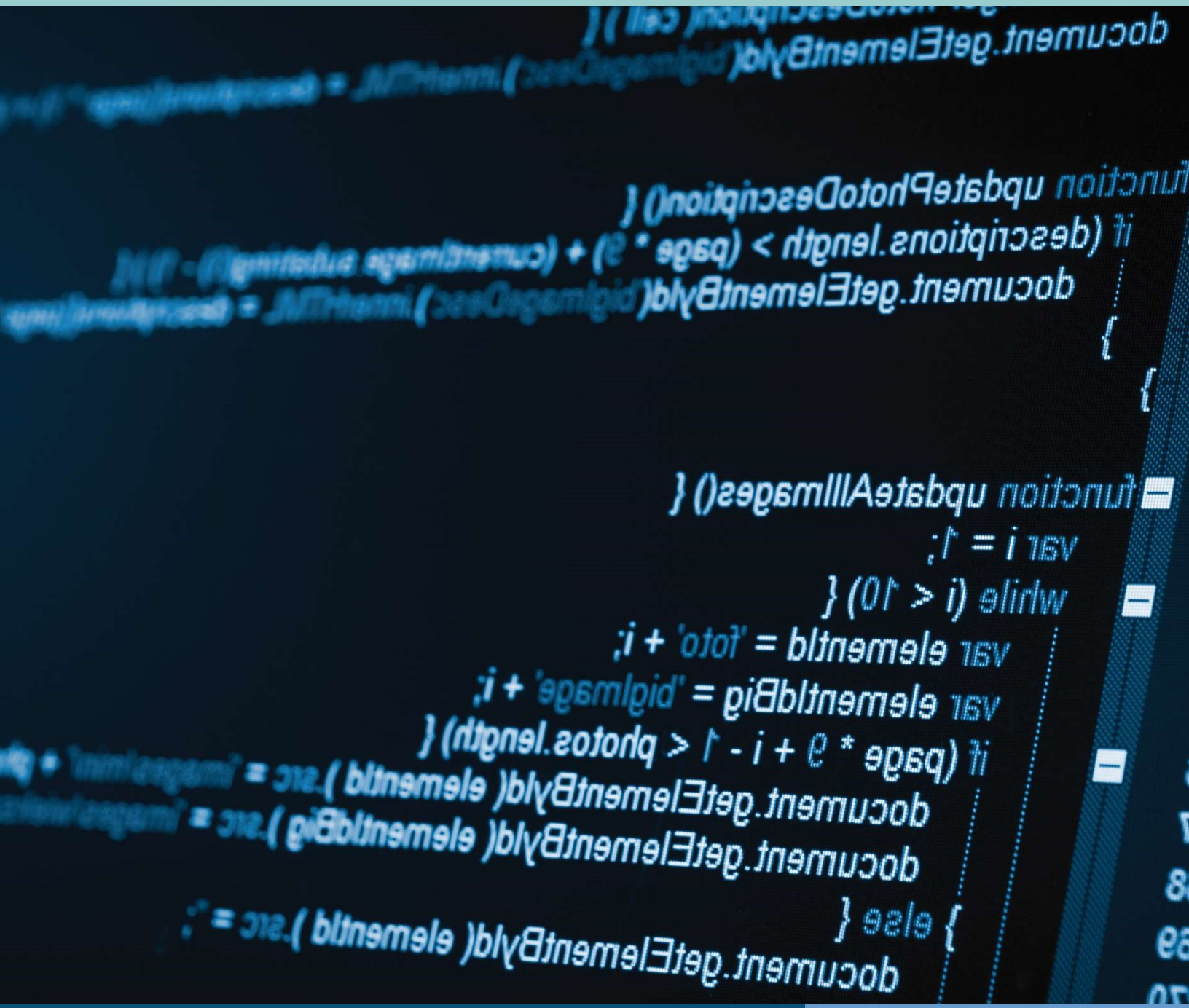
Group_Maker



GROUP-14	
Group Member	Student ID
Tamboli Alex Hitendrabhai	202011071
Tarun Mali	202011073
Tushar Aggarwal	202011074
Suraj Kumar	202011069
Suyash Rajput	202011070
Tanmay T	202011072

IIITV-ICD

PASSWORD – fourteen

CONTRIBUTION ON CODE

1. Driver Code
1.1. Tamboli Alex Hitendrabhai
1.2. Tarun Mali

2. IIITV Database
2.1. Tarun Mali

3. Manual Input Part
3.1. Tamboli Alex Hitendrabhai

4. Setting up the Database
4.1. Tamboli Alex Hitendrabhai

5. Password
5.1. Tarun Mali

6. Random Generator
6.1. Tamboli Alex Hitendrabhai

7. ID Based
7.1. Tushar Aggarwal

8. Name Based
8.1. Suraj Kumar

9. Mark Based
9.1. Suyash Rajput

10. Debbuger and UX
10.1. Suraj Kumar

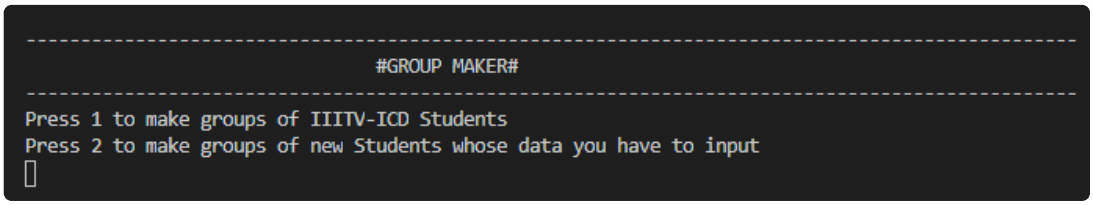
11. Tester
11.1. Suyash Rajput
11.2. Tushar Aggarwal

Quick Summary

Our project have database of all the present 77 students in Diu campus which include their Name, Roll number and marks in mid semester. We can enter entries other than already existing DIu database. Now we can generate groups of these people, we can have any number of members in group, any number between 1 to all students is permissible. We also if the number of people is not divisible by number of members, then one group with less then the desired number of group members is also generated. We can make groups randomly or on parameters like ID, name or marks. The parameters are arranged in an order (alphabetically or numerically) and then groups are formed out of it

