```
%This demonstrates the difference in adding up sorted vs nonsorted numbers
myContinue=0;
while myContinue~=1
    rge=input('Enter a range enclosed in brackets: ');
    x=input('How many random decimals? ');
    A=rge(1)+abs(rge(1)-rge(2))*rand(x,1);
    sumA=sum(A);
    sumSortA=sum(sort(A));
    diff=abs(sumA-sumSortA);
    sprintf('Using MatLab sum function: \n The sum of unsorted decimals = %d. \n The sum↙
of the sorted decimes = %d. \n The difference in sums (sorted-unsorted) =%d.' ,sumA,↙
sumSortA,diff)

    %Comp Sum of Unsorted numbers
    s1=compSum(A);
    diff1=abs(sumA-s1);
    diff2=abs(sumSortA-s1);
    sprintf('Using compensated the sum (unsorted) = %d \n The difference (MatLab Sum)↙
from unsorted = %d and sorted = %d',s1, diff1,diff2)

    %Comp Sum of sorted numbers
    s2=compSum(sort(A));
    diff3=abs(sumA-s2);
    diff4=abs(sumSortA-s2);
    sprintf('Using compensated the sum (sorted) = %d \n The difference (MatLab Sum) from↙
unsorted = %d and sorted = %d',s2, diff3,diff4)
    myContinue=input('Again? [0=yes/1=no]: ');
end
```

```
function s = compSum(lst)
    s=0;
    c=0;
    for j=1:length(lst)
        temp=s;
        y=lst(j)+c;
        s=temp+y;
        c=(temp-s)+y;
    end
end
```

```
>> main
Enter a range enclosed in brackets: [-100000,0.00001]
How many random decimals? 100

ans =

    'Using MatLab sum function:
      The sum of unsorted decimals = -4.853941e+06.
      The sum of the sorted decimes = -4.853941e+06.
      The difference in sums (sorted-unsorted) =3.725290e-09.'


ans =

    'Using compensated the sum (unsorted) = -4.853941e+06
      The difference (MatLab Sum) from unsorted = 9.313226e-10 and sorted = 2.793968e-09'


ans =

    'Using compensated the sum (sorted) = -4.853941e+06
      The difference (MatLab Sum) from unsorted = 9.313226e-10 and sorted = 2.793968e-09'

Again? [0=yes/1=no]: 0
Enter a range enclosed in brackets: [-100000,0.00001
]
How many random decimals? 500

ans =

    'Using MatLab sum function:
      The sum of unsorted decimals = -2.502960e+07.
      The sum of the sorted decimes = -2.502960e+07.
      The difference in sums (sorted-unsorted) =0.'


ans =

    'Using compensated the sum (unsorted) = -2.502960e+07
      The difference (MatLab Sum) from unsorted = 7.450581e-09 and sorted = 7.450581e-09'


ans =

    'Using compensated the sum (sorted) = -2.502960e+07
      The difference (MatLab Sum) from unsorted = 7.450581e-09 and sorted = 7.450581e-09'

Again? [0=yes/1=no]: 0
Enter a range enclosed in brackets: [-100000,0.00001]
How many random decimals? 10000

ans =

    'Using MatLab sum function:
      The sum of unsorted decimals = -5.005147e+08.
      The sum of the sorted decimes = -5.005147e+08.
      The difference in sums (sorted-unsorted) =7.152557e-07.'
```

```
ans =

    'Using compensated the sum (unsorted) = -5.005147e+08
      The difference (MatLab Sum) from unsorted = 2.264977e-06 and sorted = 1.549721e-06'


ans =

    'Using compensated the sum (sorted) = -5.005147e+08
      The difference (MatLab Sum) from unsorted = 2.264977e-06 and sorted = 1.549721e-06'

Again? [0=yes/1=no]: 0
Enter a range enclosed in brackets: [-100000,0.00001]
How many random decimals? 100000

ans =

    'Using MatLab sum function:
      The sum of unsorted decimals = -4.997305e+09.
      The sum of the sorted decimes = -4.997305e+09.
      The difference in sums (sorted-unsorted) =3.814697e-05.'


ans =

    'Using compensated the sum (unsorted) = -4.997305e+09
      The difference (MatLab Sum) from unsorted = 2.288818e-05 and sorted = 1.525879e-05'


ans =

    'Using compensated the sum (sorted) = -4.997305e+09
      The difference (MatLab Sum) from unsorted = 2.288818e-05 and sorted = 1.525879e-05'

Again? [0=yes/1=no]: 1
>>
```