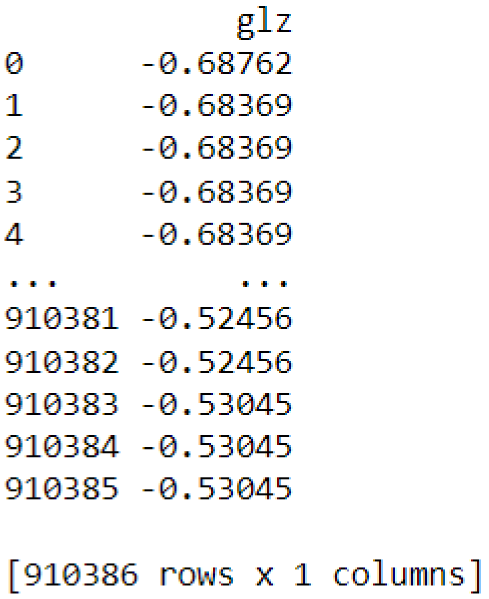
import pandas as pd

import numpy as np

from statistics import mean

df=pd.read_csv("Gait_Data.csv",usecols =['glz'])

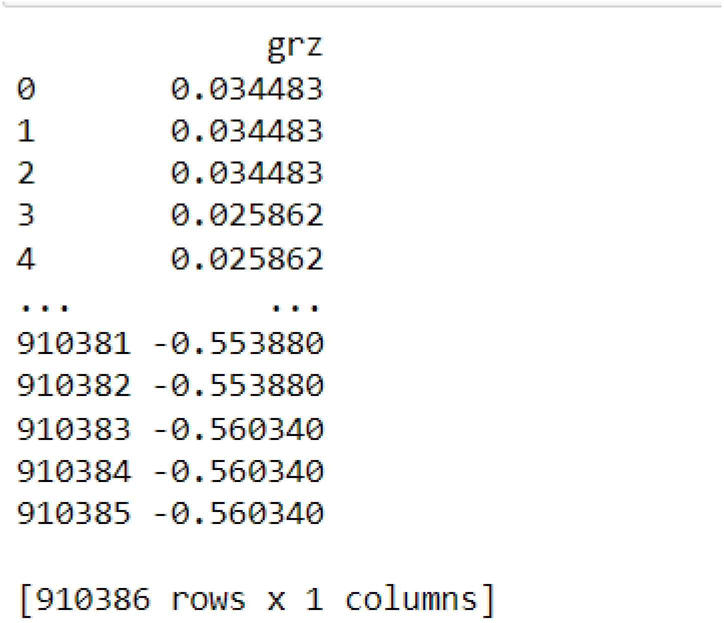
print(df)



```
             glz
0       -0.68762
1       -0.68369
2       -0.68369
3       -0.68369
4       -0.68369
...          ...
910381 -0.52456
910382 -0.52456
910383 -0.53045
910384 -0.53045
910385 -0.53045

[910386 rows x 1 columns]
```

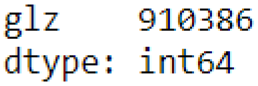
ef=pd.read_csv("Gait_Data.csv",usecols =['grz'])

print(ef)