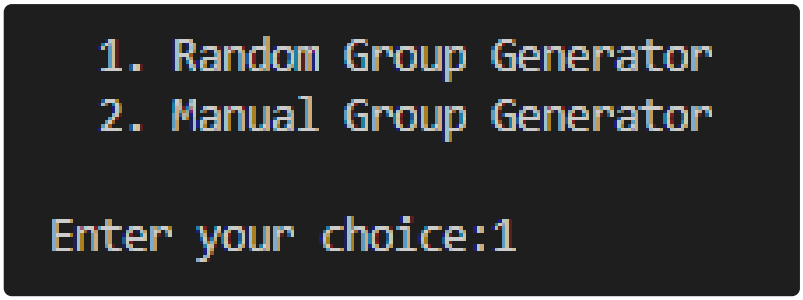
Group 14 Project Report

Welcome page

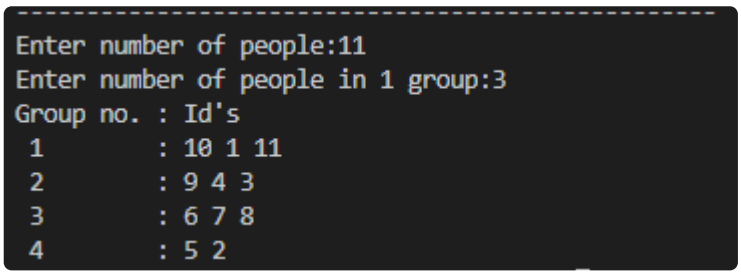


We will start our discussion by seeing the code behind option 2 because option 1 is just reuse of code in option 2 with the already existing database we have of IIITV Diu Campus with some additional features like password

When 2 is pressed



When 1 is pressed



Code snippet and explanation behind it

We take number of people and store it in a variable

```c
numberOfPeople
```

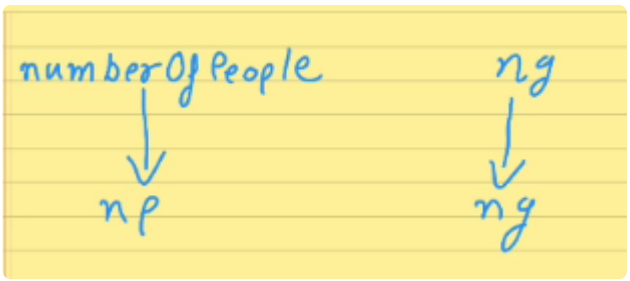
We take number of people in 1 group and store it in a variable

```c
ng
```

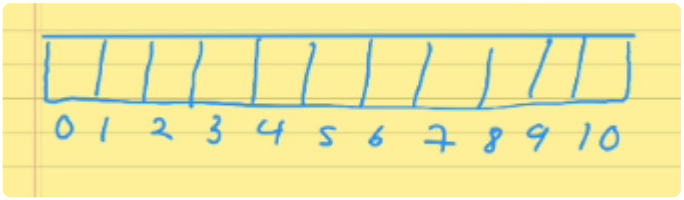
Next we pass these into the function

```c
'randomGroupGenerator()
```

Where these variables are copied into local variables of this function



Here we create an array arr of size np, in our example we have taken np as 11

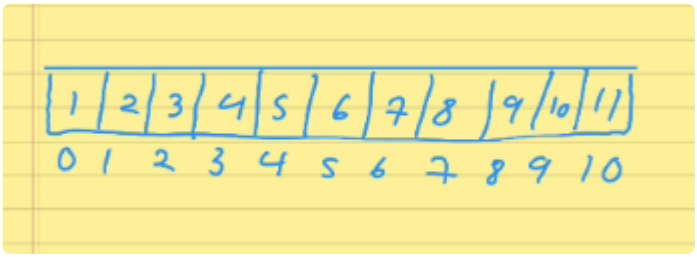


Now we initialize our array using this code

```c
for(int i = 0; i < np ;i++){
                arr[i] = i+1;
        }
```

```
4
```

After which our array looks like this

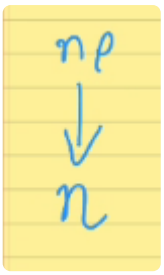


The entries of the array are indicating the ID of the persons.
Now we again send this generated array and np to a new function

C

```c
shuffle()
```

We will work directly work on arr and save a copy of np in n



Shuffle function

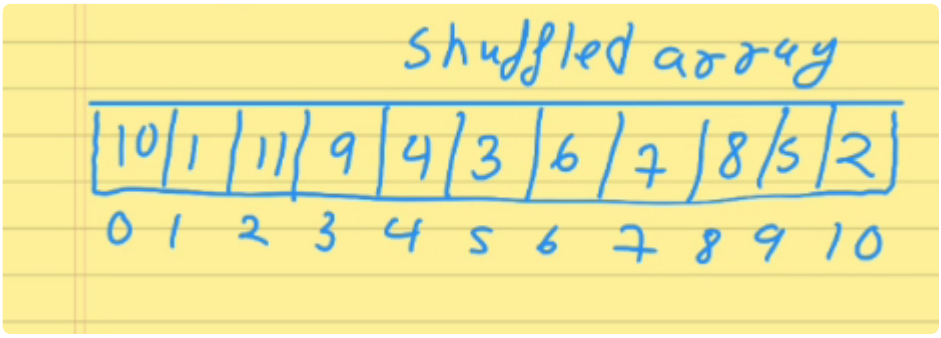
This function shuffles all the entries of the array elements randomly, similar to shuffling a deck of cards. This function uses **Fisher–Yates shuffle Algorithm** https://www.geeksforgeeks.org/shuffle-a-given-array-using-fisher-yates-shuffle-algorithm/ to perform the shuffling

C

```c
void shuffle(int arr[], int n) {
    srand ( time(NULL) );
    for (int i = n-1; i > 0; i--) {
        int j = rand() % (i+1);
```

```
            swap(&arr[i], &arr[j]);
        }
```

