```c
1 //Name: Akshay Anand EE16B046
2 //Assignment 4: Random Number generator according to given formula using arrays
3 //13/9/16
4 #include<stdio.h>
5 #include<math.h>
6 #include<stdlib.h>
7 int main(int argv,char **argc)
8 {
9   if(argv>3)                                          //If more than 3 arguments (including a.out) exit from program
10    {
11      printf("More arguments given.... exit!!!");
12      return 1;
13    }
14   else
15    {
16      long int a=atoi(argc[1]);                        //Converting string in argc to integers
17      long int n=atoi(argc[2]);
18      long int no=a,b[50000],c=pow(2,32);
19      b[0]=a;                                          //Initialising first number with the seed value
20      double s1=a*a,s2=a;                              //initialising s1 and s2 for mean and standard deviation
21      double stddev=0,avg;
22      printf("1: %ld",a);                              //First no(seed) is displayed
23      for(int i=1;i<n;i++)
24       {
25         b[i]=(1103515245*b[i-1]+12345)%c;            //calculating array elements with given formula
26         s1+=pow(b[i],2);                             //calculating s1 and s2 (s1: sum of squares) (s2: sum of numbers)
27         s2+=b[i];
28        printf("\n%d: %ld ",i+1,b[i]);               //Displaying the random numbers
29       }
30      avg=s2/n;                                        //calculating mean and std devn(line: 31)
31      stddev=sqrt(s1/n-(avg*avg));
32      printf("\nSeed provided: %ld\nAverage: %lf \nStd Deviation: %lf \n",a,avg,stddev);    //Displaying mean and std deviation
33    }
34   return 0;
35 }
```

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9962: 1176102482
9963: 2996845859
9964: 216850976
9965: 2994878425
9966: 4182513054
9967: 707758207
9968: 1124991052
9969: 1473607829
9970: 2296376746
9971: 2101226907
9972: 3863008568
9973: 3957459217
9974: 2720479862
9975: 734529655
9976: 1506413796
9977: 2806850893
9978: 600082434
9979: 3484071187
9980: 1317868368
9981: 2916337993
9982: 3254198862
9983: 956403567
9984: 3728217212
9985: 134656261
9986: 2745636186
9987: 4097946507
9988: 758119528
9989: 2093373569
9990: 3291557158
9991: 370539879
9992: 1060927252
9993: 2256468925
9994: 2784163250
9995: 3908765955
9996: 1794371712
9997: 1613010617
9998: 2711010046
9999: 3634049631
10000: 2548536492
Seed provided: 5
Average: 2155640417.424800
Std Deviation: 1243215268.836873
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9962: 3396526891
9963: 3529769864
9964: 1356407073
9965: 2500942150
9966: 2478475015
9967: 4059680820
9968: 1627762269
9969: 2205795282
9970: 3673066659
9971: 259898272
9972: 2775831385
9973: 3431746334
9974: 2379436031
9975: 1670574540
9976: 4211428373
9977: 2880305962
9978: 135720219
9979: 2883804856
9980: 1895535761
9981: 2072551414
9982: 1747795959
9983: 1422634596
9984: 1865672909
9985: 1167508866
9986: 1441522835
9987: 2445757648
9988: 69420233
9989: 3194992590
9990: 2531669743
9991: 2426168828
9992: 378692741
9993: 3134423770
9994: 2357809931
9995: 3007833576
9996: 4145660929
9997: 3916886694
9998: 2012746983
9999: 2091481236
10000: 2371723069
Seed provided: 2178
Average: 2140303275.381600
Std Deviation: 1244011444.890213
akshay681@akshay681-Inspiron-5559:~/Desktop/C_programs$
```

```
9962: 3042547481
9963: 3112510430
9964: 2857507263
9965: 4052179084
9966: 467897301
9967: 1882955754
9968: 219714267
9969: 1083666808
9970: 3755872337
9971: 707514550
9972: 4043538871
9973: 2056138020
9974: 2384617613
9975: 2015117890
9976: 3242492499
9977: 152237968
9978: 2917234825
9979: 3199221902
9980: 3767201967
9981: 2262301884
9982: 1851790405
9983: 2004080538
9984: 52422859
9985: 2777032872
9986: 1953673153
9987: 1990710118
9988: 247613095
9989: 2255038292
9990: 62490365
9991: 3251486706
9992: 474129987
9993: 4057687232
9994: 2140968441
9995: 1123281214
9996: 4141835167
9997: 2574388460
9998: 497845
9999: 1690393418
10000: 895523515
Seed provided: 936
Average: 2128210418.757600
Std Deviation: 1241994524.237888
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```