

Fortran Assignment

Q0)

```
kaustavdutta@kaustavdutta-HP-Laptop-15-fc0xxx:~/Downloads$ gfortran q0.f
kaustavdutta@kaustavdutta-HP-Laptop-15-fc0xxx:~/Downloads$ ./a.out
Kaustav Dutta
Integer:      69
Float:  15.6700001
Double Precision:  19.653242111206055
```

Q1a)

```
kaustavdutta@kaustavdutta-HP-Laptop-15-fc0xxx:~/Desktop/fortran$ ./a.out
0.30193609335681737
0.23183956874449785
0.39648851851703726
0.84231989000980156
0.90524038415289387
0.89400761385256533
0.69182142604255747
0.70165327318396642
0.66619049781568696
0.52521159222885216
```

q1b)

0.1284

0.7198

0.8095

0.0920

0.7095

0.9820

0.8301

0.4408

0.5718

0.2607

Fortran Assignment

q1c,d)

0.130768120

0.347710967

0.611653209

0.212184787

9.25900340E-02

0.670266688

0.875639260

0.812960207

0.182952404

0.182494223

Changing seed and generating 10 new random numbers

q1e)

```
kaustavdutta@kaustavdutta-HP-Laptop-15-fc0xxx:~/Desktop/fortran$ ./a.out
Average= 0.453657717
kaustavdutta@kaustavdutta-HP-Laptop-15-fc0xxx:~/Desktop/fortran$
```

q1f)

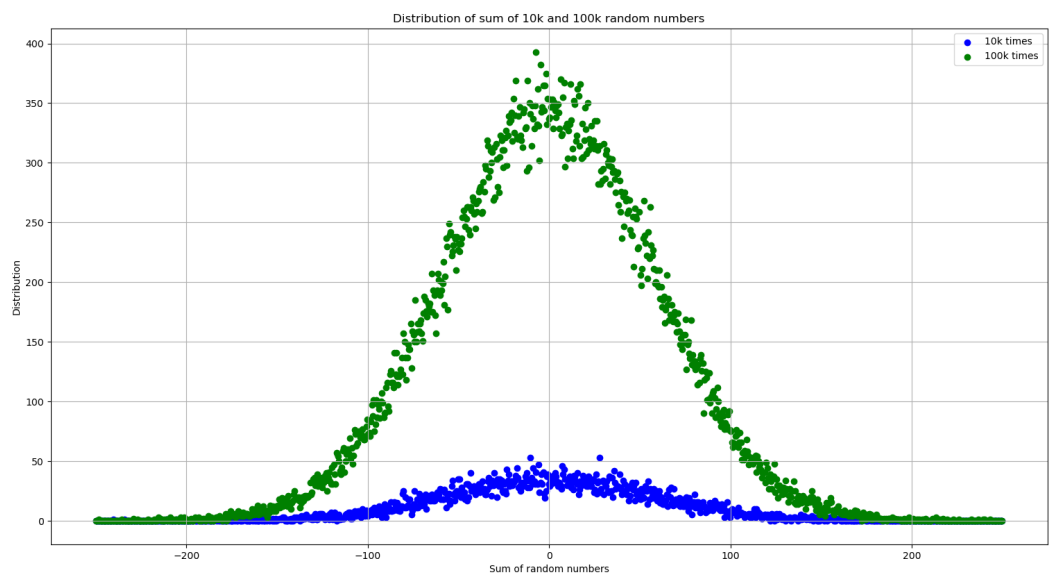
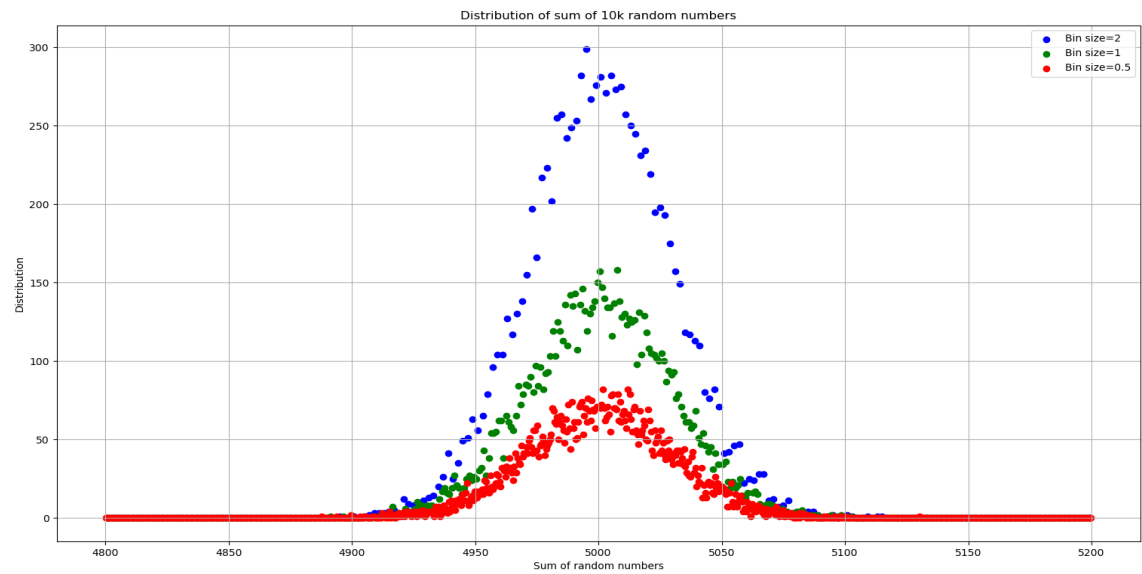
```
kaustavdutta@kaustavdutta-HP-Laptop-15-fc0xxx:~/Desktop/fortran$ ./a.out
Average of      100 random numbers: -4.14898507E-02
Average of    10000 random numbers:  7.30447378E-03
Average of   1000000 random numbers: -1.29645676E-04
```

