

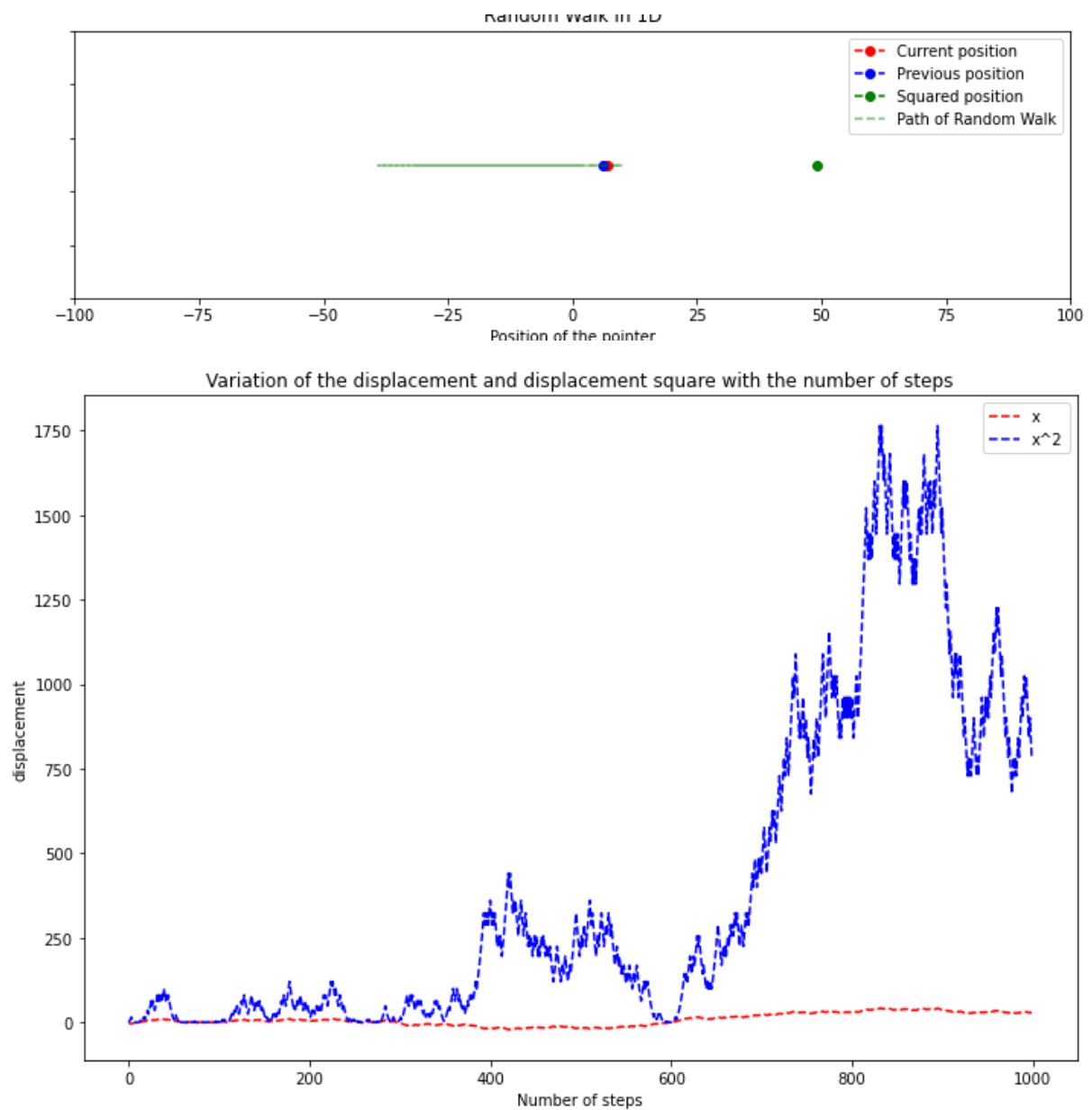
CVL 867

Atomistic and Multiscale Modelling of Materials

Assignment 02

Submitted by: Aman Pawar

Answer 01:



Answer 02

Part - I Averaging multiple simulations

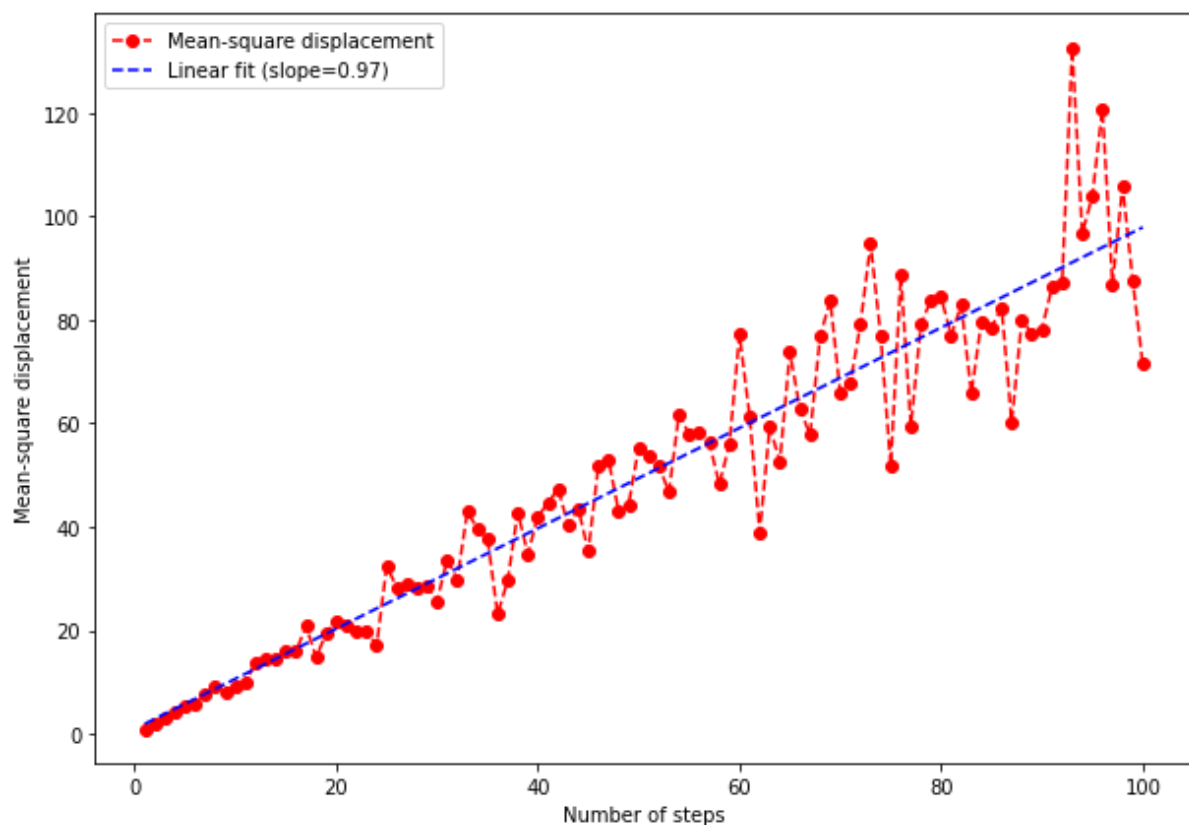
Final positions of first 10 Random Walks : [24, -30, 26, -8, -18, 6, -6, -2, 2, -30]

