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Class: BCSE II Sem:First
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Assignment Set: 1 **Problem No.** 3

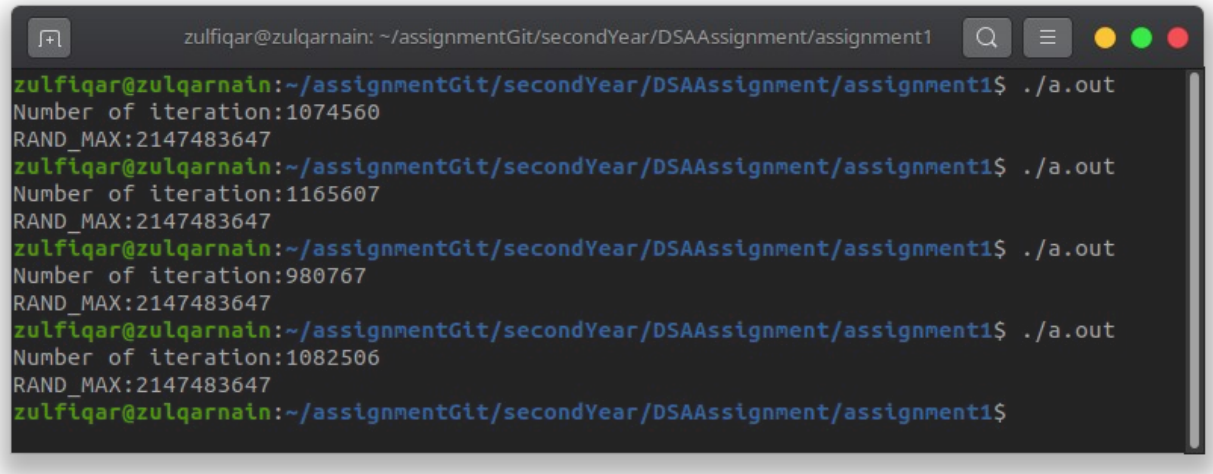
Problem Statement: Write a program to generate 1,00,000 random integers between 1 and 1,00,000 without repetitions and store them in a file in character mode one number per line. Study and use the functions in C related to random numbers.

Solution Approach:
C library function srand() and rand() is used to generate random numbers. It generates random number from the range [0,RAND_MAX), In my case it's found that RAND_MAX=2147483647, (Look the result section). So moduolo of 100000 is taken. An array of 100000 zeros taken to confirm no repitation, each time a number is generated, number at that index is assigned to 1.

Structured Pseudocode:

```
srand(current_time)
arr[100000]=0 //all elements assigned 0
count=100000
while count>0 :
        temp = rand()%100001
        if arr[temp]==0 :
                arr[temp]=1
                write temp to file
                count = count-1
        end if
end while
end program
```

Results:



Discussion

Number of iteration is counted and printed along with writng non repeated numbers in a separate file. We see the loop is continued almost 10 times than total unique numbers. It’s because rand() produced numbers in the range [0,2147483647), when modulo is taken , numbers are repeated because of the modulo.

Separate files containing commented source code:
source code assignment4.c is attached .