Here we use time() to seed srand() so that rand() produces a different output every time and we get different shuffled arrays each time. This function ends and control is transferred back to randomGroupGenerator()



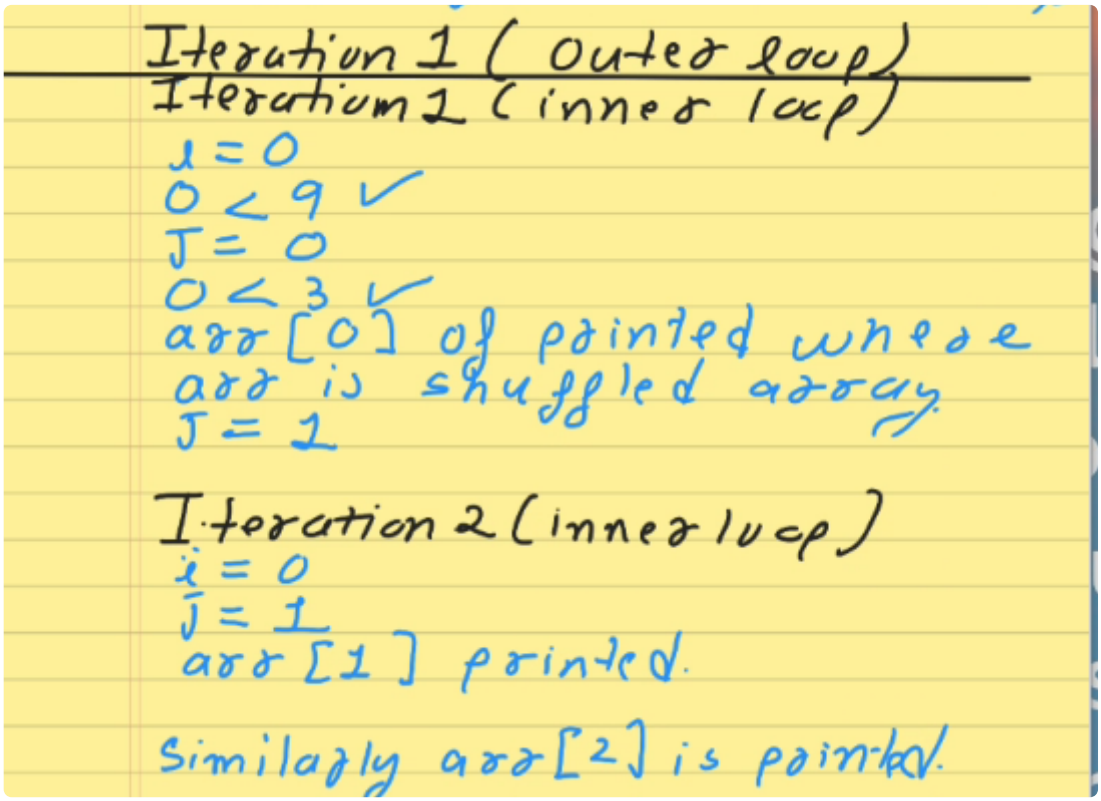
We find rem = np%ng, in this case 11%3=2, 2 is rem in this case
Now with the help of for loop we print these entries which are till arr[8], these are the entries which will have groups of 3 members

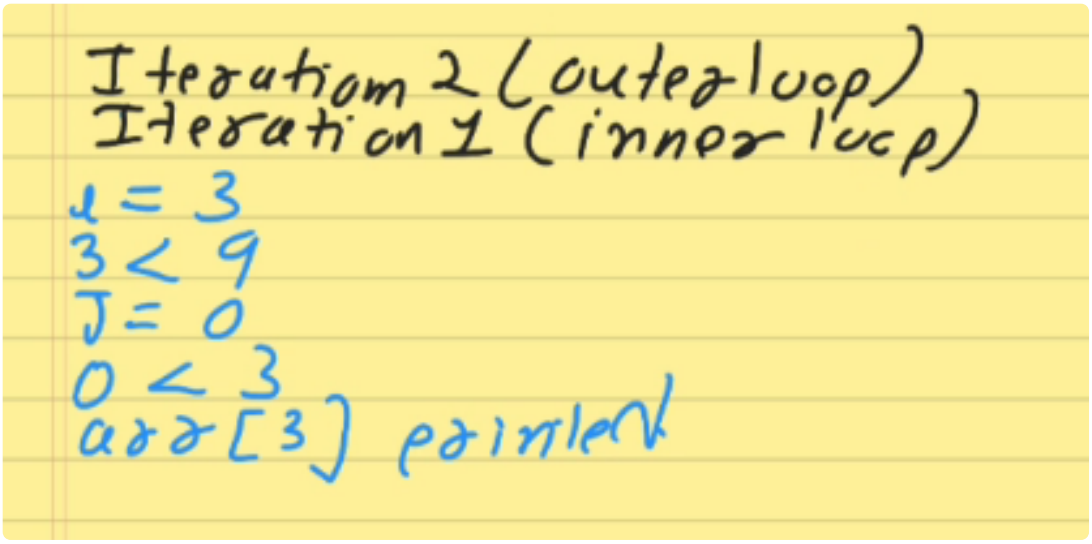
C

```c
int count = 1;
        printf("Group no. : Id's\n");
        for(int i = 0; i < np - rem; i = i + ng){
                printf(" %d        : ", count);
                for(int j = 0; j < ng; j++){
                        printf("%d ", arr[i+j]);
                }
                count++;
                printf("\n");
```

```
for(i=0; i<11-2=9; i=i+3)
  { for (j=0; j<3; j++)
    { printf("%d", arr[i+j]);
```

Here are the values of i and j in the iterations



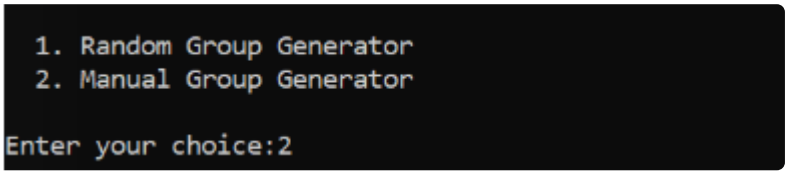


Rest of the values (Which could not be made into a group) due to less number of peoples are printed through

