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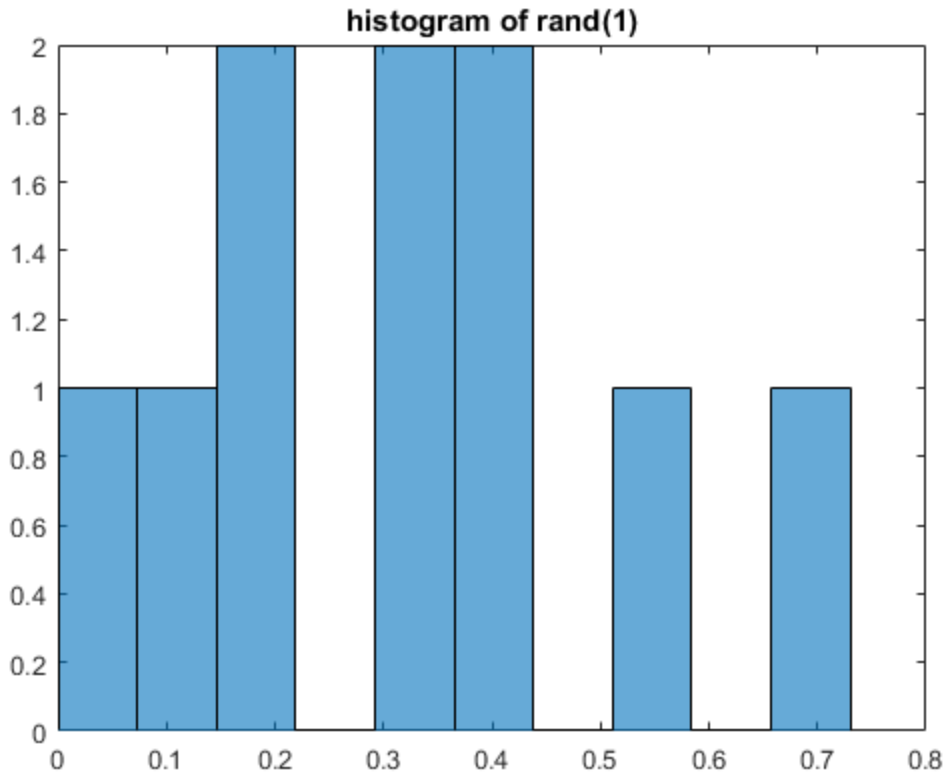
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```
clc
clear all
close all
```

first part of the question

```
% randomly generating 10 numbers
% via rand function of matlab
% using the seed of 1
rng(1);% seeding 1 to the random number generators
Random = rand(1,10);
fprintf('%10.6f',Random)% decimating 6 decimal points after the
    decimal point
figure()
HISTO =histogram(Random,'BinWidth',1/10);
HISTO.NumBins = 10;
title('histogram of rand(1)')

    0.417022    0.720324    0.000114    0.302333    0.146756    0.092339    0.186260
    0.345561    0.396767    0.538817
```



part ii of the part a

```
% now we have to increase the size of random vector
% by increasing the size we are confirmin it will be uniform