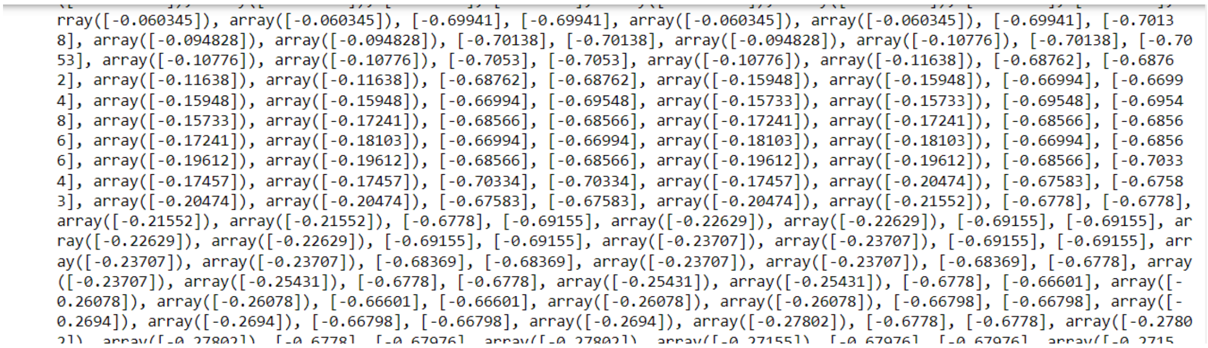
```
              grz
0        0.034483
1        0.034483
2        0.034483
3        0.025862
4        0.025862
...           ...
910381 -0.553880
910382 -0.553880
910383 -0.560340
910384 -0.560340
910385 -0.560340

[910386 rows x 1 columns]
```

```
C=90.123

cfc=0

a=df.values.tolist()

z=ef.values.tolist()

b=np.array(a)

z=np.array(z)

d=df.count()

print(d)
```



```
glz    910386
dtype: int64
```

```
c=[]

e=len(a)/10

for i in range(0,int(e),2):

      c.append(a[i])

      c.append(a[i+1])

      c.append(z[i])

      c.append(z[i+1])

f=len(c)


print(f)

print(c)
```



```
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```

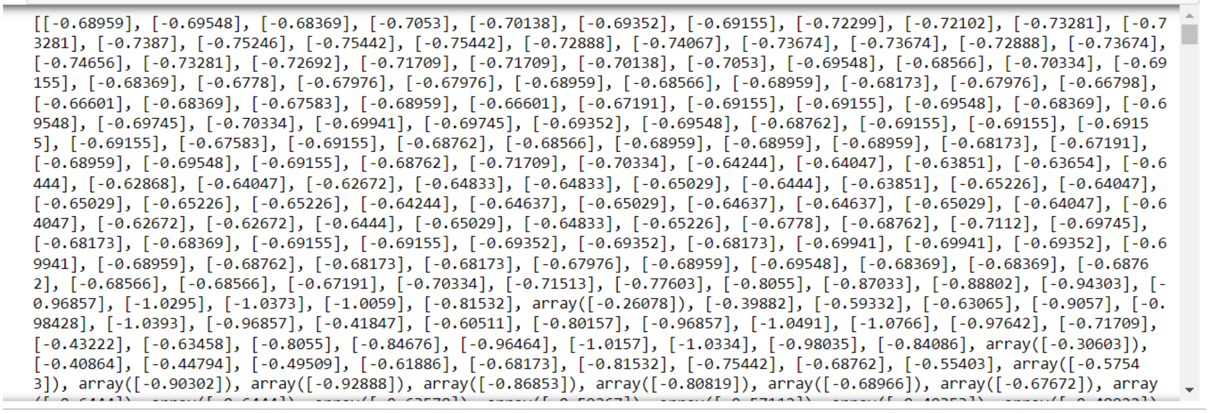
```
def find_peaks(c):

   peaks = []

   for i in range(1, len(c) - 1):
        if c[i] < c[i-1] and c[i] < c[i+1]:
            peaks.append(c[i])
    return peaks



g=find_peaks(c)
print(g)
k=len(g)
print(k)
```



```
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```
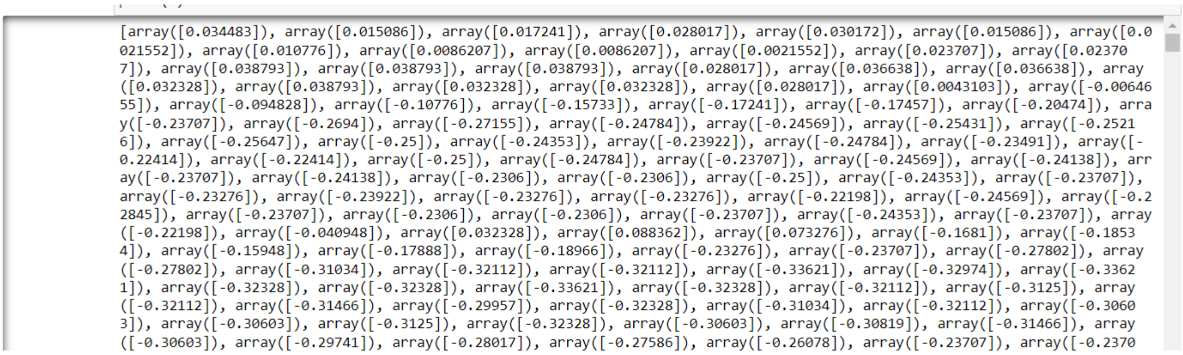

```
def find_valley(c):
    valley = []
    for i in range(1, len(c) - 1):
        if c[i] > c[i-1] and c[i] > c[i+1]:
            valley.append(c[i])
    return valley
h=find_valley(c)
print(h)
l=len(h)
print(l)
```



```
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```
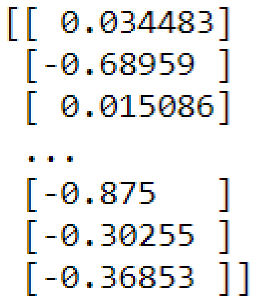
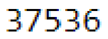