C

```c
for(int i = 1; i <= rem; i++){
                count++;
                printf("%d ", arr[sizeof(arr)/sizeof(arr[0]) - i]);
        }
```

When 2 is pressed



We are storing the data entered in by first creating a structure Person

C

```c
struct Person{
    int ID;
    char name[20];
```

```
    char Skill[20];
    int marks;
    long unsigned int phone_no;
};

```

We are again making array of type struct person type and calling it database

C

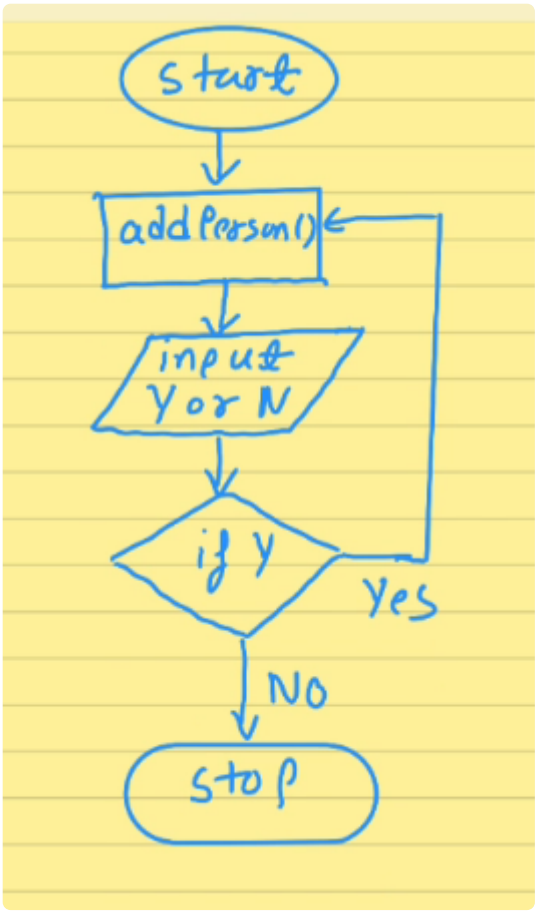
```
struct Person database[DATABASE_SIZE];
```

Where the size of database is 100, we used **#define preprocessor** directive to **define** constant 100

C

```
#define DATABASE_SIZE 100
```

When 2 is pressed, control is passed to addPerson(), which takes all the input and put in our database, control is continued to passed to addPerson() as long as we keep pressing Y or y, if we press N or anything else loop is exited

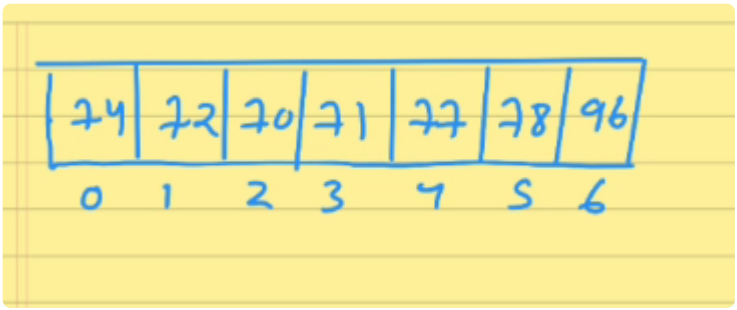


Next screen

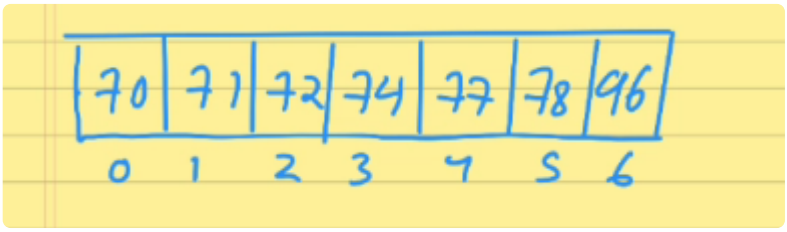
```
                #Categorizing to Groups#

1. ID Based
2. Name Based
3. Marks Based
4. Skill Based
```

If we pressed 1(ID Based)

Control is transferred to ID_Based(), again we enter the number of people in group to the variable ng. We also create an array of size equal to number of person's data we have entered in our database (COUNT_FOR_PERSON) which we was updating while using addPerson() ,we initialize each entry with the ID of the person, by using getID() , which basically return the IDs of the person that we have entered. Here is our array for 7 peoples, filled with their IDs



Next we sort the array using arraySort() which uses Selection sort algorithm to sort in increasing order, here is our array after sorting



Now we will print it in group of 3 similarly as we done in the case of random group generator, one addition we do here is that we are also printing name because in this case we have name of the persons, we will find the name corresponding to Ids by the function findByID(), we will sends Id starting from 70 in this function upto 96 number

C

```c
printf("%s(%d) ", findByID(arr[i+j]).name, arr[i+j]);
```

findByID()

C

```c
struct Person findByID(int ID){
        for(int i = 0; i < COUNT_FOR_PERSON; i++){
                if(getID(i) == ID) return database[i];
        }
```

