**NOSH Robotics – Assignment**

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**Q-2 C program in an online compiler, 1. Use timer to simulate data generated by external sensor. Setup the timer to trigger every second and generates random number (0 to 5) of random bytes and adds this to a globally accessible data structure. 2. Separately wake up periodically (every 10s), checks if 50 bytes are stored in the globally accessible data structure and prints only the latest 50 bytes (in hex value) and deletes the printed bytes from the data structure.**

**3. For example, 1st second 4 bytes are added, 2nd second 3 bytes are added and 10th second there are 39 bytes are in the buffer. Thus at 10th second data is not printed. At 20th second, if there are more than 50 bytes in the buffer, the main thread only prints the latest 50 bytes and deletes them.**

I used 2 functions, 1st to generate random number of bytes (0-5) and in turn random bytes of that particular number (every 1 sec), and 2nd function will print the latest 50 bytes stored in the global data structure ‘unsigned char a[1000]’ in hexadecimal (every 10 secs). I am using ‘sleep()’ function from the library ‘unistd’ to simulate the delay. I have attached the screenshots of the output after 30 seconds.

**Code:  
#include<stdio.h>**

**#include<stdlib.h>**

**#include<unistd.h>**

**unsigned char a[1000];**

**int size = 0;**

**void gen\_data(){**

**int n = rand()%6; //random from 0-5**

**for(int i=0;i<n;i++){**

**a[size++] = rand()%256; //random value between 0-255**

**}**

**printf("Generating %d byte of data - Total size = %d bytes",n,size);**

**// for(int i=0;i<size;i++){**

**// printf("%d ",a[i]);**

**// }**

**printf("\n");**

**}**

**void print\_data(){**

**if(size>=50){**

**printf("Size greater than 50 bytes, printing the latest 50 bytes\n");**

**for(int i = size - 50; i < size; i++){**

**printf("%02X ",a[i]);**

**}**

**size=size-50; //reducing buffer size**

**printf("\n");**

**}**

**else{**

**printf("Size is less than 50 bytes, wait another 10 seconds\n");**

**}**

**}**

**int main(){**

**int s = 0;**

**while(1){**

**sleep(1); //1 second delay to generate random bytes**

**s++;**

**gen\_data();**

**if(s%10==0){ //every 10 second**

**print\_data();**

**}**

**}**

**}**

**Output:  
A screenshot of a computer screen

AI-generated content may be incorrect.**