random1000a = rand(1,1000);% increased length vector eith random
numbers as elements
fprintf('%10.6f',random1000a)
figure()
HISTOb = histogram(random1000a,10,'BinWidth',1/10)
HISTOb.NumBins = 10;
title('rand1000(1)')
```

0.419195	0.685220	0.204452	0.878117	0.027388	0.670468	0.417305
0.558690	0.140387	0.198101	0.800745	0.968262	0.313424	0.692323
0.876389	0.894607	0.085044	0.039055	0.169830	0.878143	0.098347
0.421108	0.957890	0.533165	0.691877	0.315516	0.686501	0.834626
0.018288	0.750144	0.988861	0.748166	0.280444	0.789279	0.103226
0.447894	0.908596	0.293614	0.287775	0.130029	0.019367	0.678836
0.211628	0.265547	0.491573	0.053363	0.574118	0.146729	0.589306
0.699758	0.102334	0.414056	0.694400	0.414179	0.049953	0.535896
0.663795	0.514889	0.944595	0.586555	0.903402	0.137475	0.139276
0.807391	0.397677	0.165354	0.927509	0.347766	0.750812	0.725998
0.883306	0.623672	0.750942	0.348898	0.269928	0.895886	0.428091
0.964840	0.663441	0.621696	0.114746	0.949489	0.449912	0.578390
0.408137	0.237027	0.903380	0.573679	0.002870	0.617145	0.326645

0.527058	0.885942	0.357270	0.908535	0.623360	0.015821	0.929437
0.690897	0.997323	0.172341	0.137136	0.932595	0.696818	0.066000
0.755463	0.753876	0.923025	0.711525	0.124271	0.019880	0.026211
0.028306	0.246211	0.860028	0.538831	0.552822	0.842031	0.124173
0.279184	0.585759	0.969596	0.561030	0.018647	0.800633	0.232974
0.807105	0.387861	0.863542	0.747122	0.556240	0.136455	0.059918
0.121343	0.044552	0.107494	0.225709	0.712989	0.559717	0.012556
0.071974	0.967276	0.568100	0.203293	0.252326	0.743826	0.195429
0.581359	0.970020	0.846829	0.239848	0.493770	0.619956	0.828981
0.156791	0.018576	0.070022	0.486345	0.606329	0.568851	0.317362
0.988616	0.579745	0.380141	0.550948	0.745334	0.669233	0.264920
0.066335	0.370084	0.629718	0.210174	0.752756	0.066536	0.260315
0.804755	0.193434	0.639461	0.524670	0.924808	0.263297	0.065961
0.735066	0.772178	0.907816	0.931972	0.013952	0.234362	0.616778
0.949016	0.950176	0.556653	0.915606	0.641566	0.390008	0.485991
0.604310	0.549548	0.926181	0.918733	0.394876	0.963263	0.173956
0.126330	0.135079	0.505662	0.021525	0.947970	0.827115	0.015019
0.176196	0.332064	0.130997	0.809491	0.344737	0.940107	0.582014
0.878832	0.844734	0.905392	0.459880	0.546347	0.798604	0.285719
0.490254	0.599110	0.015533	0.593481	0.433676	0.807361	0.315245
0.892889	0.577857	0.184010	0.787929	0.612031	0.053909	0.420194
0.679069	0.918602	0.000402	0.976759	0.376580	0.973784	0.604716
0.828846	0.574712	0.628076	0.285576	0.586833	0.750022	0.858314
0.755082	0.698057	0.864479	0.322681	0.670789	0.450874	0.382103
0.410811	0.401480	0.317384	0.621919	0.430247	0.973802	0.677801
0.198570	0.426701	0.343346	0.797639	0.879998	0.903842	0.662720
0.270208	0.252367	0.854898	0.527715	0.802161	0.572489	0.733143
0.519012	0.770884	0.568858	0.465710	0.342689	0.068209	0.377924
0.079626	0.982817	0.181613	0.811859	0.874962	0.688413	0.569494
0.160971	0.466880	0.345172	0.225040	0.592512	0.312270	0.916306
0.909636	0.257118	0.110891	0.192963	0.499584	0.728586	0.208194
0.248034	0.851672	0.415849	0.616685	0.233666	0.101967	0.515857
0.477141	0.152672	0.621806	0.544010	0.654137	0.144546	0.751528
0.222049	0.519352	0.785296	0.022330	0.324362	0.872922	0.844710
0.538441	0.866608	0.949806	0.826407	0.854115	0.098743	0.651304
0.703517	0.610241	0.799615	0.034571	0.770239	0.731729	0.259698
0.257069	0.632303	0.345297	0.796589	0.446146	0.782749	0.990472
0.300248	0.143006	0.901308	0.541559	0.974740	0.636604	0.993913
0.546071	0.526426	0.135428	0.355705	0.026219	0.160395	0.745637
0.030400	0.366543	0.862346	0.692678	0.690942	0.188637	0.441904
0.581577	0.989752	0.203906	0.247733	0.262173	0.750172	0.456975
0.056929	0.508516	0.211960	0.798604	0.297331	0.027606	0.593432
0.843840	0.381016	0.749858	0.511141	0.540952	0.959434	0.803961
0.032323	0.709387	0.465001	0.947549	0.221433	0.267072	0.081474
0.428619	0.109019	0.633787	0.802963	0.696800	0.766211	0.342454
0.845851	0.428769	0.824010	0.626496	0.143423	0.078387	0.018333
0.066725	0.458584	0.113342	0.027783	0.754861	0.394850	0.746938
0.452405	0.450087	0.478073	0.474004	0.803163	0.402393	0.904686
0.037061	0.773874	0.125641	0.618514	0.010364	0.538627	0.003018
0.951194	0.905402	0.795967	0.915274	0.145558	0.157730	0.187632
0.622496	0.905809	0.989955	0.711122	0.731800	0.909293	0.400874
0.249851	0.173430	0.119457	0.812611	0.146792	0.264297	0.819089
0.310587	0.982417	0.266639	0.533653	0.314467	0.910773	0.366557
0.433592	0.512293	0.938886	0.030949	0.716879	0.891019	0.027287

0.522051	0.325990	0.859489	0.558517	0.690228	0.452853	0.628309
0.290097	0.009349	0.576756	0.311444	0.517268	0.916406	0.426475
0.247396	0.371294	0.931861	0.936868	0.844330	0.920207	0.227900
0.087482	0.227310	0.314377	0.174766	0.607094	0.413586	0.816352
0.185130	0.701877	0.240356	0.574219	0.348988	0.056964	0.228814
0.664103	0.497250	0.519016	0.174720	0.570716	0.996753	0.816835
0.594373	0.975989	0.901563	0.595608	0.032426	0.093577	0.065372
0.451733	0.375435	0.975350	0.167983	0.972788	0.767475	0.824238
0.632616	0.668733	0.476882	0.013136	0.353006	0.492072	0.730091
0.468628	0.457405	0.137663	0.010889	0.758278	0.319953	0.984383
0.220234	0.338708	0.523896	0.754891	0.463858	0.124823	0.312501
0.504519	0.673849	0.770150	0.130336	0.022915	0.519082	0.809989
0.012604	0.672470	0.686808	0.449247	0.914789	0.644361	0.005240
0.484428	0.859318	0.830400	0.649154	0.673698	0.578500	0.274120
0.560530	0.671730	0.352430	0.855828	0.195037	0.747321	0.289603
0.773799	0.427737	0.807698	0.353535	0.213693	0.767285	0.308642
0.733245	0.744473	0.221397	0.214112	0.198948	0.142518	0.377083
0.026628	0.110920	0.674564	0.799777	0.080530	0.231702	0.207626
0.917334	0.711315	0.553885	0.304518	0.834854	0.435306	0.923456
0.706052	0.478031	0.126210	0.976044	0.159834	0.202602	0.431182
0.404202	0.146751	0.729319	0.188745	0.643896	0.754306	0.210732
0.600954	0.748928	0.638219	0.597127	0.295482	0.731606	0.945308
0.425561	0.782182	0.056141	0.835272	0.192250	0.395097	0.300081
0.080104	0.904631	0.370154	0.530697	0.494116	0.132161	0.206454
0.076189	0.507922	0.261550	0.357062	0.108065	0.787552	0.106584
0.985709	0.177161	0.572405	0.044845	0.787116	0.189606	0.527904
0.740078	0.149931	0.551087	0.216617	0.759196	0.722915	0.176549
0.861967	0.019775	0.860237	0.558904	0.403220	0.758747	0.716929
0.987326	0.278085	0.003794	0.933903	0.857897	0.728851	0.516689
0.706956	0.780530	0.374876	0.770323	0.750624	0.613211	0.401866
0.697308	0.003113	0.774897	0.896417	0.239316	0.120767	0.220284
0.302097	0.883029	0.543166	0.286712	0.138355	0.290144	0.613871
0.324139	0.457360	0.444117	0.828135	0.426348	0.345699	0.674972
0.221482	0.467246	0.314766	0.626856	0.877360	0.447689	0.784457
0.456966	0.656229	0.131841	0.432982	0.909312	0.605479	0.766775
0.504701	0.498056	0.842900	0.067807	0.573272	0.942763	0.517860
0.194466	0.847939	0.251639	0.700726	0.540261	0.948836	0.624337
0.837978	0.007933	0.989340	0.077715	0.322130	0.946152	0.008939
0.822730	0.861212	0.439831	0.255745	0.802690	0.477862	0.134339
0.927849	0.895970	0.491545	0.856702	0.418578	0.683465	0.397991
0.505742	0.189552	0.964989	0.294216	0.103460	0.144315	0.014092
0.715946	0.564498	0.794578	0.507080	0.791821	0.695764	0.777848
0.406483	0.647771	0.179794	0.321820	0.172605	0.408637	0.241419
0.406922	0.975222	0.320319	0.982491	0.636306	0.375091	0.857484
0.619587	0.252033	0.792856	0.432939	0.357511	0.330277	0.697369
0.268650	0.808278	0.295289	0.544121	0.487921	0.855356	0.888386
0.184384	0.585348	0.898205	0.446117	0.921868	0.278991	0.608831
0.682454	0.228206	0.013768	0.416724	0.938482	0.343028	0.779744
0.174736	0.341953	0.144598	0.716771	0.699308	0.688497	0.253396
0.692360	0.227298	0.424649	0.371922	0.355308	0.057655	0.631647
0.707317	0.613589	0.648313	0.169941	0.149447	0.514175	0.875333
0.183953	0.462839	0.428932	0.497289	0.161511	0.342441	0.261880
0.844527	0.800332	0.426639	0.607015	0.145466	0.509613	0.296947
0.859651	0.671598	0.633474	0.124751	0.470588	0.986573	0.948299