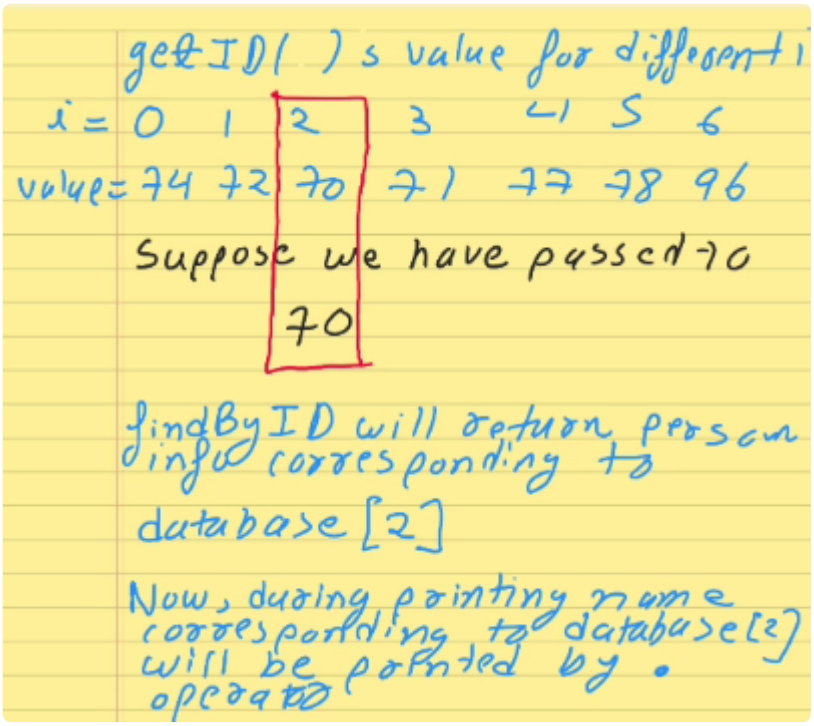
We used getID() in it whose code snippet is below

C

```c
int getID(int count){
```

```
        return database[count].ID;
}
```

Working of findByID()



If we pressed 2(Name Based)

Control is transferred to nameBased(), again we enter the number of people in group to the variable ng. We make an array a which can store strings as its elements.

C

```
        char* a[COUNT_FOR_PERSON];
```

We initialize the array with the names of our database with the help of getName()

C

```
for(int i = 0; i < COUNT_FOR_PERSON; i++){
                a[i] = getName(i);
        }
```

Now we arrange all the names in alphabetical order with the help of this code snippet

C

```c
for (int i = 0; i < COUNT_FOR_PERSON; i++) {
        for (int j = i+1; j < COUNT_FOR_PERSON; j++)
                if (strcmp(a[i], a[j]) > 0) {
                        char* temp = a[i];
                        a[i] = a[j];
                        a[j] = temp;
        }
```

We are using strcmp to compare the strings(first names), it gives positive output when a[i] (which is a string) is lexigraphically greater then a[j], we should remember that we put all the names in same format for it to work like Tarun Alex Suraj, TARUN, ALEX SURAJ, tarun, alex suraj will work but tarun, Alex, SURAJ won't work. Due to use of strcmp we have to include header file

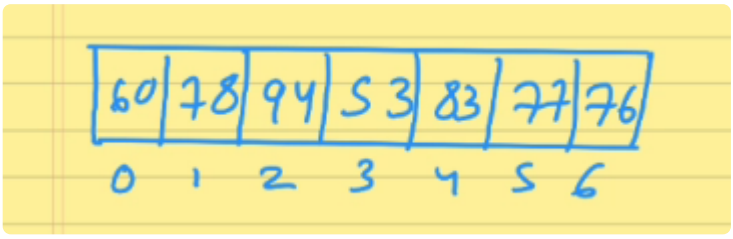
C

```c
#include <string.h>
```

Now we print names in group as we have done earlier

If we pressed 3(Marks Based)

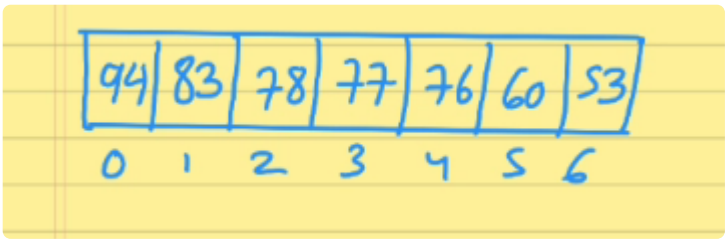
Control is transferred to markBased() , again we enter the number of people in group to the variable ng. We make an array arr which can store marks which is fetched by getMarks()



C

```c
int getMarks(int count){
        return database[count].marks;
}
```

Now this time we sort arr in descending order by Bubble sort Algorithm



Similar to ID based, we will also printing corresponding names, for which we will use findByMarks()

C

```c
printf("%s(%d) ", findByMarks(arr[i+j]).name, arr[i+j]);
```

findByMarks()

C

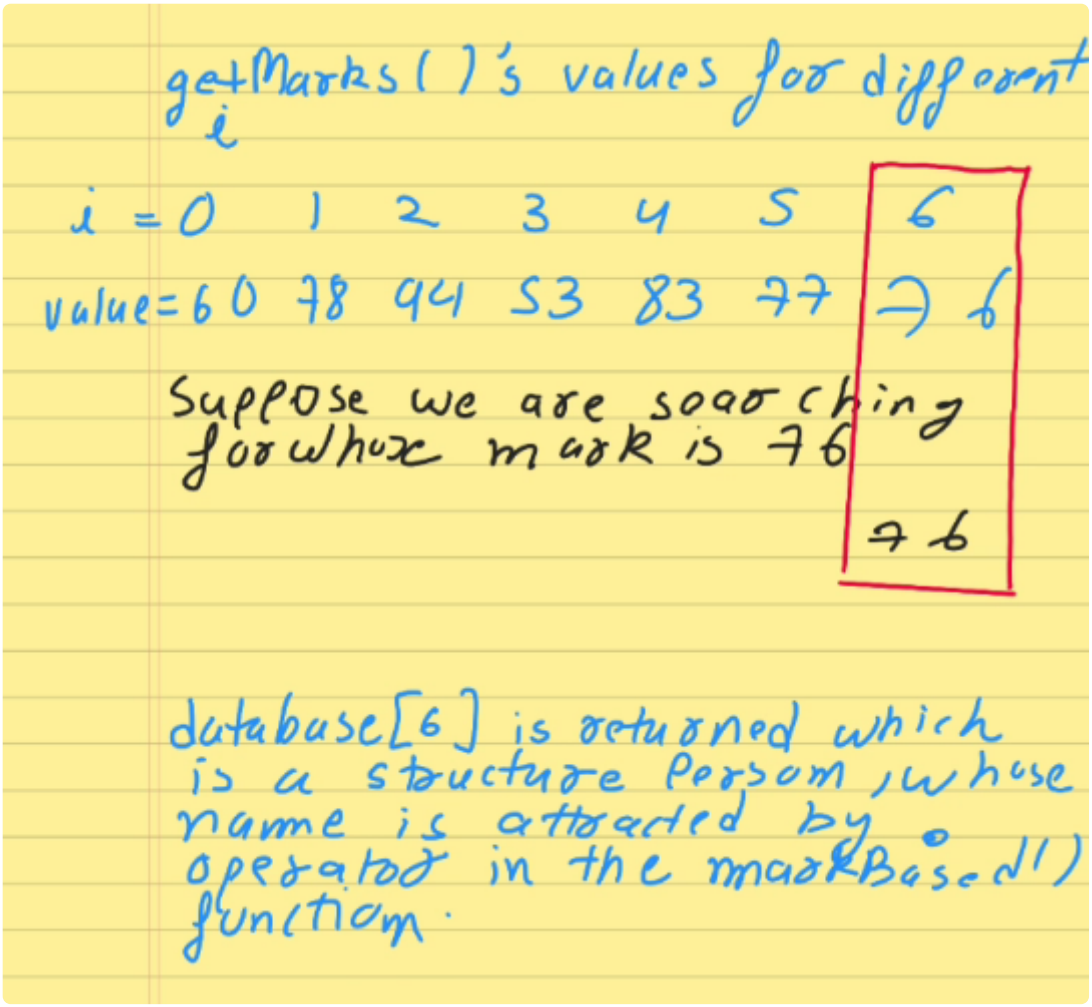
```c
struct Person findByMarks(int marks){
        for(int i = 0; i < COUNT_FOR_PERSON; i++){
                if(getMarks(i) == marks) return database[i];
        }
}
```