q1g)

```
kaustavdutta@kaustavdutta-HP-Laptop-15-fc0xxx:~/Desktop/fortran$ ./a.out
Size:      100
Average:   -3.1465125134042149E-002
Absolute difference from 0.50: 0.53146512513404209
Size:     10000
Average:   -8.1812601483465773E-003
Absolute difference from 0.50: 0.50818126014834653
Size:    1000000
Average:    1.0967914642643862E-004
Absolute difference from 0.50: 0.49989032085357354
```

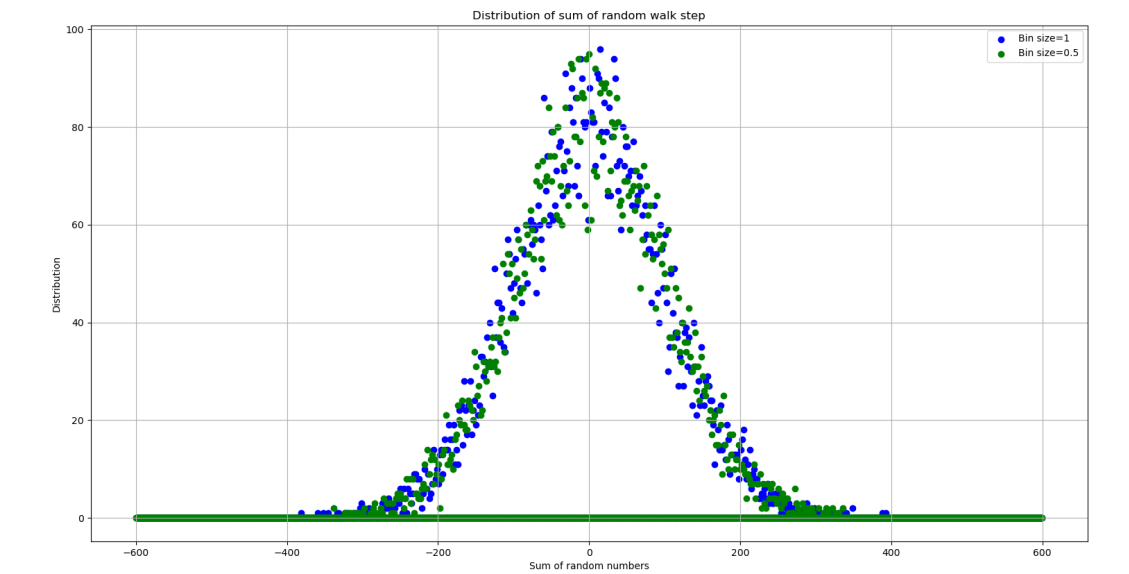
q1h)