```

0.645086 0.151725 0.639127 0.565662 0.468666 0.428037 0.599270
0.849970 0.751121 0.579361 0.924704 0.064740 0.991347 0.052995
0.199496 0.422753 0.107509 0.623670 0.047993 0.284624 0.061037
0.703519 0.668456 0.378581 0.188194 0.747005 0.340379 0.795301
0.487901 0.525669 0.028491 0.644232 0.350657 0.229205 0.433883
0.382467 0.469789 0.979483 0.364378 0.774410 0.552768 0.889131
0.354953 0.245519 0.911019 0.043534 0.950753 0.556407 0.376363
0.995052 0.058363 0.516706 0.031097 0.571176 0.180469 0.630959
0.980924 0.874903 0.451836 0.708461 0.777469 0.494843 0.528533
0.150784 0.369400 0.142221 0.726894 0.477013 0.448879 0.885998
0.527619 0.409091 0.268892 0.072012 0.418136 0.025753 0.291154
0.503510 0.965933 0.109383 0.673041 0.499932 0.777098 0.143607
0.083203 0.399219 0.796962 0.191676 0.767777 0.290298 0.216891
0.016716 0.398659 0.381081 0.659345 0.070918 0.152604 0.016576
0.113796 0.651789 0.402657 0.321026 0.557912 0.993460 0.834487
0.699623 0.918259 0.039729 0.070333 0.474006 0.349167 0.937252
0.489565 0.539649 0.895260 0.446635 0.877034 0.253582 0.273810
0.328361 0.547564 0.220129 0.671429 0.142793 0.094100 0.870192
0.236869 0.386004 0.571542 0.525802 0.076024 0.874126 0.951136
0.812507 0.283802 0.527847 0.339417 0.554667 0.974403 0.311703
0.668797 0.325967 0.774477 0.325810 0.889827 0.751708 0.762632
0.469479 0.210765 0.041475 0.321829 0.037113 0.693855
HISTOb =

```

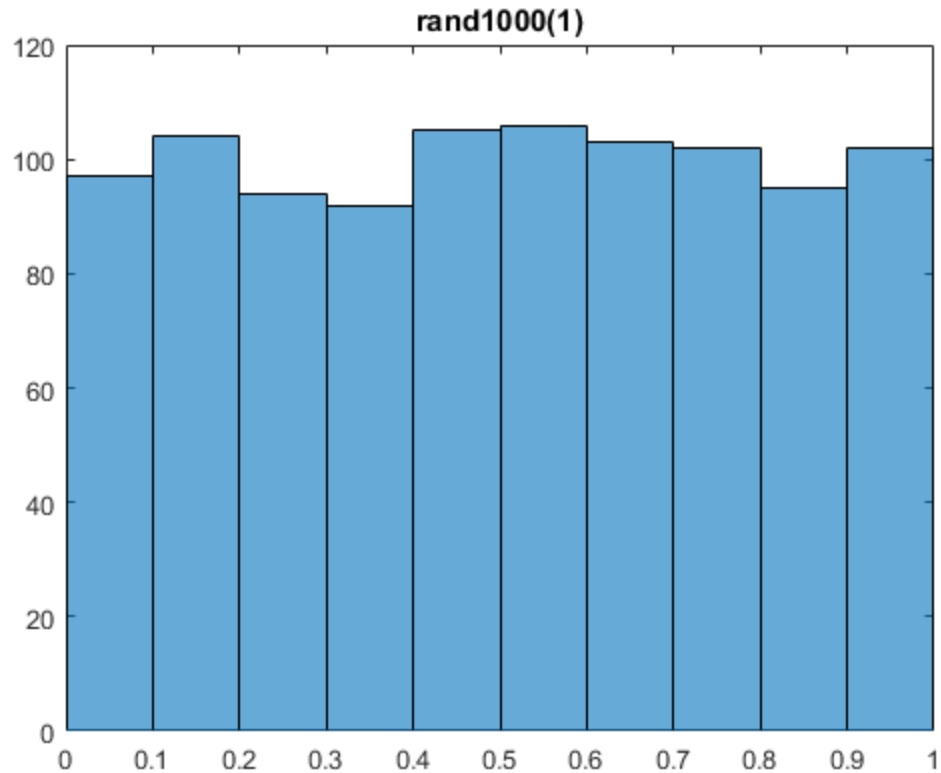
Histogram with properties:

```

      Data: [1x1000 double]
    Values: [97 104 94 92 105 106 103 102 95 102]
    NumBins: 10
   BinEdges: [1x11 double]
   BinWidth: 0.1000
  BinLimits: [0 1]
Normalization: 'count'
   FaceColor: 'auto'
   EdgeColor: [0 0 0]

```

Use GET to show all properties



this time part b

```
% repeating the same procedure with different seed
% seed of current time of the day
% will produce different results
% two loops for performing the generation of random n

for i=1:100
    % 100 times changig the seed value with 100 different instants of
    % time
    % of the day
    rng('shuffle');
    for j =1:1000
        avgX(i,j) = rand(1);
    end
end
```

performing the average of 100 different x vectors of 1000 length

```
X = sum(avgX)/100;
fprintf('%10.6f',X)
figure()
```

```
dhistragrm = histogram(X,10,'BinWidth',1/10)
dhistragrm.NumBins = 10;
title('x vector pdf')
```

