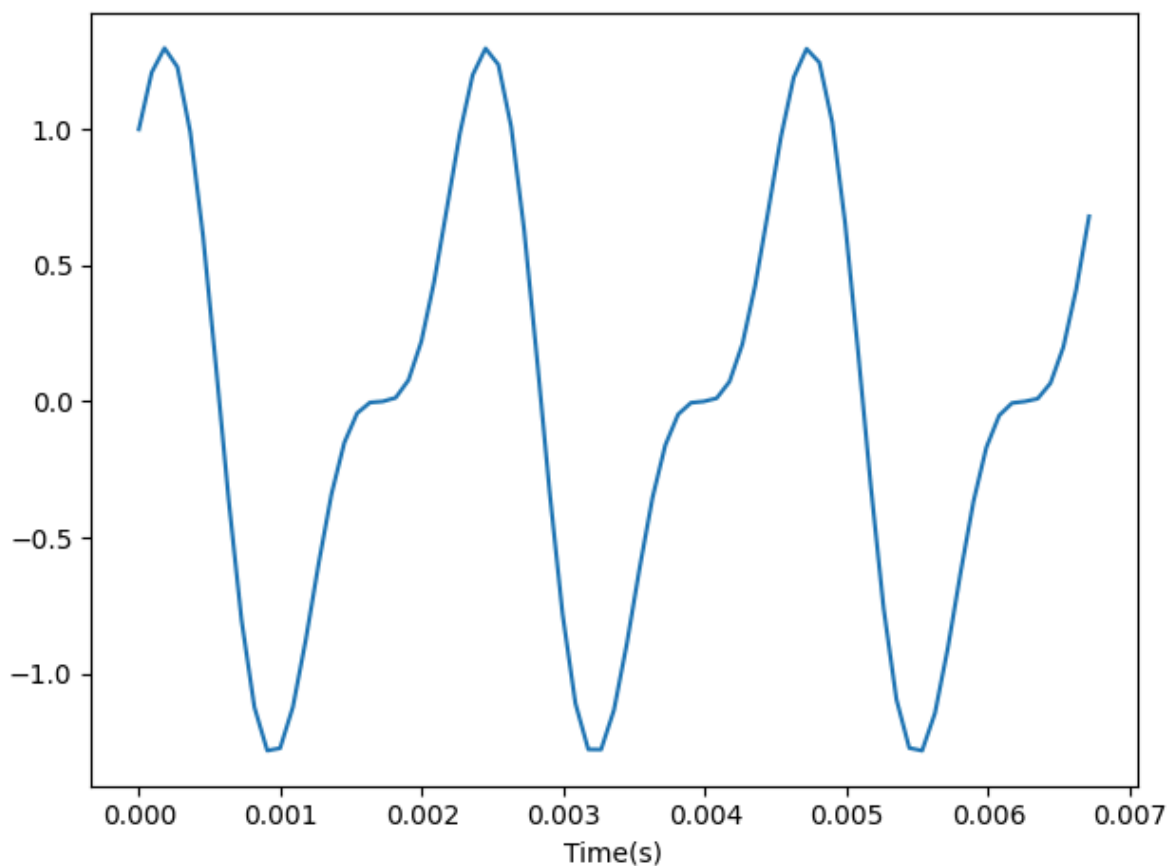
```
In [ ]: sin_sig.plot()
        decorate(xlabel='Time(s)')
```



```
In [ ]: mix = sin_sig + cos_sig
        mix
```

```
Out[ ]: <thinkdsp.SumSignal at 0x7d80fa7debf0>
```

```
In [ ]: mix.plot()
        decorate(xlabel='Time(s)')
```

```
In [ ]:   from thinkdsp import read_wave
          import matplotlib.pyplot as plt