Fortran Assignment

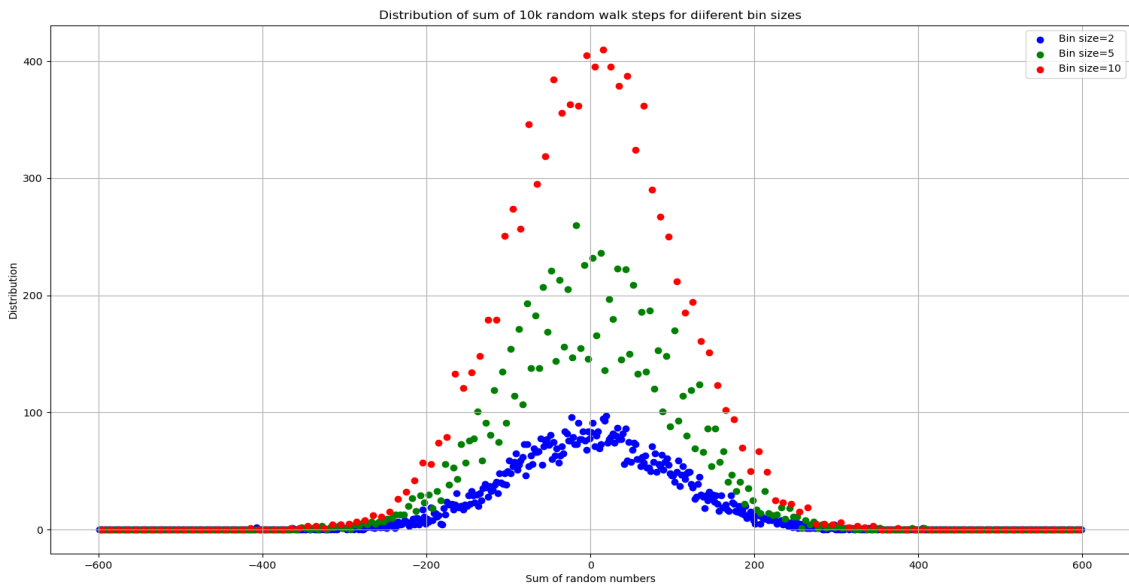


q1i)

Fortran Assignment

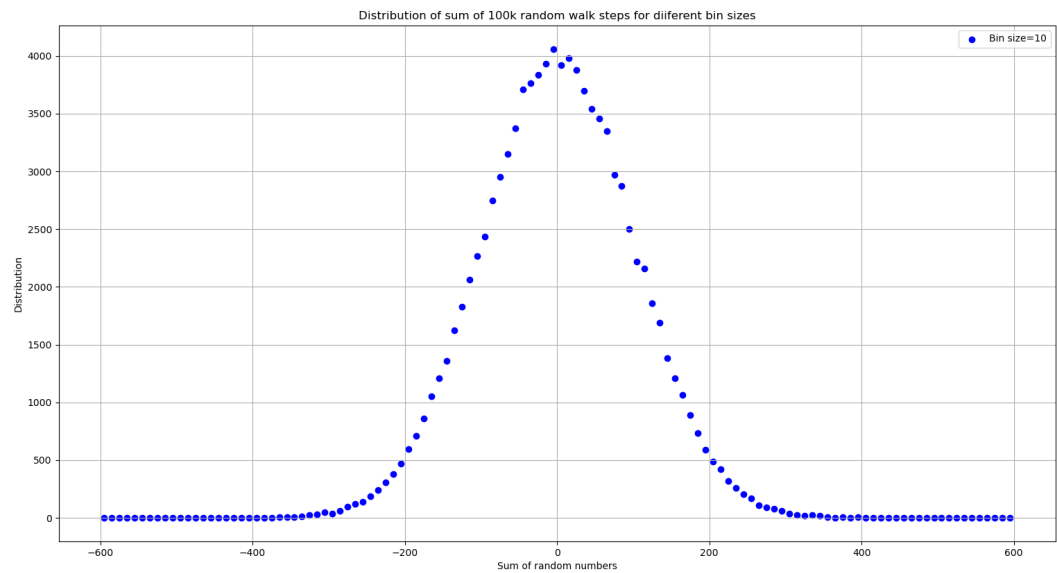
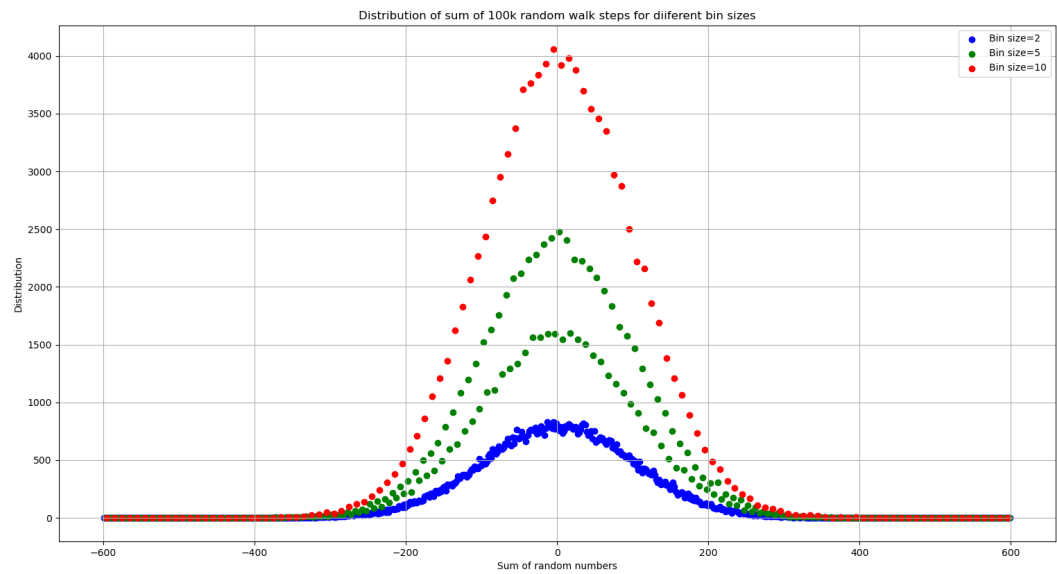