```
0.497625 0.524571 0.504281 0.542799 0.522646 0.501123 0.478808
0.504217 0.470145 0.477547 0.510668 0.507699 0.512614 0.547686
0.445936 0.475904 0.479315 0.520760 0.532170 0.513704 0.522950
0.478361 0.478350 0.463990 0.465004 0.489086 0.476795 0.510468
0.482248 0.540789 0.509697 0.480119 0.464698 0.513929 0.565301
0.567468 0.488302 0.554647 0.519529 0.536369 0.504244 0.508839
0.482778 0.494530 0.456485 0.497964 0.498693 0.468986 0.474091
0.413537 0.495859 0.470666 0.481959 0.577094 0.451384 0.555951
0.459646 0.504508 0.543544 0.483220 0.541238 0.509630 0.456313
0.515137 0.564485 0.557266 0.486762 0.481460 0.505555 0.550216
0.505690 0.502008 0.498469 0.472968 0.544353 0.488668 0.485058
0.494880 0.484414 0.430602 0.461997 0.509301 0.487114 0.504419
0.485474 0.513526 0.513931 0.515360 0.498671 0.430581 0.519775
0.524022 0.468345 0.493950 0.481094 0.514172 0.529249 0.426339
0.512673 0.536887 0.526884 0.478176 0.513413 0.487203 0.495921
0.447203 0.492581 0.515855 0.437804 0.525708 0.430864 0.443128
0.536455 0.510526 0.543903 0.492769 0.512529 0.471683 0.476136
0.549090 0.482322 0.537148 0.500610 0.543123 0.467030 0.494165
0.461499 0.477814 0.502984 0.545300 0.490278 0.496592 0.459564
0.489875 0.543700 0.488613 0.514161 0.533607 0.486397 0.469644
0.489775 0.514343 0.496627 0.458555 0.488122 0.541283 0.526485
0.519409 0.499422 0.560420 0.471397 0.492619 0.443725 0.489834
0.465570 0.479030 0.501905 0.473405 0.505815 0.440132 0.463289
0.464806 0.514873 0.491496 0.480158 0.502822 0.549516 0.496612
0.472022 0.515005 0.501539 0.522063 0.526227 0.476514 0.527350
0.513440 0.498515 0.464339 0.458644 0.514375 0.505766 0.504086
0.497980 0.517218 0.503543 0.508941 0.447825 0.520029 0.461800
0.476035 0.519696 0.523273 0.510903 0.476743 0.493444 0.475775
0.525371 0.537829 0.475931 0.525221 0.477846 0.519125 0.538815
0.463216 0.525305 0.482667 0.480783 0.529707 0.474449 0.522963
0.484580 0.511047 0.467167 0.460169 0.517493 0.553834 0.478787
0.485440 0.505774 0.466565 0.521126 0.511776 0.520362 0.511168
0.529232 0.496440 0.509430 0.523167 0.491382 0.474842 0.488360
0.533215 0.500297 0.499544 0.491885 0.537464 0.512183 0.514827
0.516508 0.472849 0.498135 0.488849 0.498890 0.496164 0.441183
0.487989 0.535151 0.499504 0.501092 0.507476 0.483001 0.481171
0.510437 0.498356 0.471871 0.517170 0.511317 0.508660 0.576105
0.496471 0.530016 0.509329 0.475998 0.505784 0.541960 0.476314
0.429983 0.523934 0.499167 0.517655 0.481521 0.555289 0.448828
0.538510 0.441234 0.502106 0.491918 0.528524 0.509737 0.556466
0.493649 0.437092 0.504398 0.512406 0.490424 0.499812 0.510572
0.552640 0.490948 0.484010 0.501709 0.480198 0.540553 0.521556
0.496300 0.556233 0.505853 0.528005 0.449936 0.492121 0.519352
0.468286 0.509185 0.543152 0.514755 0.457858 0.518457 0.514472
0.493002 0.481886 0.488777 0.469007 0.463762 0.513358 0.514906
0.470948 0.489999 0.522793 0.488623 0.521937 0.531498 0.505372
0.485441 0.463979 0.508721 0.447404 0.481841 0.522520 0.472702
0.445697 0.443966 0.516444 0.524249 0.429827 0.433842 0.468792
0.490499 0.495986 0.509279 0.505452 0.510974 0.518808 0.491261
0.487999 0.487947 0.528434 0.505914 0.485757 0.406196 0.524809
```

0.524941	0.479738	0.523992	0.490445	0.523390	0.525028	0.524935
0.524273	0.545777	0.509695	0.489432	0.530725	0.551866	0.528327
0.506494	0.505519	0.488453	0.531938	0.453633	0.498383	0.462429
0.490111	0.498920	0.515762	0.496520	0.478834	0.482218	0.470752
0.436397	0.549726	0.483492	0.478131	0.456251	0.468887	0.483983
0.496215	0.528712	0.528634	0.481326	0.550339	0.472399	0.530227
0.483843	0.490163	0.490865	0.499177	0.504684	0.488859	0.492576
0.545256	0.519617	0.507342	0.512265	0.460391	0.539978	0.515272
0.551508	0.477194	0.512118	0.532344	0.450733	0.464621	0.516864
0.518281	0.540456	0.512951	0.486533	0.505490	0.473140	0.517453
0.517657	0.410953	0.475492	0.469245	0.501392	0.521632	0.510870
0.534420	0.462098	0.499936	0.497583	0.471553	0.480507	0.511812
0.548612	0.526457	0.555589	0.463068	0.474025	0.494538	0.458804
0.530460	0.521942	0.491601	0.462483	0.487446	0.528257	0.447059
0.534263	0.457763	0.521066	0.482405	0.445311	0.532803	0.495808
0.492686	0.517499	0.491716	0.541468	0.534374	0.470950	0.544108
0.502225	0.475119	0.509937	0.525711	0.495596	0.487256	0.513175
0.530879	0.495064	0.505651	0.496440	0.545464	0.467263	0.509579
0.472180	0.513107	0.484963	0.529027	0.520535	0.476600	0.523507
0.466844	0.505141	0.481740	0.525530	0.480410	0.450022	0.526012
0.481249	0.470585	0.459498	0.532028	0.516769	0.452614	0.517334
0.499787	0.498018	0.539611	0.453309	0.493763	0.442264	0.482750
0.496368	0.520302	0.537869	0.524064	0.524300	0.523611	0.523931
0.518766	0.427035	0.490298	0.487963	0.471164	0.512068	0.489441
0.494036	0.543284	0.480221	0.492222	0.511112	0.501984	0.547985
0.488902	0.510806	0.500752	0.440857	0.495429	0.500417	0.500732
0.495229	0.458743	0.524456	0.525308	0.499335	0.571131	0.481424
0.476757	0.449483	0.519731	0.496597	0.523773	0.487927	0.519811
0.506643	0.498068	0.468830	0.533549	0.588490	0.492902	0.519651
0.471301	0.497756	0.526553	0.516203	0.468764	0.489968	0.502026
0.490599	0.462636	0.501994	0.467930	0.535303	0.488516	0.484972
0.530679	0.488196	0.425993	0.503624	0.502981	0.449136	0.513388
0.517833	0.500377	0.488024	0.447059	0.528824	0.525794	0.474411
0.503010	0.514509	0.528843	0.493540	0.514191	0.508053	0.486072
0.508920	0.469023	0.485784	0.445514	0.480191	0.464081	0.502631
0.544176	0.523803	0.483522	0.522510	0.529145	0.463020	0.549562
0.499909	0.474210	0.577625	0.527200	0.455130	0.482797	0.476515
0.505755	0.517175	0.534508	0.501622	0.510032	0.491049	0.435224
0.522883	0.539436	0.457534	0.516012	0.509037	0.530266	0.503676
0.500093	0.497342	0.522751	0.486250	0.478085	0.539376	0.450620
0.514323	0.460428	0.483939	0.529110	0.503265	0.519002	0.500925
0.486786	0.487696	0.569186	0.503209	0.554341	0.530974	0.487416
0.491300	0.529354	0.514272	0.502589	0.449826	0.482700	0.440013
0.472791	0.523490	0.557312	0.509115	0.535643	0.483194	0.453643
0.540128	0.466049	0.507550	0.492290	0.524740	0.446428	0.515769
0.472838	0.490890	0.484646	0.509226	0.497115	0.489177	0.485083
0.509427	0.444236	0.487603	0.476737	0.505872	0.516943	0.459273
0.507689	0.469451	0.475841	0.540034	0.467902	0.520397	0.554553
0.478683	0.522032	0.512224	0.503728	0.498027	0.474605	0.529832
0.538639	0.513742	0.471291	0.470254	0.546292	0.562883	0.515149
0.509561	0.508073	0.510842	0.494710	0.531318	0.467697	0.490934
0.523310	0.559106	0.477821	0.492277	0.537286	0.531588	0.589544
0.455065	0.491607	0.477977	0.474259	0.530027	0.477076	0.513754
0.550240	0.487164	0.471054	0.491677	0.456306	0.486391	0.494367

