NITTE (Deemed to be University) | NMAM INSTITUTE OF TECHNOLOGY

(An off-Campus Institution of NITTE (DEEMED TO BE UNIVERSITY), MANGALORE)

Department of Master of Computer Applications

A Task Report On

Principles of Inclusion & Exclusion Using Sets

First Semester Assignment, regards to the subject

MATHEMATICAL FOUNDATION FOR COMPUTER APPLICATION

(23MCA104)

For the Academic year

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Submitted by

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Awarded:

Signature of the Faculty
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(Dept. of MCA, Assistant Professor Gd-II)

Title of the Project :

Principles of Inclusion & Exclusion using sets.

Introduction :

This is a system developed using C Program to handle problems related to sets, especially focusing on inclusion and exclusion properties, involves creating a program that can efficiently represent, manipulate, and analyze sets. Graphics and animations are employed to visualize the sets and their relationships, making it easier for users to understand and work with the data.

Technologies Used :

- Software used : Turbo C
- Language used : C

Farmulas :

- n(AUB) = n(A) + n(B) – n(A ^ B)

  This formula is used to find the number of elemnts in union of 2 sets

- n(AUBUC) = n(A) + n(B) + n(C) – n(A ^ B) – n(B ^ C) – n(C ^ A) + n(A ^ B ^ C)

  This formula is used to find the number of elemnts in union of 2 sets

  Here,

  ^ This is the symbol we used to represent intersection

  n(A) is number of elements in set A

  n(B) is number of elements in set B

  n(A ^ B) is number of elements in both set A and B

  n(A ^ B ^ C) is number of elements present in set A , B and C

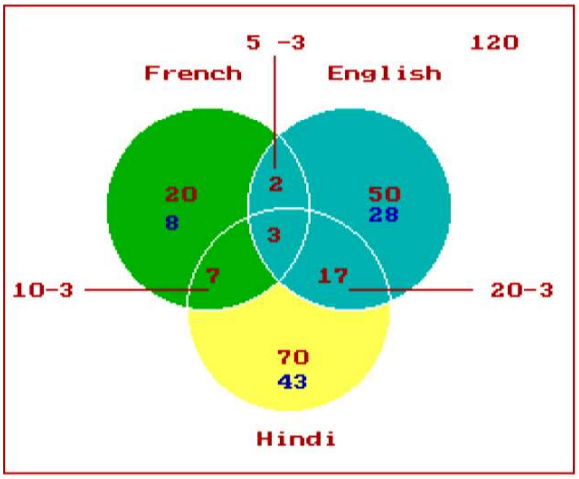
Applications :

- Counting Problems
- Probability
- Data Analysis

User Interfaces :

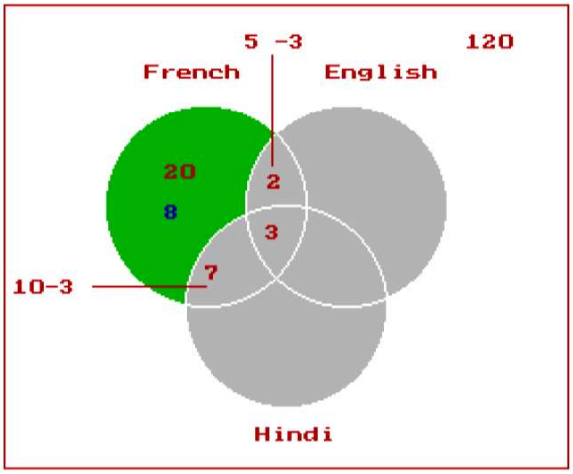
Instance 1 :

```
Enter total number of student:120
Enter number of student study French:20
Enter number of student study English:50
Enter number of student study Hindi:70
Enter number of student study both french and English:5
Enter number of student study both french and Hindi:10
Enter number of student study both English and Hindi:20
Enter number of student study all three language:3

  1.All set
  2.French alone
  3.Hindi alone
  4.English alone
  5.English but not hindi
  6.Hindi but not french
  Enter your choice: 1

          n(F)= 20
          n(E)= 50
          n(H)= 70
      n(E intersection F)= 5
      n(E intersection H)= 20
      n(H intersection F)= 10
n(F intersection E intersection H)= 3
```



Instance 2 :