Part - II Computing mean square displacement

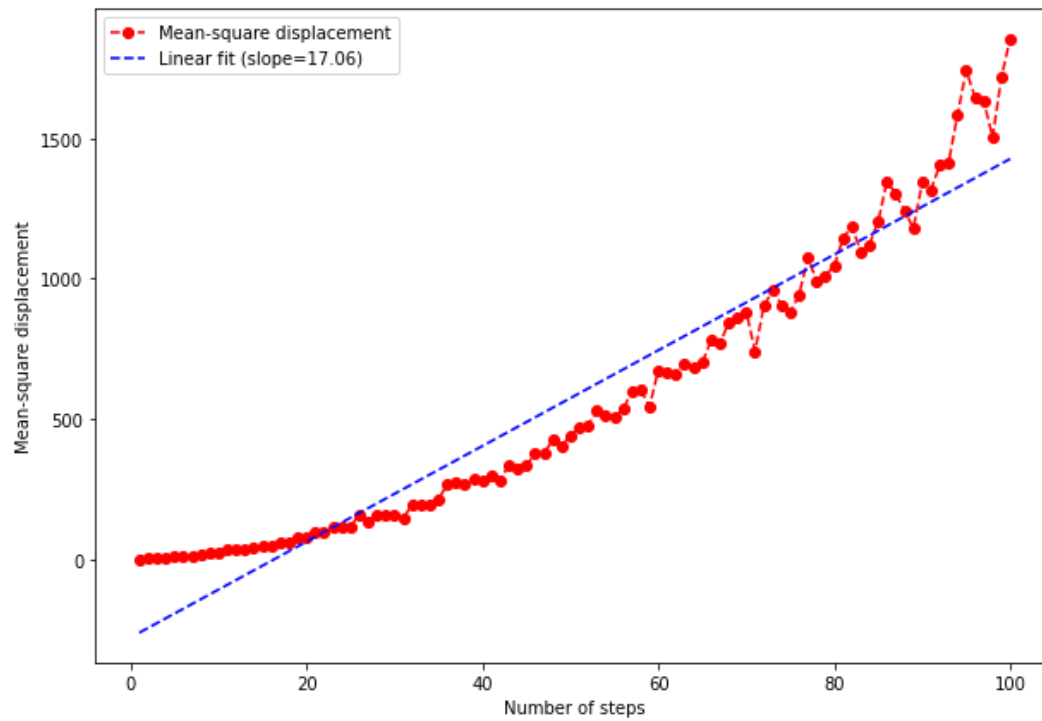
The mean squared displacements of 100 1D random walks are: 869.2

Part - III Checking the MSD tends to a linear function of the number of steps with a unity slope

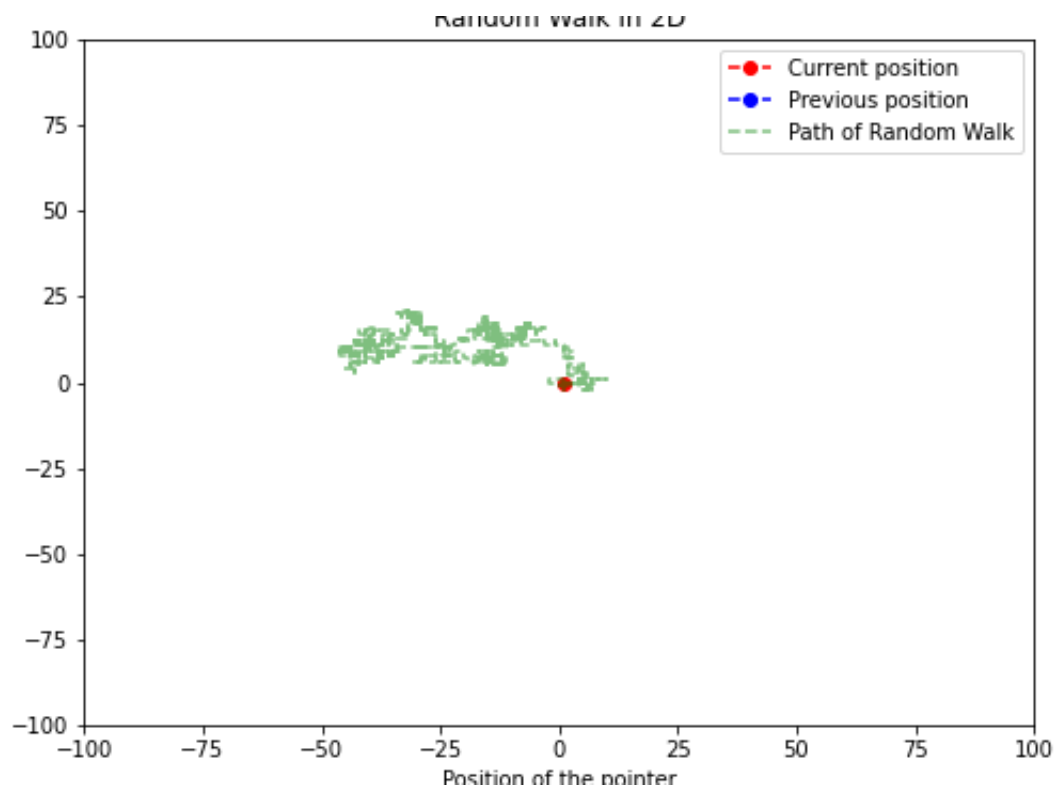
The slope of the line will give us the diffusion coefficient, which should be 1 if the MSD is proportional to the number of steps.