          rapsodi = read_wave('/content/stomps-and-claps-percussion-and-rhythm-141190.wav')
          rapsodi.make_audio()
```
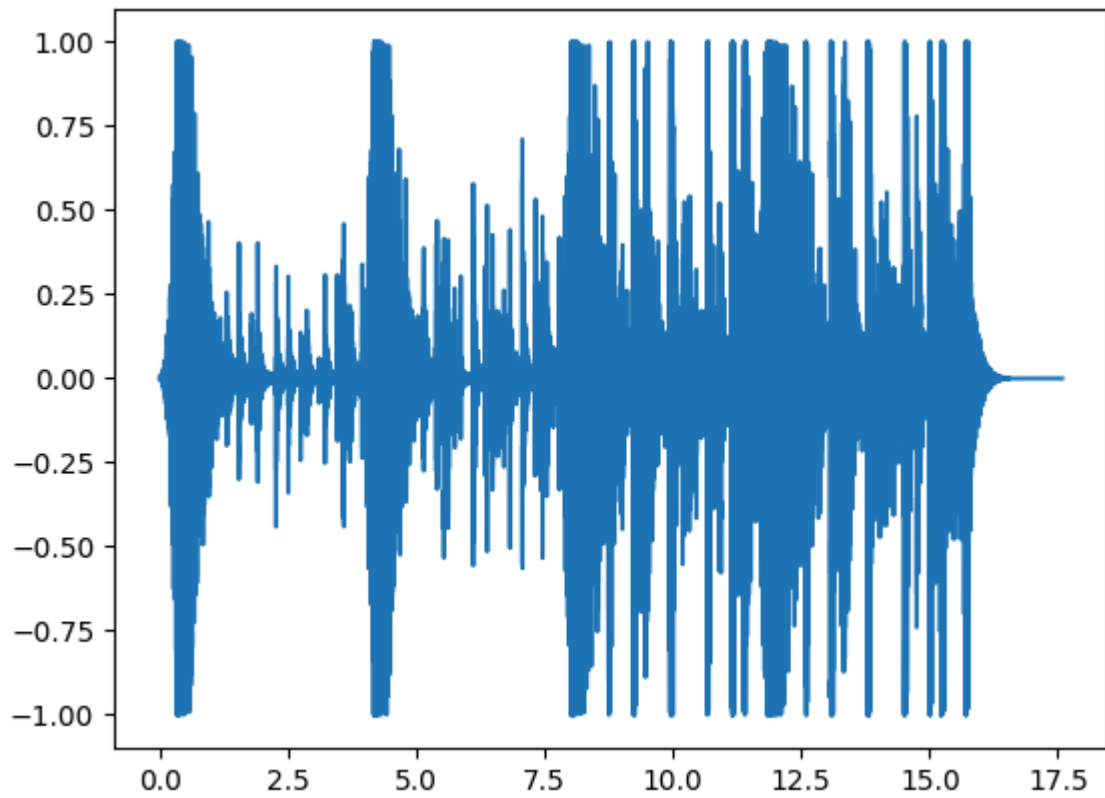
```
/content/thinkdsp.py:1113: RuntimeWarning: overflow encountered in scalar absolute
  high, low = abs(max(ys)), abs(min(ys))
```
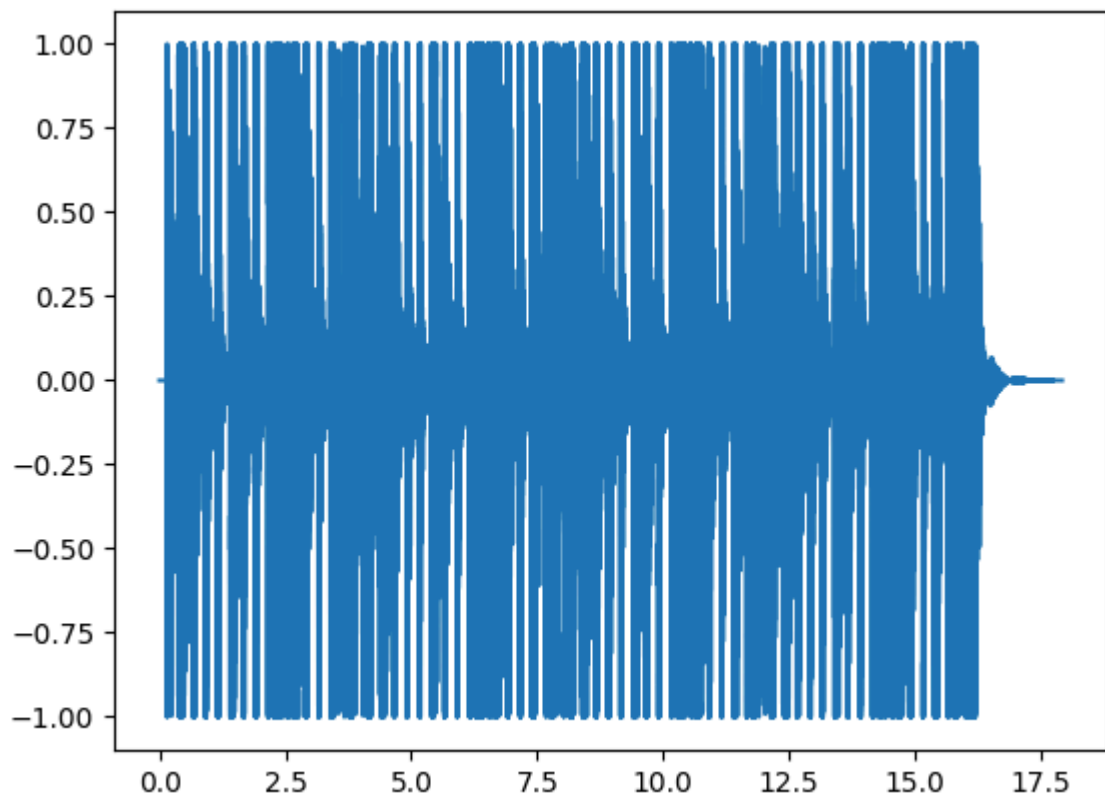
Out[ ]:

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```
In [ ]:   aitakatta = read_wave('/content/epic-sport-clap-main-9900.wav')
          aitakatta.make_audio()
```

Out[ ]:

▶ 0:00 / 0:17 ──────── 🔊 ⋮
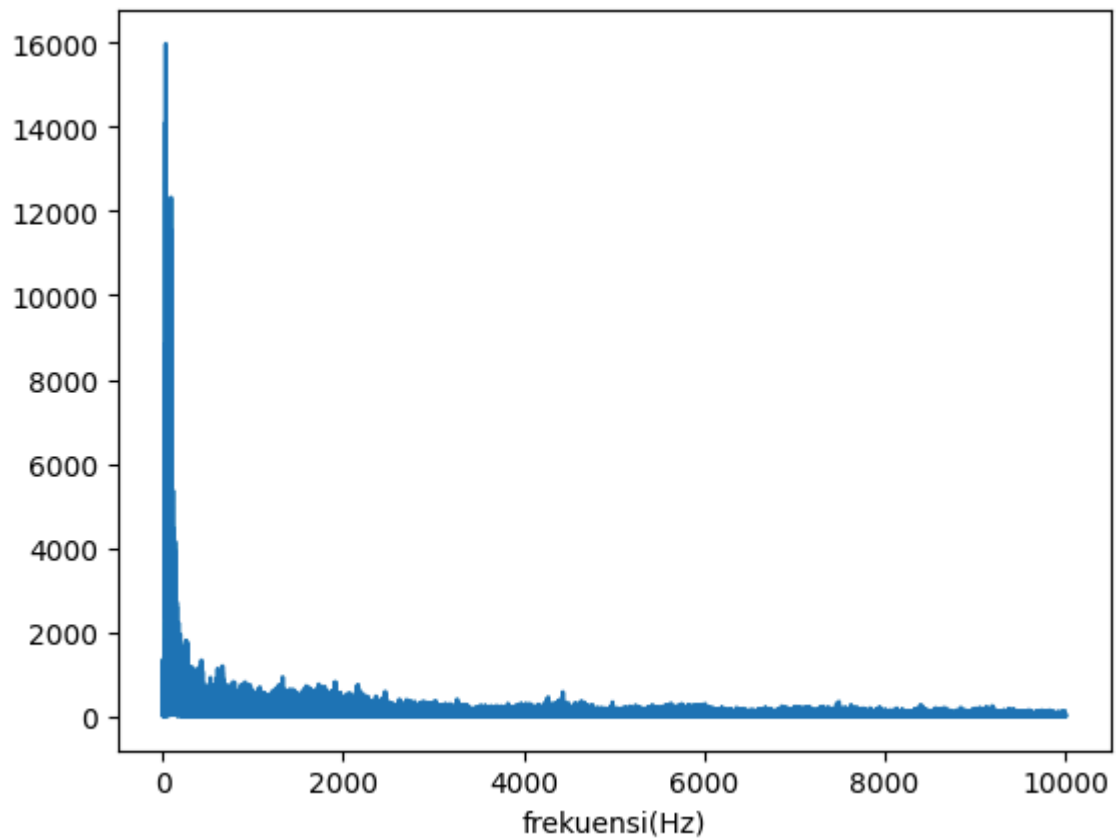
```
In [ ]:   rapsodi.plot()
```
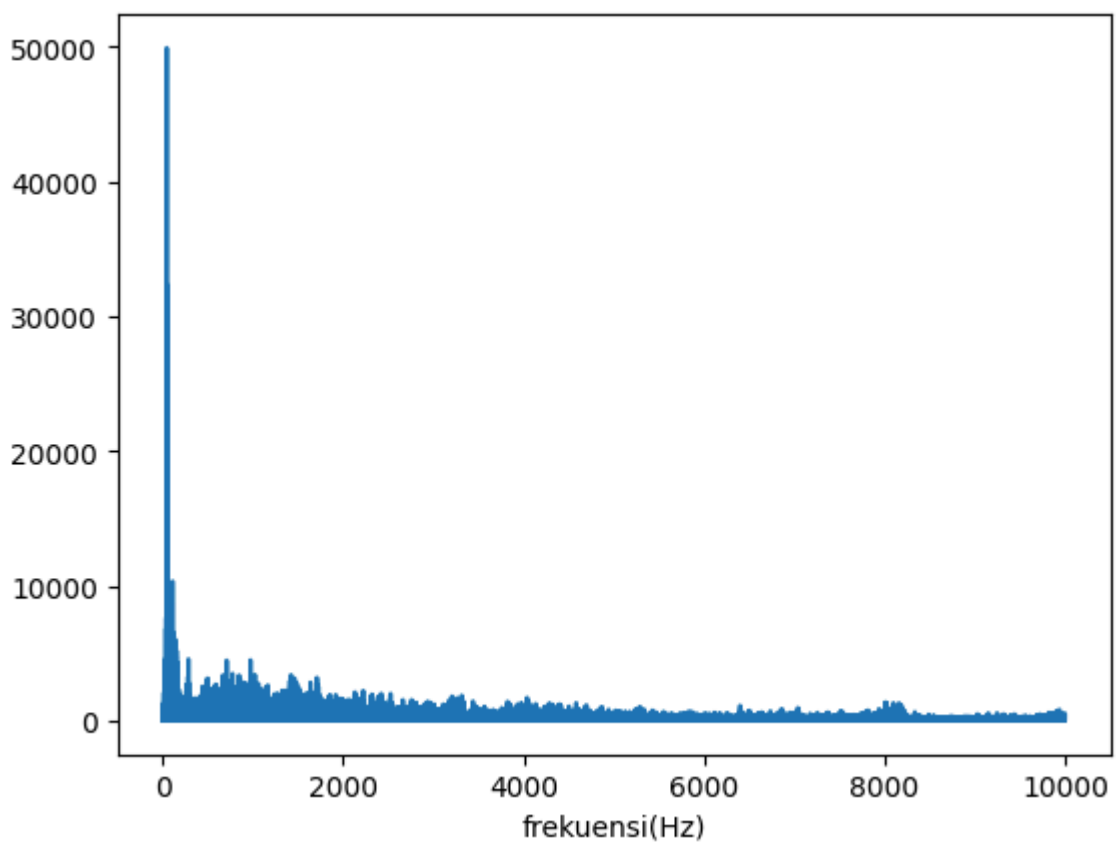
```
In [ ]: aitakatta.plot()
```



```