q1j)



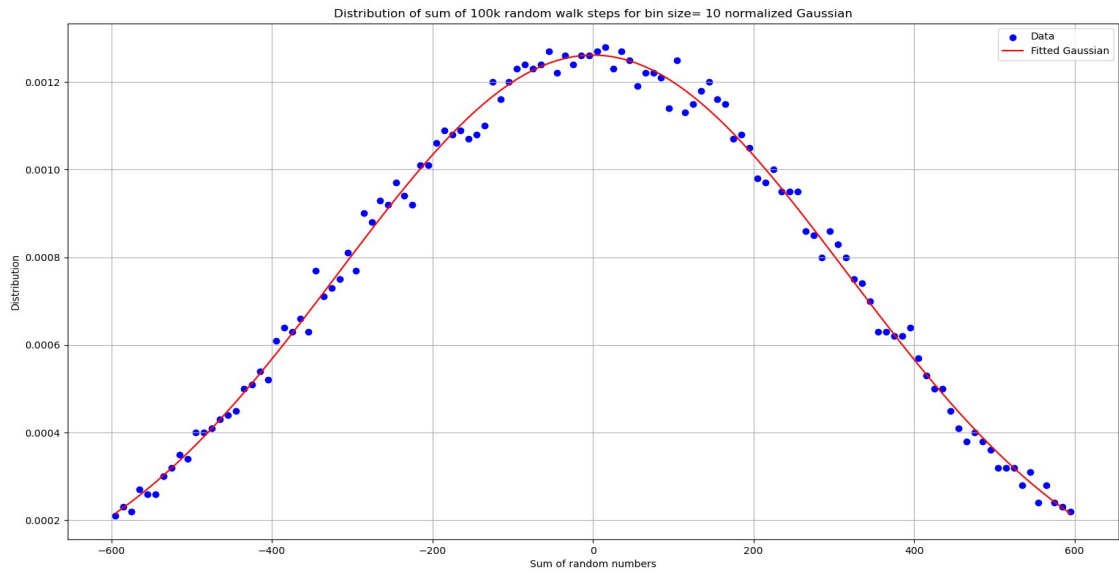
q1k)