```

0.508419 0.575624 0.478831 0.519589 0.518894 0.488616 0.489310
0.555263 0.456903 0.476675 0.512921 0.497032 0.509279 0.474559
0.535542 0.517250 0.476970 0.474077 0.455677 0.515702 0.526967
0.477570 0.514562 0.453381 0.485151 0.523263 0.553260 0.445477
0.508648 0.530477 0.549355 0.505057 0.564814 0.506011 0.482102
0.531686 0.519891 0.546944 0.513404 0.483262 0.474108 0.493504
0.530396 0.509030 0.450259 0.477171 0.495818 0.536367 0.502485
0.461230 0.540762 0.482182 0.526556 0.511863 0.496210 0.480688
0.438574 0.450173 0.508103 0.485188 0.478312 0.489778 0.493036
0.489252 0.504073 0.559088 0.572299 0.475002 0.471357 0.463432
0.479640 0.472232 0.497388 0.476424 0.492929 0.524268 0.493469
0.511039 0.496339 0.517062 0.574184 0.527841 0.502906 0.477007
0.486559 0.547243 0.494589 0.496349 0.527698 0.542308 0.498524
0.517437 0.491905 0.468698 0.462852 0.494816 0.501428 0.514780
0.504401 0.486397 0.539952 0.503410 0.468763 0.500093 0.478192
0.507748 0.470364 0.523180 0.473634 0.494587 0.503375 0.483628
0.488719 0.548879 0.577855 0.519112 0.463414 0.478183 0.443888
0.479080 0.467877 0.463742 0.449301 0.554423 0.513390 0.465372
0.475990 0.562584 0.456037 0.489923 0.530756 0.477150 0.495706
0.481349 0.480766 0.559376 0.488803 0.509636 0.473966 0.541033
0.512092 0.516707 0.513498 0.464674 0.520585 0.492753 0.453796
0.535793 0.525615 0.474703 0.440429 0.524850 0.478497 0.452627
0.508701 0.507856 0.478372 0.500959 0.500025 0.467868 0.483711
0.525529 0.535897 0.507493 0.493461 0.486395 0.462579 0.472939
0.453817 0.503386 0.503404 0.476056 0.461947 0.535787 0.464922
0.558430 0.472080 0.488169 0.459858 0.552805 0.490828 0.499585
0.498675 0.521369 0.506262 0.483924 0.488470 0.487291 0.487963
0.532432 0.530248 0.509077 0.518950 0.491282 0.517127 0.497747
0.522713 0.504332 0.493544 0.518065 0.498888 0.470463 0.485829
0.490892 0.527132 0.464994 0.499891 0.478100 0.469121 0.568540
0.450855 0.492052 0.530456 0.494430 0.541140 0.484406 0.525419
0.443525 0.513317 0.444007 0.495239 0.532538 0.513369 0.495363
0.560238 0.509619 0.472261 0.517136 0.503712 0.473203 0.511620
0.503167 0.513755 0.471228 0.522330 0.502540 0.513793 0.462701
0.516293 0.490289 0.488874 0.499730 0.496729 0.514714 0.497013
0.516584 0.502194 0.512724 0.486341 0.560117 0.497955 0.441881
0.457459 0.527408 0.437733 0.500057 0.546244 0.529836 0.528080
0.544580 0.515916 0.524598 0.479972 0.502355 0.496886 0.472183
0.492951 0.482578 0.510888 0.507313 0.573024 0.488079
dhistgram =

```

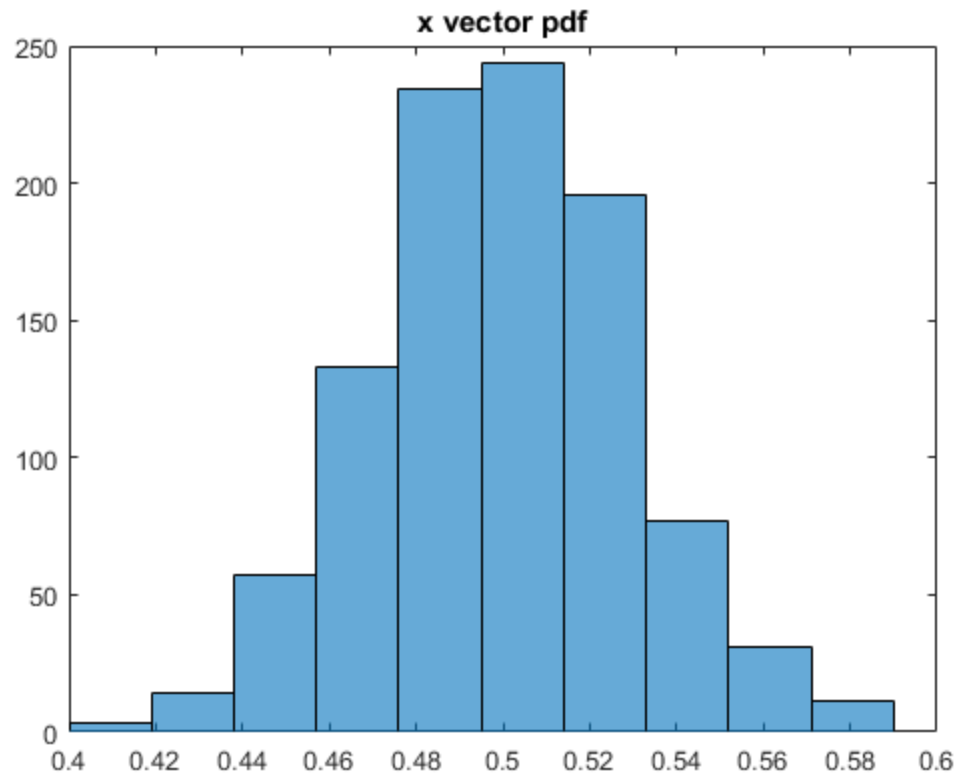
Histogram with properties:

```

    Data: [1x1000 double]
    Values: [510 490]
    NumBins: 2
    BinEdges: [0.4000 0.5000 0.6000]
    BinWidth: 0.1000
    BinLimits: [0.4000 0.6000]
    Normalization: 'count'
    FaceColor: 'auto'
    EdgeColor: [0 0 0]

```

Use GET to show all properties

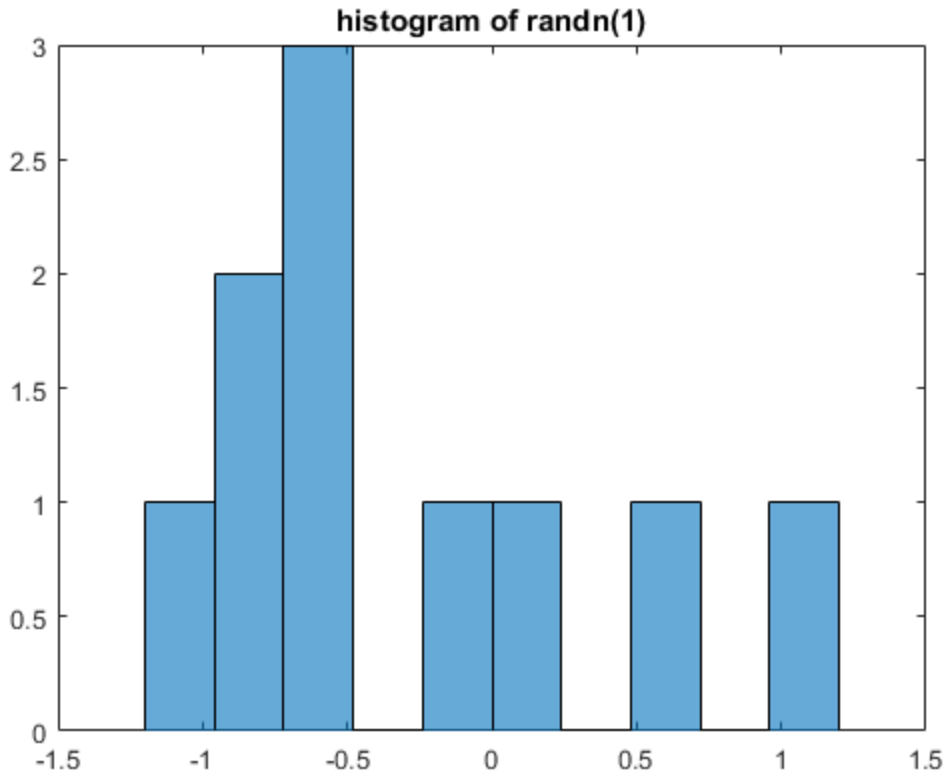


first part of part c of the question

```
% randomly generating 10 numbers
% via rand function of matlab
% using the seed of 1
rng(1);% seeding 1 to the random number generators
Random = randn(1,10);
fprintf('%10.6f',Random)% decimating 6 decimal points after the
    decimal point
figure()
HISTO =histogram(Random, 'BinWidth',1/10);
HISTO.NumBins = 10;
title('histogram of randn(1)')
```



```
-0.649014  1.181166 -0.758453 -1.109613 -0.845551 -0.572665 -0.558681
 0.178380 -0.196861  0.586443
```



part ii of the part c