```
m=np.array(c)

def countlist(valley,peak):

   return[sub[item] for item in range(len(h))

                for sub in[valley,peak]]


com=(countlist(find_valley(m),find_peaks(m)))

type(com)

g=np.array(com)

print(g)
```



```
[[ 0.034483]
 [-0.68959 ]
 [ 0.015086]
 ...
 [-0.875   ]
 [-0.30255 ]
 [-0.36853 ]]
```

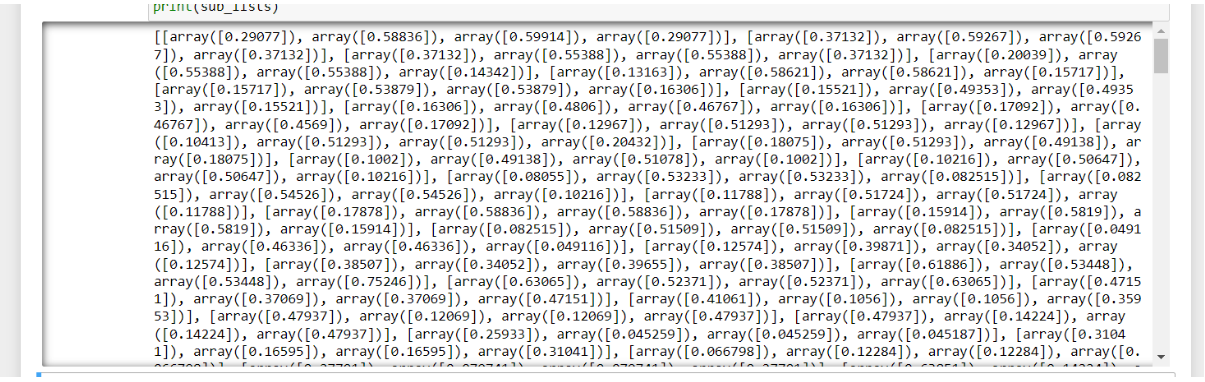
```
n=len(g)+len(h)

C=20

temp=[]

cfc=0

i=0

fc=0

lam=0

lc=0

msc=0
```

```
print(n)
alg=[]
for i in range(1,n,4):
    if((C-m[i])*(C-m[i-1])>0):
        cfc=cfc+1
        if(cfc==2):
            fc=m[i]
            cfc=0
            if((C1*m[i]<=m[i]<=C)and (fc!=0)):
                lam=m[i+1]
                if((m[i+1]<=C2)and (lam!=0)):
                    lc=m[i+2]
                    if((m[i+2]>0)and(lc!=0)):
                        msc=m[i+3]
                        alg.append(fc)
                        alg.append(lam)
                        alg.append(lc)
                        alg.append(msc)
                        cfc==0
                    else:
                        i=i-1
                else:
                    i=i-2
```



```
37536
```

```
def divide_list(lst, size):
    return [lst[i:i+size] for i in range(0, len(lst), size)]
sub_lists = divide_list(alg, 4)
print(sub_lists)
```



```
print(sub_lists)
```

```
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```
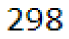

cc=len(sub_lists)

print(cc)



```
298
```

cd=[]

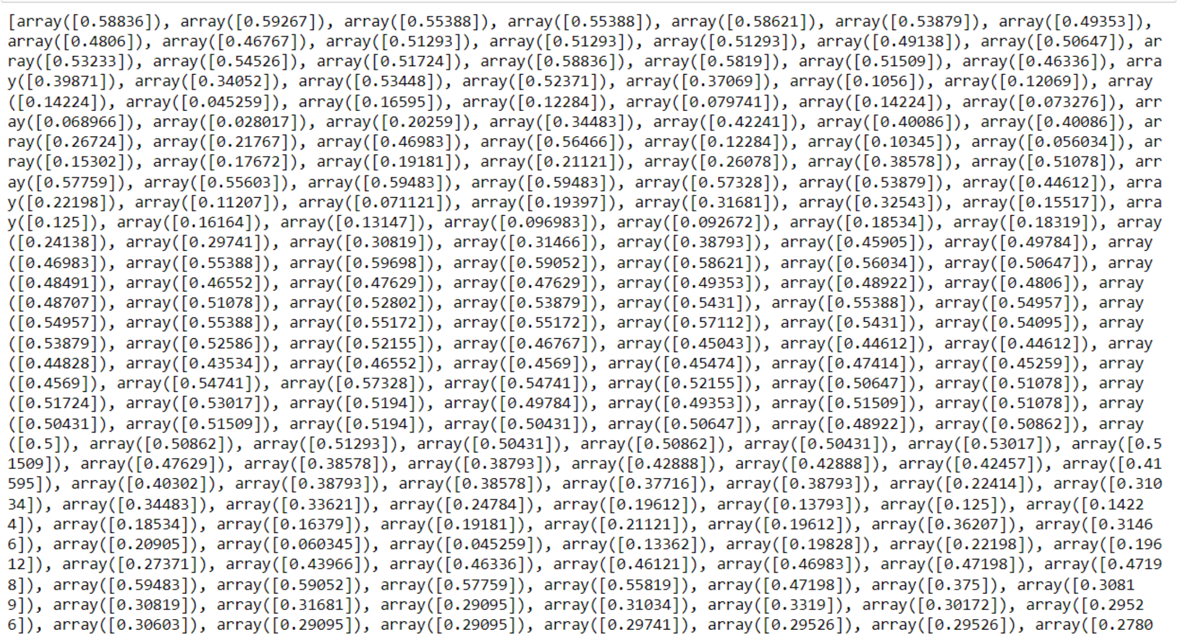
lad=[]