Fortran Assignment

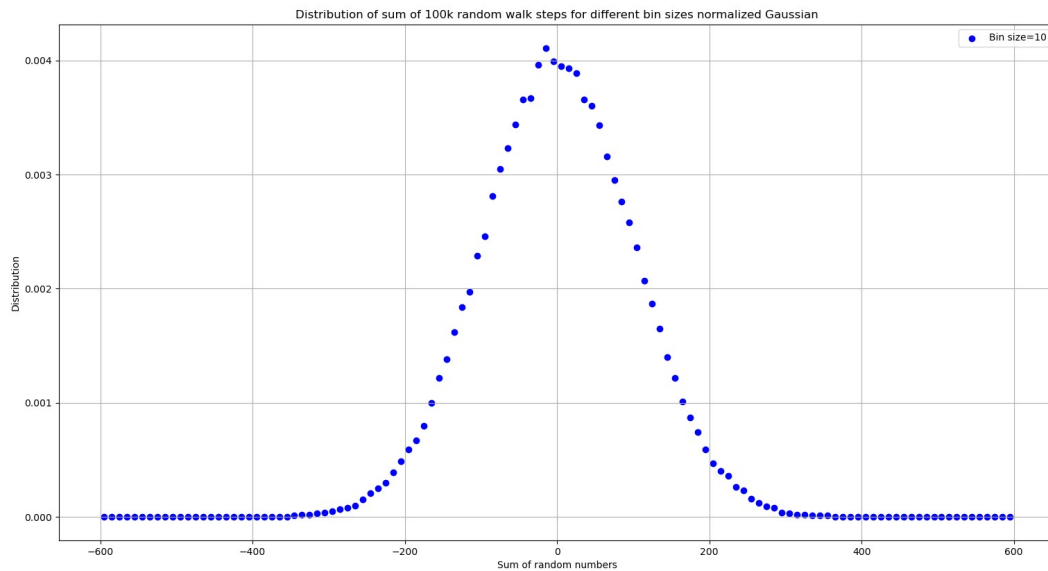


Fortran Assignment

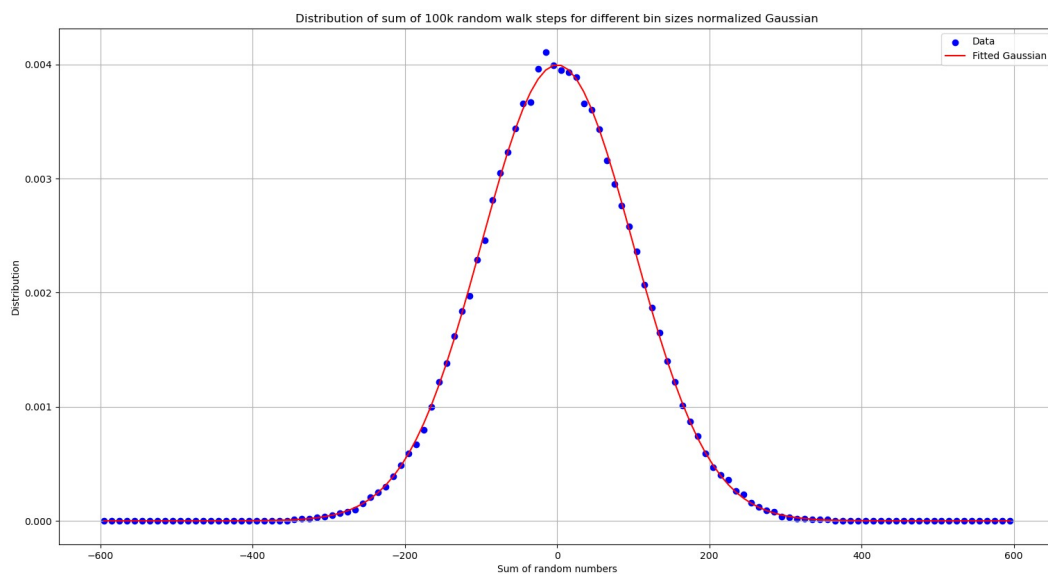
q11)



Fortran Assignment



q1m)



Fitting of 1k question

```
kaustavdutta@kaustavdutta-HP-Laptop-15-fc0xxx:~/Desktop/fortran$ python3 q1k_norm_fit.py
Area under the curve: 0.9998666666666667
Fitted parameters: Amplitude = 0.003996108401798943, Std Dev = 99.81594146556161
```