```
% now we have to increase the size of random vector
% by increasing the size we are confirm it will be uniform

random1000c = randn(1,1000);% increased length vector eith random
    numbers as elements
fprintf('%10.6f',random1000c)
figure()
HISTOc = histogram(random1000c,10,'BinWidth',1/10)
HISTOc.NumBins = 10;
title('randn1000(1)')
```

-0.851887	0.800321	-1.509405	0.875874	-0.242790	0.166813	-1.965419
-1.270071	1.175171	2.029160	-0.275157	0.603658	1.781252	1.773658
-1.865123	-1.051107	-0.417382	1.402162	-1.367747	-0.292535	1.270848
0.066009	0.451290	-0.322210	0.788409	0.928736	-0.490790	1.797201
0.590697	-0.635786	0.603347	-0.535248	-0.155080	0.612122	-1.044343
-0.345632	-1.171405	-0.685587	0.926216	-1.481675	-0.558058	-0.028453
-1.476292	0.258900	-2.018691	0.199740	0.425864	-1.270043	-0.485219
0.594308	-0.276465	-1.857583	0.040731	0.282970	0.063561	0.433430
0.422860	1.299528	-1.049793	-1.786412	0.816043	-0.328209	-1.214566
1.111833	-0.507497	0.898730	0.377216	1.452392	0.446945	0.645825
-0.623677	-0.595236	1.611324	-0.348998	0.164167	-1.636577	0.581366
-0.128906	0.432859	-0.245109	-1.085430	1.680802	0.176412	-2.071440
0.211089	-0.582848	0.018169	1.494778	-0.424797	1.686243	0.365490

-1.097061	1.930213	0.622936	0.657284	-1.463383	0.853935	0.580489
-0.918601	0.794865	0.517535	0.494614	0.663930	-0.710172	-1.306838
-0.741589	-1.467659	-0.391675	0.841659	0.082784	0.314671	0.789805
-0.801224	-0.325654	0.284676	1.309618	0.160373	-2.118188	0.707081
-1.043414	1.068207	-0.317234	1.479677	0.699088	0.159099	-0.945481
-0.793007	-2.049239	-2.358835	-1.659269	-0.958124	0.225730	0.217665
-0.823239	-1.012768	1.215258	0.156275	-0.400257	-0.441779	0.448102
-1.664591	0.214890	0.549563	1.392338	-0.619228	-0.012601	0.773612
1.629212	-1.409975	-1.747283	-0.472246	-0.060088	0.438879	0.201222
-0.583298	0.764797	0.140770	-0.372937	0.105467	1.270624	0.499130
-0.397025	-1.789968	-0.266894	0.178431	-0.434192	0.464513	-1.121445
-0.359075	0.532267	-1.643508	0.466899	0.112107	1.496544	-0.586502
-1.718932	0.741040	1.087696	0.756670	1.629694	-1.374993	-1.052011
0.477518	1.222177	2.370732	0.114586	0.279069	0.752080	-0.260257
-0.025993	0.096724	0.144143	1.856209	1.100335	-0.364107	0.471993
-0.839107	-0.523633	-1.388766	0.004248	-1.404783	2.629018	0.819529
-1.443411	-0.499729	-0.517959	-1.802747	0.988435	-0.360753	1.132659
0.409018	0.819121	0.319661	2.415006	-0.114032	0.118016	0.999691
-0.357659	-0.055026	0.241456	-2.735180	0.193514	-0.145396	1.454576
-0.396689	1.728903	0.251893	-0.618553	0.976329	0.130991	-0.364357
-0.093312	0.489806	1.401431	-0.274223	0.675816	0.190581	0.670363
0.208357	0.327875	-0.823197	0.331906	0.343914	0.379748	1.088939
0.994859	0.208610	-0.399188	0.506011	-0.127763	-0.254921	-0.078043
-0.314649	-0.308418	0.401268	-0.129421	1.327683	0.670787	-0.691715
-0.049218	-0.326731	0.303248	2.056500	1.707191	0.510742	-0.187689
-0.589429	1.143276	0.130368	0.586463	0.103399	0.264541	0.054799
0.221252	0.091006	-0.150115	-0.561297	-1.799185	-0.470727	-0.902588
0.547841	-0.735208	1.475863	0.505823	0.692664	0.134881	-1.068780
-0.167592	-0.462884	-1.263564	0.420394	-0.324321	1.341096	1.213663
-0.502785	-1.116363	-0.922072	-0.001042	0.153490	-0.903970	-0.938332
0.433891	-0.153153	0.402438	-0.652552	-1.957691	0.067693	-0.047320
-0.696919	0.457548	0.079304	0.479593	-2.360392	0.444008	-0.324989
0.097206	1.114805	-1.157063	-0.475713	0.522585	0.887144	0.016548
0.902542	1.154784	0.872534	-0.469163	0.596529	0.836092	0.304493
1.155324	-1.571514	1.636478	0.554831	-0.585432	-0.510444	0.492702
-0.650826	0.926873	-0.188116	0.320829	1.420298	-1.189962	-0.928444
1.309552	0.115346	2.828126	0.274099	0.115688	-1.070368	-0.709702
-1.513138	-1.136958	1.272192	-1.144058	-0.526164	1.578178	0.578636
0.578573	-1.422806	-0.190392	0.186023	1.483995	-0.679469	-0.530061
-0.859494	1.306356	-0.086330	-2.150373	0.025232	-1.135619	0.714953
-0.616843	-0.955457	0.135560	0.637969	-0.366977	1.061410	0.056378
0.085413	1.836021	0.675363	-1.545835	0.353632	-0.092440	0.638395
-0.862960	-0.886446	-1.223166	-0.185643	-1.720509	0.151805	0.816508
0.577798	1.063851	-0.803239	0.798627	-0.315092	1.186064	0.084939
-1.424976	-1.454111	-1.809316	-1.462947	-0.138068	-1.005592	-2.733304
1.692405	-0.283386	1.122142	-0.306948	-0.168531	-0.081308	-0.037718
2.091389	-0.410630	2.957570	-1.687389	0.290257	-1.469352	0.449062
-1.695895	0.060461	-1.147612	1.993936	0.920892	1.622701	-0.487547
-1.195582	-1.419470	0.468220	1.329924	2.304717	0.851429	0.521839
3.201293	-0.330453	-0.896356	-0.993950	-1.871669	1.497869	-1.632447
-0.851817	1.077400	-0.440099	3.327984	0.103796	-0.773079	0.677374
-0.696817	-0.075351	0.026019	2.005536	-1.129631	0.654237	1.419167
-0.825613	0.053107	-0.855855	1.768118	0.182871	0.431022	-0.228818
0.393997	-0.525875	-2.446960	0.155245	-0.834079	0.078468	1.312710

-0.135124	-1.409995	-0.162703	2.109836	1.462586	0.914106	1.512145
-0.454165	-1.139403	-0.705497	-0.331098	-1.520792	0.165279	-0.487870
0.586965	-0.903369	0.371008	-1.260143	0.222889	-0.413064	-1.016668