for i in range(cc):

    cd.append(sub_lists[i][0])

    lad.append(sub_lists[i][1])

print(lad)



```
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12]), array([0.27371]), array([0.43966]), array([0.46336]), array([0.46121]), array([0.46983]), array([0.47198]), array([0.4719
8]), array([0.59483]), array([0.59052]), array([0.57759]), array([0.55819]), array([0.47198]), array([0.375]), array([0.3081
9]), array([0.30819]), array([0.31681]), array([0.29095]), array([0.31034]), array([0.3319]), array([0.30172]), array([0.2952
6]), array([0.30603]), array([0.29095]), array([0.29095]), array([0.29741]), array([0.29526]), array([0.29526]), array([0.2780
```
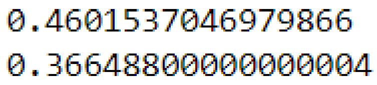
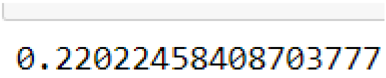

cm=np.average(cd)

```
print(cm)

lam=np.average(lad)

print(lam)
```



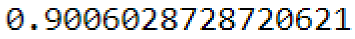
```
0.4601537046979866
0.36648800000000004
```

```
sd=np.std(cd)

print(sd)
```



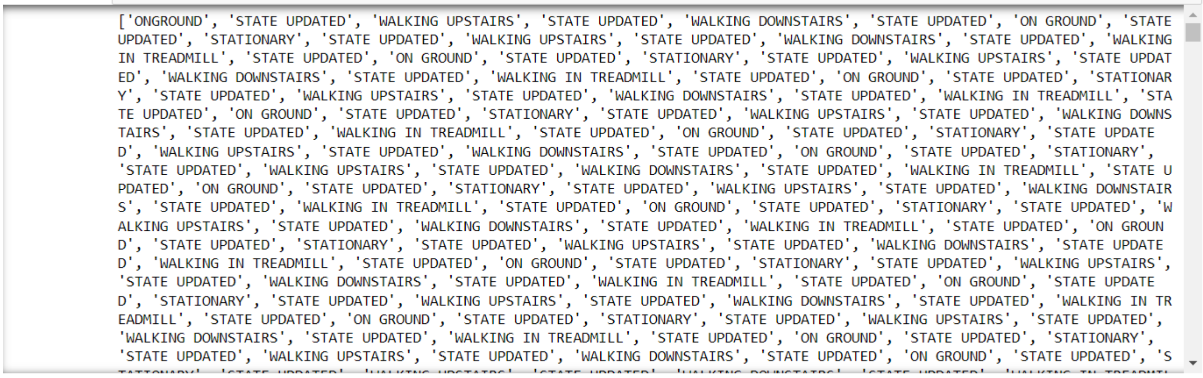
```
0.22022458408703777
```

```
alpha=cm+(2*sd)

print(alpha)
```



```
0.9006028728720621
```

```
C2=3

result=["ONGROUND"]

cmax=max(c)

cmin=min(c)

dif=abs(cmax-cmin)


for i in range(cc):

   if(lad[i]!=0):

      if(lad[i]>0):

         result.append("STATE UPDATED")

         result.append("WALKING UPSTAIRS")

      if(lad[i]>lam):

         result.append("STATE UPDATED")

         result.append("WALKING DOWNSTAIRS")

      if((cd[i]>alpha)and(result[i-1]!="WALKING IN TREADMILL")):

          result.append("STATE UPDATED")
          result.append("TRANSITION STATE")
        if((cd[i]>alpha)and(result[i-1]!="WALKING UPSTAIRS")or(result[i-1]!="WALKING DOWNSTAIRS")):
          result.append("STATE UPDATED")
          result.append("WALKING IN TREADMILL")
        if(cd[i]<=alpha):
          result.append("STATE UPDATED")
          result.append("ON GROUND")
    if(dif<C2):
        result.append("STATE UPDATED")
        result.append("STATIONARY")


print(result)
```



```
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```