In [ ]: rapsodi_sp = rapsodi.make_spectrum()
        aitakatta_sp = aitakatta.make_spectrum()
```

```
In [ ]: rapsodi_sp.plot(high=10000)
        plt.xlabel('frekuensi(Hz)');
```

```
aitakatta_sp.plot(high=10000)
plt.xlabel('frekuensi(Hz)');
```
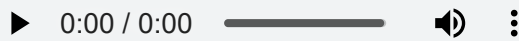


```
segment_rapsodi = rapsodi.segment(start=9.0,duration=0.25)
segment_aitakatta = aitakatta.segment(start=10.0,duration=0.25)
```
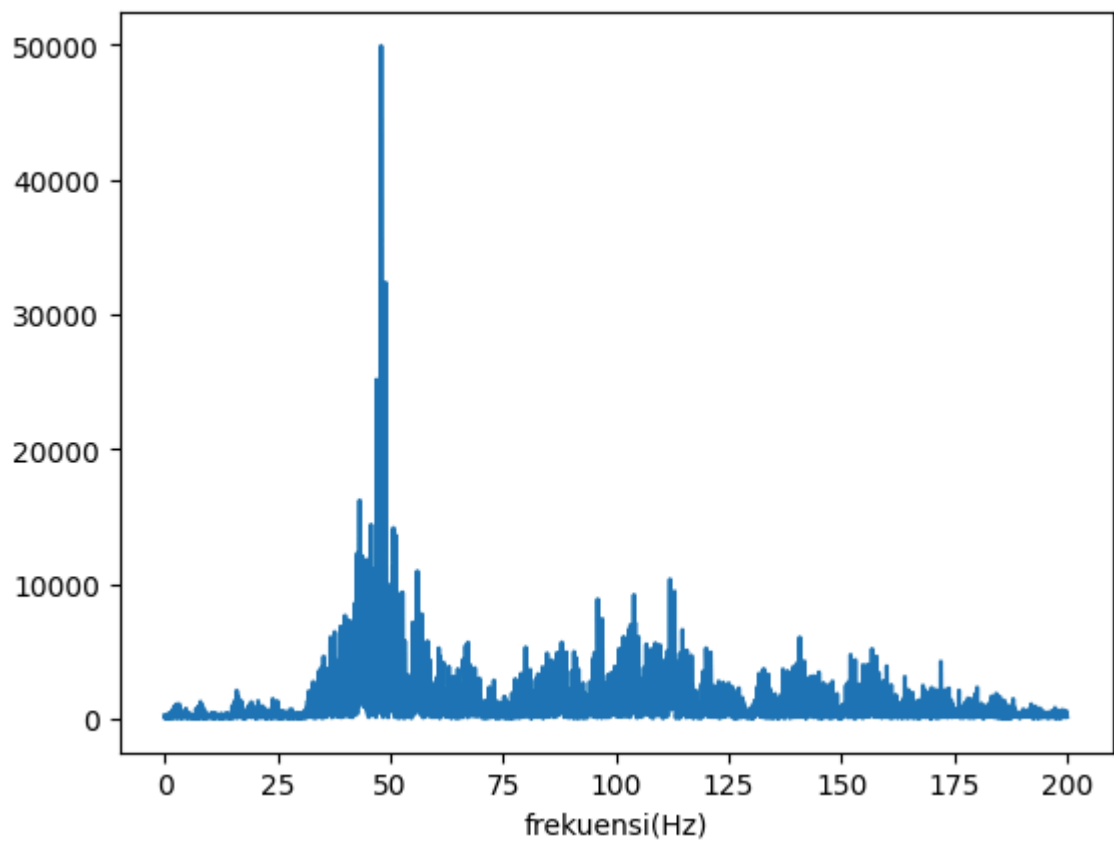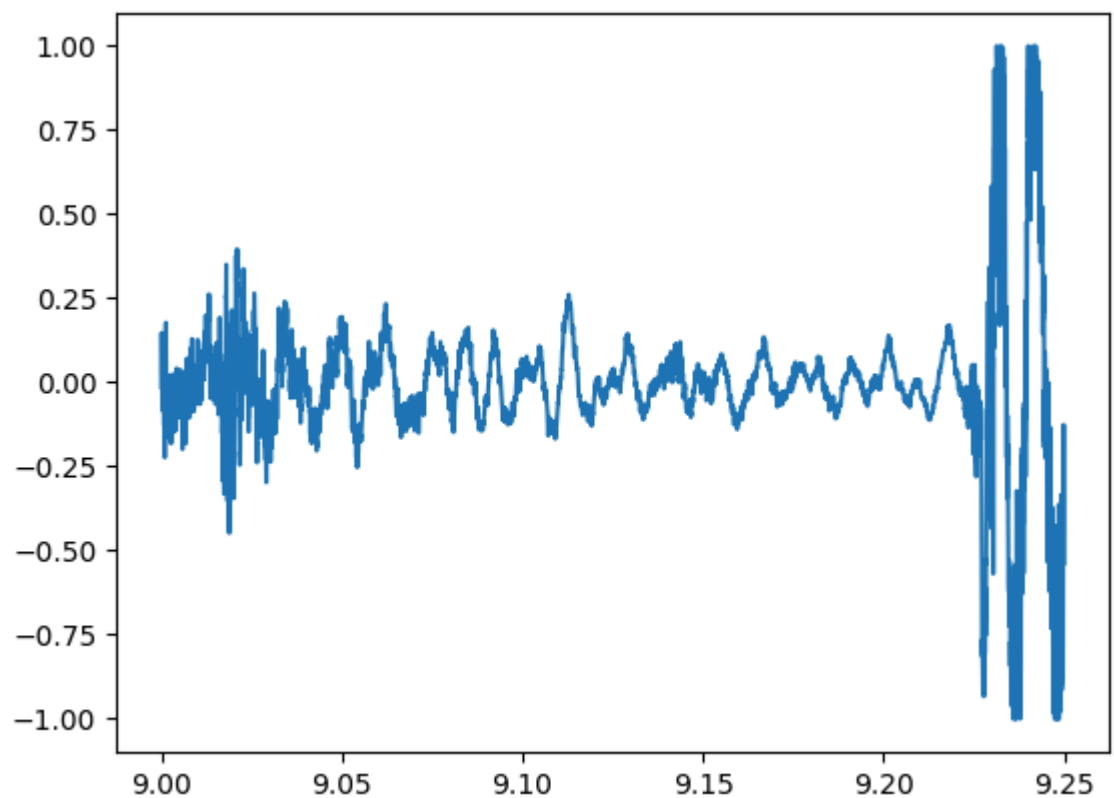
```
segment_rapsodi.make_audio()
```

Out[ ]:

```
▶  0:00 / 0:00  ━━━━━━━  🔊  ⋮
```

In [ ]:
```
segment_aitakatta.make_audio()
```

Out[ ]:

```
▶  0:00 / 0:00  ━━━━━━━  🔊  ⋮
```

In [ ]:
```python
sp_seg_rapsodi = segment_rapsodi.make_spectrum()