This function makes use of getMarks() function

C

```c
int getMarks(int count){
        return database[count].marks;
}
```

Working of findByMarks()



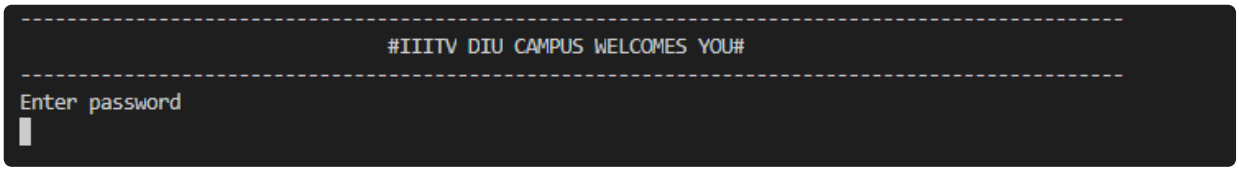
C

```c
printf("%s(%d) ", findByMarks(arr[i+j]).name, arr[i+j]);
```

Welcome page

```
--------------------------------------------------------------------------------------------------------
                                #GROUP MAKER#
--------------------------------------------------------------------------------------------------------
Press 1 to make groups of IIITV-ICD Students
Press 2 to make groups of new Students whose data you have to input
```

When 1 is pressed

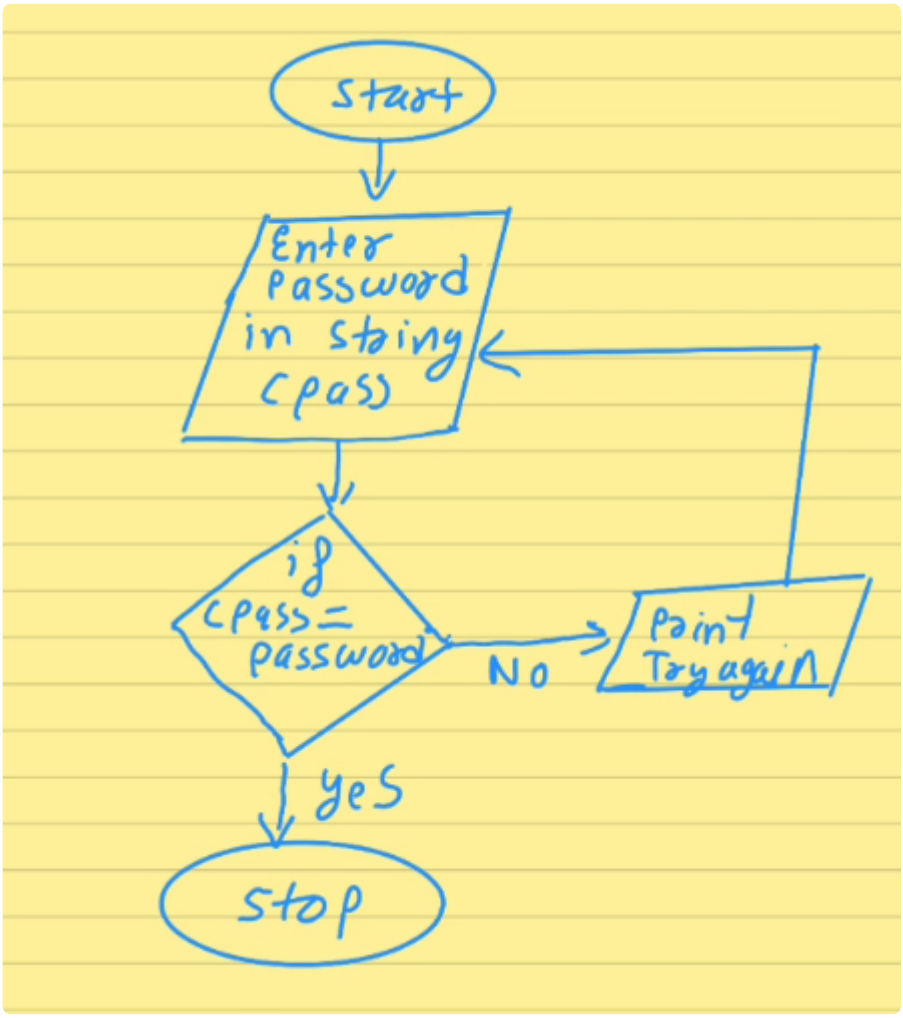


As this is confidential data, we used password to protect it. Password is "**fourteen**"

checkPsswd() function snippet

C

```c
int checkPsswd(char password[]){
        //char pass[]="fourteen";
        printf("Enter password\n");
        char cpass[20];
        do{
                scanf("%s",cpass);//make this invisible
                if(strcmp(password, cpass)==0){
                        return 1;
                        break;
                }
                else{
                        printf("Try again\n");
                }
        }while(1)
```



When password is entered successfully, we get this screen

```
Press 1 to view list of students with Name, ID and Marks in Midsem
Press 2 to Categorize students into group
```

Database

We entered Name, Id and marks in last mid semester in our code. We do not use file instead we used already existing array of structure and put the data manually in them. Here are few entrees of them. As we are using existing database, it will work with all the functions that we have used in Option 2 like ID_Based();, nameBased();, markBased();.