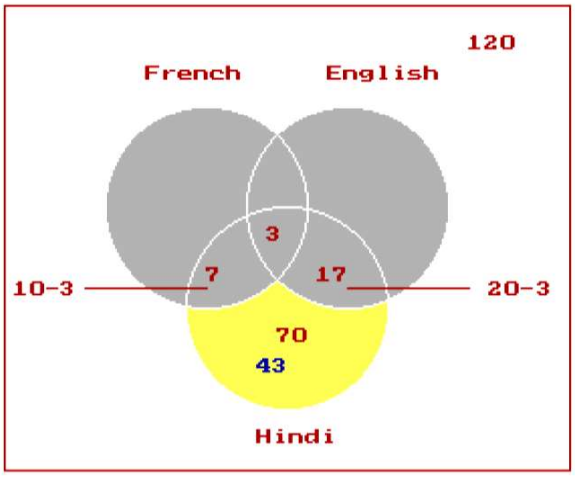
```
Enter total number of student:120
Enter number of student study French:20
Enter number of student study English:50
Enter number of student study Hindi:70
Enter number of student study both french and English:5
Enter number of student study both french and Hindi:10
Enter number of student study both English and Hindi:20
Enter number of student study all three language:3

   1.All set
   2.French alone
   3.Hindi alone
   4.English alone
   5.English but not hindi
   6.Hindi but not french
   Enter your choice: 2
```




```
20 - 7 - 3 - 2
   = 8
```

Instance 3:

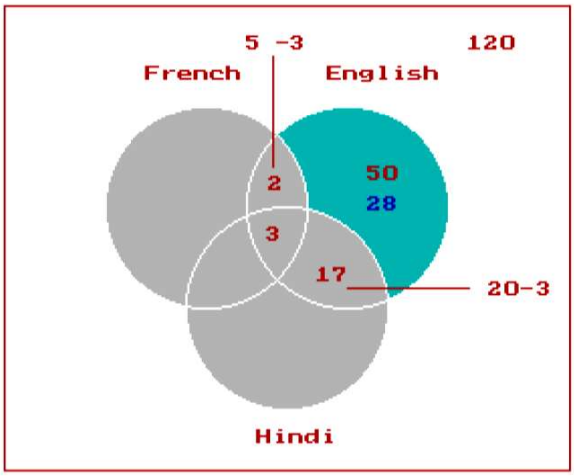
```
Enter total number of student:120
Enter number of student study French:20
Enter number of student study English:50
Enter number of student study Hindi:70
Enter number of student study both french and English:5
Enter number of student study both french and Hindi:10
Enter number of student study both English and Hindi:20
Enter number of student study all three language:3

   1.All set
   2.French alone
   3.Hindi alone
   4.English alone
   5.English but not hindi
   6.Hindi but not french
   Enter your choice: 3
```




```
70 - 17 - 3 - 7
   = 43
```

Instance 4 :

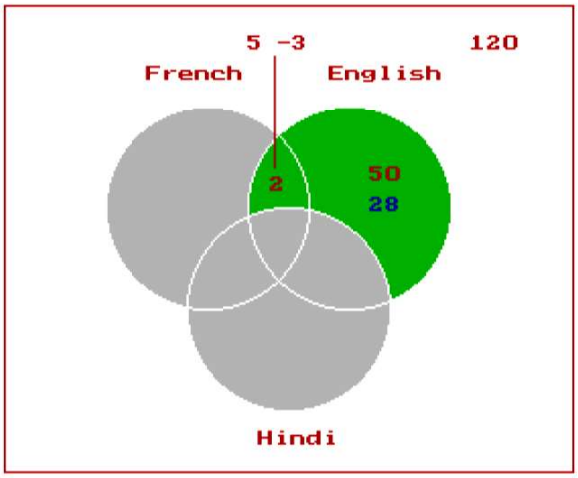
```
Enter total number of student:120
Enter number of student study French:20
Enter number of student study English:50
Enter number of student study Hindi:70
Enter number of student study both french and English:5
Enter number of student study both french and Hindi:10
Enter number of student study both English and Hindi:20
Enter number of student study all three language:3

   1.All set
   2.French alone
   3.Hindi alone
   4.English alone
   5.English but not hindi
   6.Hindi but not french
   Enter your choice: 4
```




```
50 - 2 - 3 - 17
= 28
```

Instance 5 :

```
Enter total number of student:120
Enter number of student study French:20
Enter number of student study English:50
Enter number of student study Hindi:70
Enter number of student study both french and English:5
Enter number of student study both french and Hindi:10
Enter number of student study both English and Hindi:20
Enter number of student study all three language:3

   1.All set
   2.French alone
   3.Hindi alone
   4.English alone
   5.English but not hindi
   6.Hindi but not french
   Enter your choice: 5
```




```
28 + 2
= 30
```

Instance 6 :

```
Enter total number of student:120
Enter number of student study French:20
Enter number of student study English:50
Enter number of student study Hindi:70
Enter number of student study both french and English:5
Enter number of student study both french and Hindi:10
Enter number of student study both English and Hindi:20
Enter number of student study all three language:3

   1.All set
   2.French alone
   3.Hindi alone
   4.English alone
   5.English but not hindi
   6.Hindi but not french
   Enter your choice: 6
```