ATIVIDADE CONTEXTUALIZADA 9

```python
import csv
import numpy as np

def ler():
    with
open('C:\\Users\\eduar\\OneDrive\\Documentos\\GitHub\\ProgISD20202-1\\M
aria_Eduarda\\aula8\\coletaFlexJoelho.csv','r') as fileObject:
            lista=[]
            for line in fileObject:
                dadosEsp=line.split('],""['')
                esp2=dadosEsp[1].split(']""')[0]
                #print(esp2)
                esp1=dadosEsp[0].split("[")[1]
                #print(esp1)
                for dadosEsp1 in esp1.split(","):
                        #print(float(dadosEsp1))
                        lista.append(float(dadosEsp1))
                for dadosEsp2 in esp2.split(","):
                        #print(float(dadosEsp2))
                        lista.append(float(dadosEsp2))
    return lista

def calculoDoAngulo():
    coleta=np.array(list(ler()))
    ang=0
    angulos=[]
    #conferencia=[]
    for i in range (5,len(coleta),5):
        #conferencia.append(coleta[i])
        ang=0.98*(ang+coleta[i]*0.05)+(1-0.98)*coleta[i-4]
        angulos.append(ang)
    resultado=np.array(list(angulos))
    return resultado
def VariacaoAngular():
    Angulos=calculoDoAngulo()
    variacao=[]
    for i in range(0,len(Angulos),1):
        VarAng=Angulos[i+1]-Angulos[i]
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        variacao.append(VarAng)
    Variacao_Angulo=np.array(list(variacao))
    return Variacao_Angulo


def Somatorio():
    Angulos=calculoDoAngulo()
    soma=np.sum(Angulos)
    return soma


def Media():
    Angulos=calculoDoAngulo()
    media=np.mean(Angulos)
    return media


def Minimo():
    Angulos=calculoDoAngulo()
    mim=np.amin(Angulos)
    return mim


def Maximo():
    Angulos=calculoDoAngulo()
    maxi=np.amax(Angulos)
    return maxi


def Integral ():
    Angulos=calculoDoAngulo()
    somaAcumulada=np.cumsum(Angulos)
    return somaAcumulada


def Aredondar():
    Angulos=calculoDoAngulo()
    aredondamento=np.around(Angulos,2)
    return aredondamento


def DiferencaMedia():
    Angulos=calculoDoAngulo()
    diferenca_media=(np.square(Angulos))/Angulos.size
    return diferenca_media


def salvando ():
     soma=Somatorio()
     media=Media()
     minimo=Minimo()
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        maximo=Maximo()
        integral=Integral()
        aredondar=Aredondar()
        diferenca_media=DiferencaMedia()
        with open('anguloprocessado9.csv', 'w', newline='') as csvfile:
            spamwriter = csv.writer(csvfile, delimiter= ' ',
                            quotechar= '|', quoting=csv.QUOTE_MINIMAL)
            coleta=np.array(list(calculoDoAngulo()))
            sensor1=[]
            sensor2=[]
            for i in  range(0,len(coleta),1):
                if ((i%2)==0):
                    sensor1.append(coleta[i])
                else:
                    sensor2.append(coleta[i])
            spamwriter.writerow(['Valores dos Angulos'] )
            spamwriter.writerow(['Sensor 1: \n'] + [sensor1])
            spamwriter.writerow(['Sensor 2: \n']+[sensor2])
            spamwriter.writerow(['Operações:'] )
            spamwriter.writerow(['Somatório: \n']+[soma])
            spamwriter.writerow(['Media: \n']+[media])
            spamwriter.writerow(['Minimo: \n']+[minimo])
            spamwriter.writerow(['Maximo: \n']+[maximo])
            spamwriter.writerow(['Integral: \n']+[integral])
            spamwriter.writerow(['Aredondamento: \n']+[aredondar])
            spamwriter.writerow(['Diferença média:
\n']+[diferenca_media])
        with open('anguloprocessado9.csv','r',newline='') as csvfile:
            spamreader = csv.reader(csvfile,delimiter=' ',quotechar='|')
            for row in spamreader:
                print(','.join(row))
        with open('anguloprocessado9.txt','w') as FileObject:
            coleta=calculoDoAngulo()
            sensor1=[]
            sensor2=[]
            for i in  range(0,len(coleta),1):
                if ((i%2)==0):
                    sensor1.append(coleta[i])
                else:
                    sensor2.append(coleta[i])
            FileObject.write("***Valores dos Angulos***\n#Sensor 1:\n")
            FileObject.writelines(str(sensor1))
            FileObject.write("\n\n#Sensor 2:\n")
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```python
        FileObject.writelines(str(sensor2))
        FileObject.write("***Operacoes***\n#Somatorio:\n")
        FileObject.write(str(soma))
        FileObject.write("Media:\n")
        FileObject.write(str(media))
        FileObject.write("Minimo:\n")
        FileObject.write(str(minimo))
        FileObject.write("Maximo:\n")
        FileObject.write(str(maximo))
        FileObject.write("Integral:\n")
        FileObject.write(str(integral))
        FileObject.write("Aredondamento:\n")
        FileObject.write(str(aredondar))
        FileObject.write("Diferença Média:\n")
        FileObject.writelines(str(diferenca_media))

    with open('anguloprocessado9.txt','r') as FileObject:
        print(FileObject.read())

print("****Welcome CalcAngle****")
salvando()
```