C

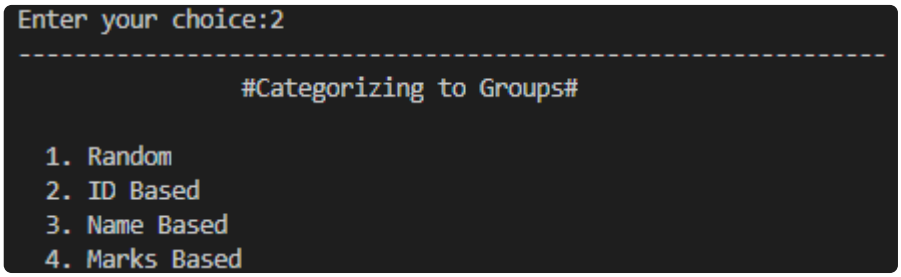
```c
database[0].ID=202011001,
database[1].ID=202011002.................
```

```
2   database[0].marks=18, database[1].marks=17
3   atabase[0].name="Abhishek Dhangar",
```

When 1 is pressed

Control is passed to printliitvData() which prints all the required entries

When 2 is pressed



When 1 is pressed(Random)

```
Enter your choice:1
Enter number of people in each group:3
Group no. : Id's
 1        : 202011032 202011017 202011026
 2        : 202011013 202011072 202011048
 3        : 202011038 202011008 202011070
 4        : 202011010 202011044 202011061
 5        : 202011006 202011074 202011076
 6        : 202011042 202011024 202011018
 7        : 202011069 202011030 202011078
 8        : 202011034 202011062 202011002
 9        : 202011080 202011021 202011055
 10        : 202011063 202011005 202011033
 11        : 202011003 202011073 202011023
 12        : 202011039 202011065 202011047
 13        : 202011040 202011046 202011007
 14        : 202011035 202011027 202011059
 15        : 202011066 202011045 202011004
 16        : 202011022 202011077 202011050
 17        : 202011016 202011057 202011054
 18        : 202011060 202011064 202011001
 19        : 202011012 202011036 202011019
 20        : 202011068 202011075 202011009
 21        : 202011041 202011037 202011014
 22        : 202011052 202011029 202011071
 23        : 202011079 202011043 202011067
 24        : 202011056 202011031 202011058
 25        : 202011015 202011051 202011053
 26        : 202011020 202011028
Categorize further(Y/N):
```

This is similar to the earlier case where we were generating random groups, but this time we have one less step to do is that we do not have to generate the array of IDs as done in this step earlier, so in this way we are saving some processing time

C

```c
for(int i = 0; i < np ;i++){
                    arr[i] = i+1;
          }
```

Instead we create a new array arrdiu with the entries as

C

```c
int arrdiu[]={database[0].ID=202011001,
database[1].ID=202011002.....................
```

Now this array will be shuffled by shuffle() and rest of the process remain same

Now, for option 2, 3 and 4 there is no change and we will just pre-existing functions along with our database

Option 2(ID Based)

```
Group no. : Id's
 1        : Abhishek Dhangar(202011001) Abhishek Tharu(202011002) Aditya Adityaa(202011003)
 2        : Aditya Shakle(202011004) Agraj Jidung(202011005) Akash Mishra(202011006)
 3        : Al Kahaf Ahmad(202011007) Amarjeet Kumar(202011008) Anish Bairwa(202011009)
 4        : Anmol Jain(202011010) Ishaan Ashish Arora(202011012) Ashish Gupta(202011013)
 5        : Ashutosh Ankush Dhumal(202011014) Avichal Bansal(202011015) Bhalodia Chinmay(202011016)
 6        : Bhavsar Yashesh(202011017) Vivek Manoj Borole(202011018) Deep Chaudhary(202011019)
 7        : Dev Juneja(202011020) Divanshu Prajapat(202011021) Gurupal Singh(202011022)
 8        : Karan Hadiyal(202011023) Hari Gopal Nayak Jarupla(202011024) Hrishubh Bhandari(202011026)
 9        : Inderjeet Singh(202011027) Ishant Bisen(202011028) Jaideep Panchal(202011029)
 10        : Jayesh Jaroli(202011030) Jaykumar Kumar(202011031) Jenishkumar Desai(202011032)
 11        : Jigyashu(202011033) K Goutham Goutham(202011034) Kadali Sri Akash(202011035)
 12        : Kampati Tharun(202011036) Kanakam Venkata Vishnu Swaroop(202011037) Karan Chaudhary(202011038)
 13        : Katyare Prashik Ramchandra(202011039) Kaushik Moralwar(202011040) Krishna Jaishwal(202011041)
 14        : Ajay Rakeshkumar Kumbhar(202011042) Lakshya Lakshyaa(202011043) Likhithapudi Pranadeep(202011044)
 15        : Mahesh Maheshh(202011045) Muppala Nithish Kumar Raju(202011046) N Vinod Kumar Reddy(202011047)
 16        : Naman Kumar Jangid(202011048) Nishesh Jain(202011050) Omkaar Bhamare(202011051)
 17        : Pallikonda Sai Teja(202011052) Krunal Rajendrabhai Patel(202011053) Patel Sanskar Sanjaykumar(202011054)
 18        : Mahesh Mangukiya Perin(202011055) Podiyam Mahesh(202011056) Prafulla Patil(202011057)
 19        : Prashant Kumar(202011058) Priyanka Joshi(202011059) Raj Tejaswee(202011060)
 20        : Rajat Singh(202011061) Ramancha Kartheesha(202011062) Ravish Kumar Singh(202011063)
 21        : Rohit Khandal(202011064) Sakshi Singh Dangi(202011065) Suhubham Senani(202011066)
 22        : Siddharth Gautham(202011067) Sourya Roy Karmakar(202011068) Suraj Kumar(202011069)
 23        : Suyash Rapjut(202011070) Tamboli Alex Hitendrabhai(202011071) Tanmay T(202011072)
 24        : Tarun Mali(202011073) Tushar Agrawal(202011074) Tushar Vyas(202011075)
 25        : Urmil Sachin Lokhande(202011076) Vartul Shrivastava(202011077) Yash Chandil Gupta(202011078)
 26        : Aditya A(202011080) Yashasvi Sharma(202011079)
```