sp_seg_aitakatta = segment_aitakatta.make_spectrum()
```

In [ ]:
```python
rapsodi_sp.plot(high=200)
plt.xlabel('frekuensi(Hz)');
```
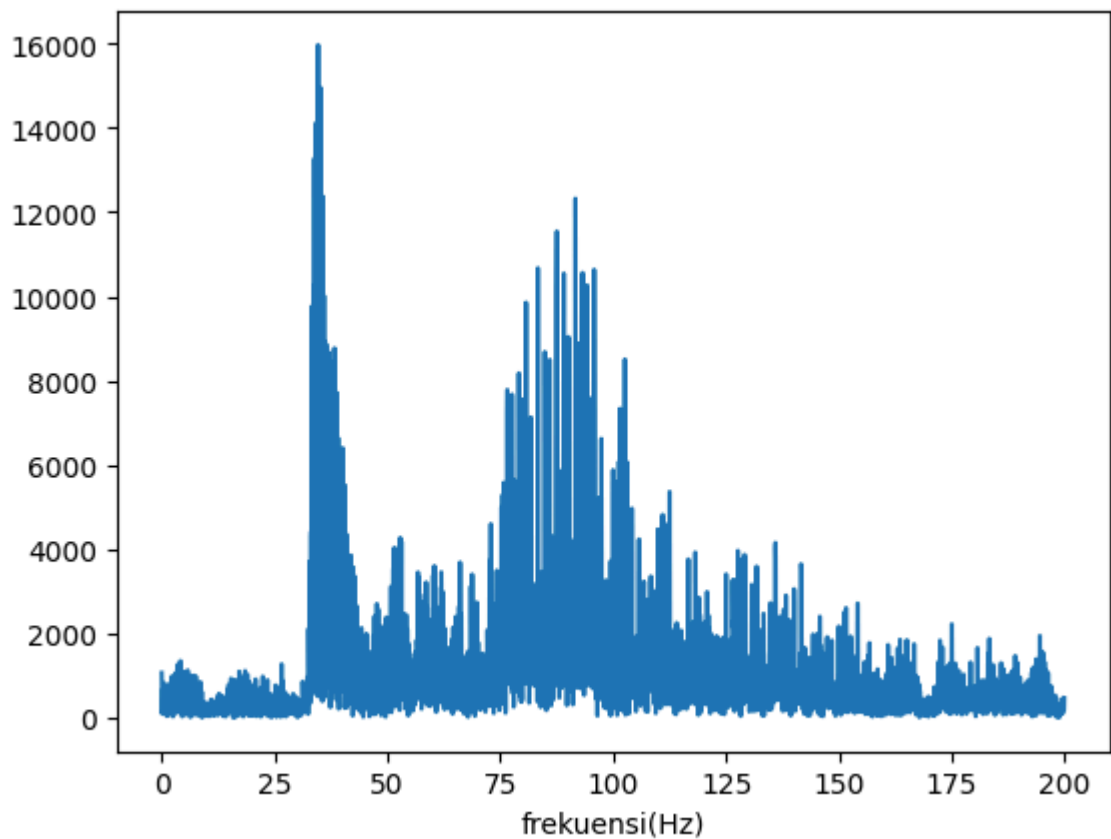

In [ ]:
```python
aitakatta_sp.plot(high=200)
plt.xlabel('frekuensi(Hz)');
```

```
In [ ]:  segment_rapsodi.plot()
```



```
In [ ]:  segment_aitakatta.plot()
```

suarakuh (1)