-0.326023	0.283502	-0.011569	0.036267	-1.098303	0.375683	0.170055
1.139668	1.657464	0.338248	-1.818971	-0.802271	-0.574424	-0.234256
-0.305201	1.639446	-1.897236	1.318520	0.532359	0.601598	0.467189
0.208181	-0.057599	-3.065186	-0.612494	-0.016162	0.776900	-0.090006
-0.148789	-0.887773	-0.776091	0.629228	-1.315840	0.898735	-0.825132
-0.575501	0.025326	0.562567	-0.172096	-0.648153	-0.153145	0.017124
0.827807	0.698925	-1.006189	-2.244176	0.102301	0.901808	-3.005798
0.659237	0.760341	-0.169916	0.708616	0.628756	-0.763568	1.187671
1.163956	0.437910	0.764358	0.172088	-0.635979	0.263635	0.557991
-0.323506	0.238930	-0.668543	0.542180	-0.734938	0.616388	-0.228798
0.821000	-0.155227	-1.308308	0.777575	-1.180115	0.287776	0.449292
-0.536068	-0.920966	-0.686498	-1.092870	-0.488991	-0.918765	-2.031704
0.639006	1.135888	-0.785609	-1.012202	-1.008377	1.521160	0.663270
0.071216	-0.584426	1.014640	-0.226944	0.644054	0.200877	-0.029035
-0.992314	1.983578	-0.939563	-1.609478	-0.219788	-0.277410	-0.880145
0.583931	-0.363930	0.416690	1.286826	-1.403915	0.444248	1.440858
0.332877	0.515995	-0.232061	0.602345	0.612538	-0.392011	0.710826
-1.894823	1.358329	-0.911798	-0.149636	-0.401140	-0.577582	2.003854
-0.509643	0.088893	-0.019698	-0.738074	-1.152164	-1.947602	0.026296
-0.825893	-0.717992	-1.940978	0.987546	-1.663117	2.063314	-2.082036
0.273162	-2.376736	0.379466	-0.991320	0.094217	0.643802	-0.782961
0.148621	-0.920779	1.191122	0.980936	-0.723429	2.334377	-2.551227
0.902509	0.227135	-0.351252	0.527464	0.874846	3.068098	-0.618881
0.757522	1.028627	0.052840	0.210857	1.152476	-0.352294	0.515560
0.962176	0.387157	-0.225196	0.249426	-1.916009	0.711205	1.562903
-0.825379	-0.568134	-0.723674	-1.008999	0.730514	0.085210	-0.427966
-0.596362	-0.745602	0.642888	-0.193149	-0.125760	-0.073857	1.122151
-0.252944	-0.395011	0.393903	-0.678536	-0.165741	-0.509151	0.489158
1.226135	-0.152181	0.838969	-0.066415	0.882032	-0.614498	-0.113187
0.752232	0.502254	1.771514	0.025691	-0.005188	1.034393	-1.602583
0.322434	2.312027	0.025913	-0.509970	1.390458	-1.457564	0.666306
0.224730	2.098755	0.479445	0.650313	-1.726147	1.603671	-0.546180
-0.510315	2.098672	1.021840	-0.204025	-1.148959	1.057324	-0.070703
-1.661645	1.725458	0.981133	-0.018408	1.300162	-0.282012	0.242475
-0.273552	0.018418	-1.537433	2.541337	-0.425990	-1.305117	-0.607644
-1.881951	0.389123	0.027765	0.014656	1.476658	0.253200	0.653493
-0.165081	0.536320	-0.559253	-0.431607	-1.870828	-0.473182	-1.195105
-0.294704	0.711937	-0.317180	1.345581	0.431573	-0.290225	0.804784
0.349499	-0.674941	1.159802	-0.038383	-0.497727	-0.165461	0.255275
-0.514031	1.049777	-0.297014	0.207544	-0.016294	0.885397	1.700280
-1.692024	0.187102	1.299425	-0.177342	1.266924	-0.642952	0.588980
0.491726	-0.317791	-1.080348	-0.236695	1.037509	-0.505673	1.149250
-1.658338	-0.658551	-1.174728	0.405981	0.561162	0.763683	-0.251252
0.580274	-0.859688	-0.241693	-0.235381	-0.518473	-0.949763	0.239594
0.558733	0.350337	0.275183	-1.081674	-1.534654	0.024216	1.571428
-2.038232	-0.205198	-0.179022	-0.010316	-1.244388	-0.704389	-1.094266
1.129088	1.118448	-0.225268	0.071858	-1.379221	0.029911	-0.397478
1.691775	0.755117	0.523884	-0.474369	-0.019750	3.137981	1.552722
0.062457	0.446259	0.216111	-0.165013	-0.261181	0.128395	0.842844
0.764314	0.220261	1.040580	-1.324760	0.635503	-1.677369	-0.314410
-0.596958	0.417571	-2.304534	-0.775047	-1.620703	0.427633	0.236062

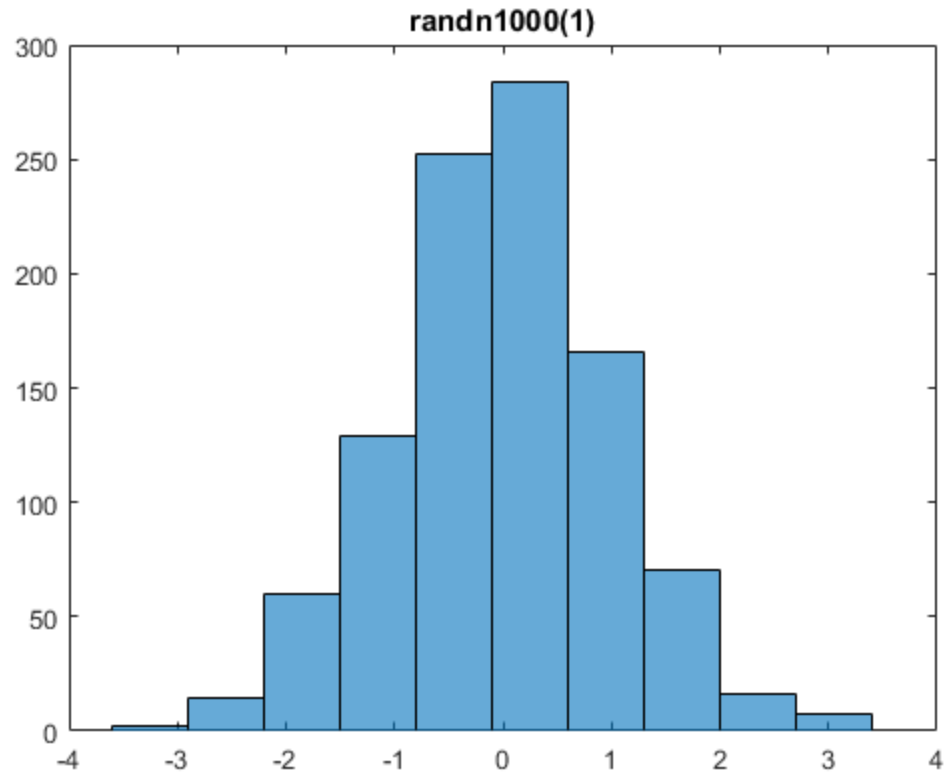
```
-0.179066 -0.206452 1.218866 -0.039144 0.078823 -0.684109 0.108209
-0.193160 -0.181832 -0.400381 -0.209644 -0.103754 1.330781 -0.541981
0.979114 0.275543 1.449138 -0.307006 -0.726711 1.278873 -2.764208
-0.568166 2.763304 0.060634 -2.063403 0.030640 0.326295 0.731459
1.354879 -0.215322 0.536494 0.574383 -0.015417 0.059954 -0.917658
-0.524292 -1.050423 0.306080 -0.057590 -0.177815 1.481890 0.131511
-0.052032 -0.550095 -1.733962 -0.387419 -2.365146 -0.571256 0.010069
1.255723 -0.820761 0.305460 -0.000029 -2.243771 -1.863345 -0.195606
1.225722 -0.603548 0.678204 -0.726321 -1.072731 -1.302486 -0.229620
-0.656655 0.381522 -1.448788 -0.978113 -1.224376 -1.077053 0.623583
-0.457896 -0.561759 0.136208 1.021503 1.936089 1.561356 1.359023
-1.864756 -1.717061 -0.061872 -0.705292 1.107436 -0.044768 0.118538
0.878220 -0.079947 0.590146 -0.554747 -0.615667 -0.689040 0.116539
-0.855605 0.796908 -2.464211 -0.474592 0.563042 -0.552889 -0.294927
0.124951 0.109075 -1.119832 0.472949 1.778637 0.800018 -0.658022
0.107852 -0.517307 0.119842 1.930902 -0.532678 0.922536 -1.036749
0.279650 -0.523115 0.546274 0.705333 0.468460 -0.100024 -1.067891
-2.588719 -0.448819 -1.440259 0.934778 0.375977 -0.251271 0.496861
0.092671 -1.964326 -0.401108 -1.093911 -0.678303 -1.970043 0.307210
0.046920 0.215869 -0.237293 1.666002 -0.222967 -1.370886 0.856108
0.721929 0.712895 0.644424 -1.294450 -0.827930 -0.564768 -0.228959
0.855717 -1.301764 -0.073907 -2.197588 0.864011 0.645328
```

HISTOc =

Histogram with properties:

```
Data: [1x1000 double]
Values: [1x65 double]
NumBins: 65
BinEdges: [1x66 double]
BinWidth: 0.1000
BinLimits: [-3.1000 3.4000]
Normalization: 'count'
FaceColor: 'auto'
EdgeColor: [0 0 0]
```

Use GET to show all properties



second part of the question

```
% ACF for part a

[normalizedACFa, lagsa] = autocorr(random1000a, 10);
[normalizedACFb, lagsb] = autocorr(X, 10);
[normalizedACFc, lagsc] = autocorr(random1000c, 10);
disp('Normalized Autocorrelation for sequence in part a')
normalizedACFa
disp('Normalized Autocorrelation for sequence in part b')
normalizedACFb
disp('Normalized Autocorrelation for sequence in part c')
normalizedACFc

% filter first order system with time constant 1

t = 0:0.1:10;
ht = exp(-t);
y = conv(ht,random1000a);

% Auto correlation of y
[normalizedACFy, lagsc] = autocorr(y, 10);

disp('Normalized Autocorrelation for filtered sequence of a ')
```

```

normalizedACFy
figure()
stem(normalizedACFa)
title('ACF of not filtered sequence')
figure()
stem(normalizedACFy)
title('ACF of filtered sequence')

```

Normalized Autocorrelation for sequence in part a

normalizedACFa =

Columns 1 through 7

```

1.0000   -0.0278    0.0631   -0.0462   -0.0141   -0.0164   -0.0299

```

Columns 8 through 11

```

-0.0589    0.0065    0.0262    0.0020

```

Normalized Autocorrelation for sequence in part b

normalizedACFb =

Columns 1 through 7

```

1.0000   -0.0208   -0.0086    0.0025   -0.0400    0.0095   -0.0421

```

Columns 8 through 11

```

0.0033   -0.0008   -0.0310    0.0128

```

Normalized Autocorrelation for sequence in part c

normalizedACFc =

Columns 1 through 7

```

1.0000   -0.0197    0.0522   -0.0243   -0.0330   -0.0029   -0.0104

```

Columns 8 through 11

```

-0.0101    0.0256    0.0292    0.0045

```

Normalized Autocorrelation for filtered sequence of a

normalizedACFy =

Columns 1 through 7

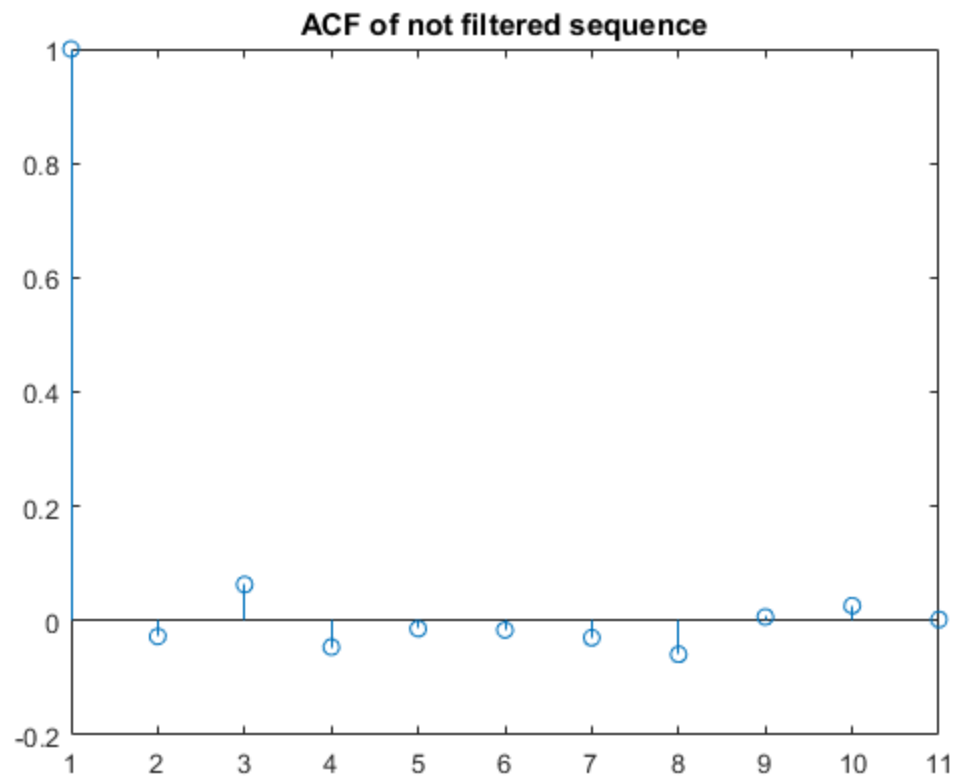
```

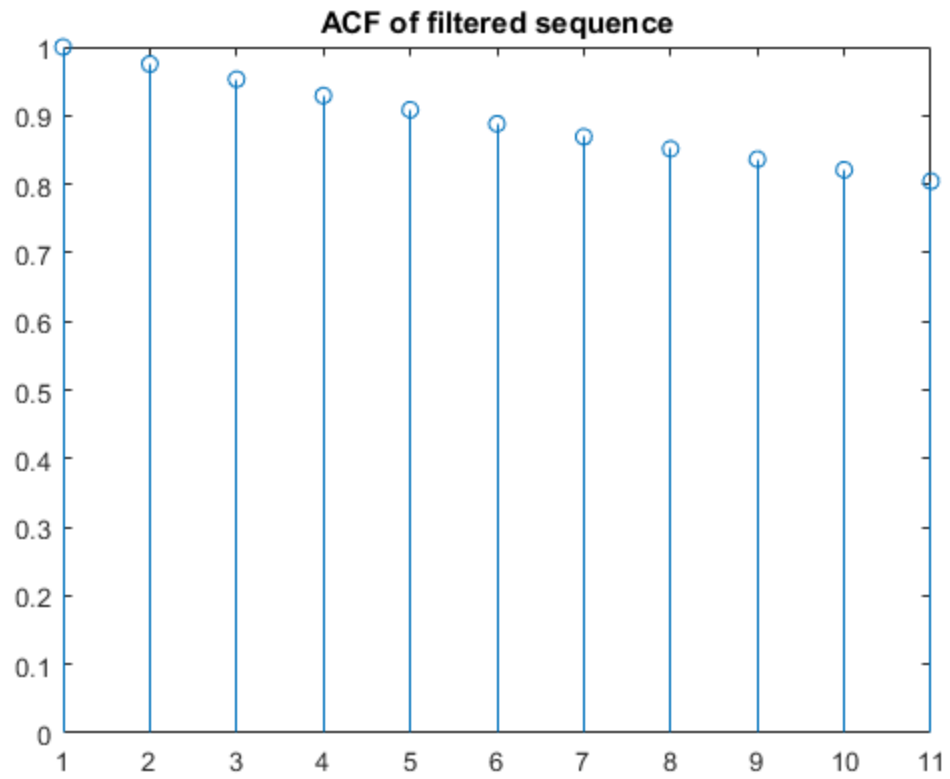
1.0000    0.9752    0.9529    0.9291    0.9084    0.8881    0.8692

```

Columns 8 through 11

0.8516 0.8365 0.8210 0.8044





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