Option 3(Name Based)

```
Enter number of people in each group:5
Group no. : Names
 1        : Abhishek Dhangar   Abhishek Tharu   Aditya A   Aditya Adityaa   Aditya Shakle
 2        : Agraj Jidung   Ajay Rakeshkumar Kumbhar   Akash Mishra   Al Kahaf Ahmad   Amarjeet Kumar
 3        : Anish Bairwa   Anmol Jain   Ashish Gupta   Ashutosh Ankush Dhumal   Avichal Bansal
 4        : Bhalodia Chinmay   Bhavsar Yashesh   Deep Chaudhary   Dev Juneja   Divanshu Prajapat
 5        : Gurupal Singh   Hari Gopal Nayak Jarupla   Hrishubh Bhandari   Inderjeet Singh   Ishaan Ashish Arora
 6        : Ishant Bisen   Jaideep Panchal   Jayesh Jaroli   Jaykumar Kumar   Jenishkumar Desai
 7        : Jigyashu   K Goutham Goutham   Kadali Sri Akash   Kampati Tharun   Kanakam Venkata Vishnu Swaroop
 8        : Karan Chaudhary   Karan Hadiyal   Katyare Prashik Ramchandra   Kaushik Moralwar   Krishna Jaishwal
 9        : Krunal Rajendrabhai Patel   Lakshya Lakshyaa   Likhithapudi Pranadeep   Mahesh Maheshh   Mahesh Mangukiya Perin
 10        : Muppala Nithish Kumar Raju   N Vinod Kumar Reddy   Naman Kumar Jangid   Nishesh Jain   Omkaar Bhamare
 11        : Pallikonda Sai Teja   Patel Sanskar Sanjaykumar   Podiyam Mahesh   Prafulla Patil   Prashant Kumar
 12        : Priyanka Joshi   Raj Tejaswee   Rajat Singh   Ramancha Kartheesha   Ravish Kumar Singh
 13        : Rohit Khandal   Sakshi Singh Dangi   Siddharth Gautham   Sourya Roy Karmakar   Suhubham Senani
 14        : Suraj Kumar   Suyash Rapjut   Tamboli Alex Hitendrabhai   Tanmay T   Tarun Mali
 15        : Tushar Agrawal   Tushar Vyas   Urmil Sachin Lokhande   Vartul Shrivastava   Vivek Manoj Borole
 16        : Yashasvi Sharma   Yash Chandil Gupta
Categorize further(Y/N):
```

Option 4(Marks Based)

```
Enter your choice:4
Enter number of people in each group:6
Group no. : Names(marks)
 1        : Bhavsar Yashesh(20) Jenishkumar Desai(20) Nishesh Jain(20) Raj Tejaswee(20) Rajat Singh(20) Aditya A(20)
 2        : Dev Juneja(19) Hari Gopal Nayak Jarupla(19) Amarjeet Kumar(19) Jigyashu(19) Lakshya Lakshyaa(19) Anmol Jain(19)
 3        : Omkaar Bhamare(19) Krunal Rajendrabhai Patel(19) Mahesh Mangukiya Perin(19) Ashish Gupta(19) Aditya Adityaa(19) Sourya Roy Karmakar(19)
 4        : Tamboli Alex Hitendrabhai(19) Urmil Sachin Lokhande(19) Yashasvi Sharma(19) Vivek Manoj Borole(19) Al Kahaf Ahmad(18) Pallikonda Sai Teja(18)
 5        : Hrishubh Bhandari(18) Inderjeet Singh(18) Prafulla Patil(18) Priyanka Joshi(18) Jaideep Panchal(18) Abhishek Dhangar(18)
 6        : Bhalodia Chinmay(18) Suraj Kumar(18) Suyash Rapjut(18) Karan Chaudhary(18) Tushar Agrawal(18) Divanshu Prajapat(18)
 7        : Likhithapudi Pranadeep(18) Gurupal Singh(18) Jaykumar Kumar(17) Abhishek Tharu(17) Aditya Shakle(17) Siddharth Gautham(17)
 8        : Vartul Shrivastava(17) Mahesh Maheshh(17) Kadali Sri Akash(17) Naman Kumar Jangid(16) Karan Hadiyal(16) Ishaan Ashish Arora(16)
 9        : Tushar Vyas(16) Akash Mishra(16) Kanakam Venkata Vishnu Swaroop(16) Patel Sanskar Sanjaykumar(16) N Vinod Kumar Reddy(16) Suhubham Senani(15)
 10       : Ishant Bisen(15) Deep Chaudhary(15) Ajay Rakeshkumar Kumbhar(15) Ravish Kumar Singh(15) Sakshi Singh Dangi(15) K Goutham Goutham(14)
 11       : Tarun Mali(14) Prashant Kumar(14) Avichal Bansal(14) Rohit Khandal(12) Yash Chandil Gupta(12) Ramancha Kartheesha(12)
 12       : Katyare Prashik Ramchandra(12) Krishna Jaishwal(11) Anish Bairwa(11) Muppala Nithish Kumar Raju(10) Kaushik Moralwar(9) Kampati Tharun(9)
 13       : Jayesh Jaroli(0) Podiyam Mahesh(0) Tanmay T(0) Agraj Jidung(5) Ashutosh Ankush Dhumal(5)
Categorize further(Y/N):
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