Answer 03



Answer 04



Answer 05

The collision of the sailors happened at step: 73

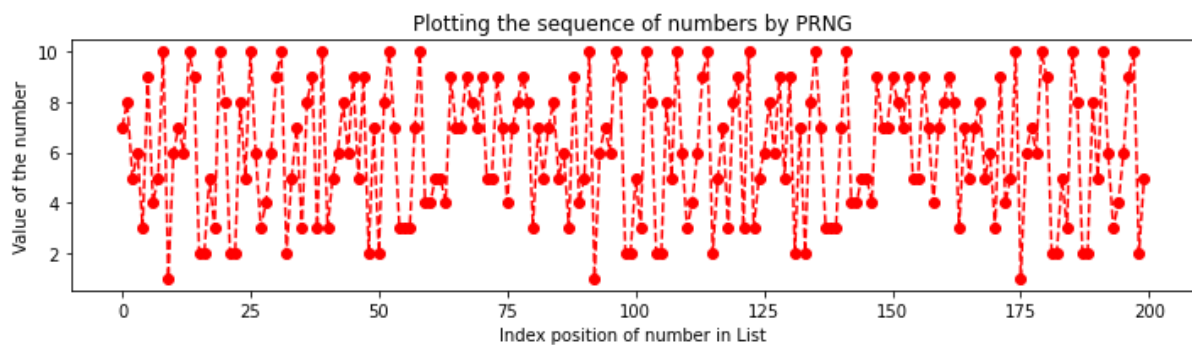
Part - II performing multiple simulations determine the average number of steps after which the two sailors bump into each other

The average number of steps after which the two sailors bump into each other is 112.0

Answer 06

The first 10 generated random numbers are :

[7. 8. 5. 6. 3. 9. 4. 5. 10. 1.]



The period of the list of random numbers generated is: 83

The sequence is : [7. 8. 5. 6. 3. 9. 4. 5. 10. 1. 6. 7. 6. 10. 9. 2. 2. 5.

3. 10. 8. 2. 2. 8. 5. 10. 6. 3. 4. 6. 9. 10. 2. 5. 7. 3.

8. 9. 3. 10. 3. 5. 6. 8. 6. 9. 5. 9. 2. 7. 2. 8. 10. 7.

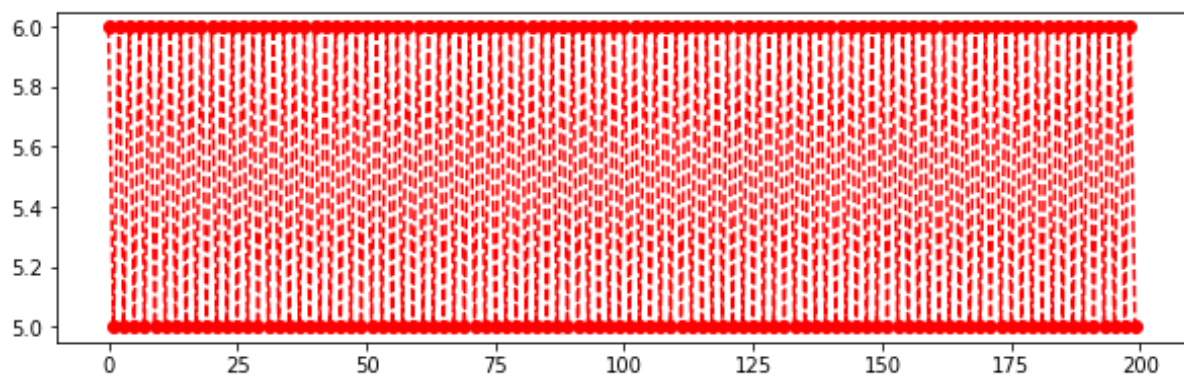
3. 3. 3. 7. 10. 4. 4. 5. 5. 4. 9. 7. 7. 9. 8. 7. 9. 5.

5. 9. 7. 4. 7. 8. 9. 8. 3. 7. 5.]

The minimum value of a : 166

Corresponding period: 100.0

Plot for the verification of above results



Thankyou.. 😊