SOURCE CODE:

```cpp
#include <iostream>
using namespace std;
class node{
    public:
    int data;
    node *next;
    node(){
        next = NULL;
    }
    node(int data){
        this->data = data;
        this->next = NULL;
    }
};
int setmaking(node *head, int val){
    node *temp = new node;
    temp = head;
    int index = 0;
    while (temp != NULL){
        if (temp->data == val){
            return index;
        }
        index++;
        temp = temp->next;
    }
    return -1;
}
void  addingset(node *&head, int val)
{
    if (setmaking(head, val) == -1)
    {
        node *temp = new node();
        temp = head;
        node *newnode = new node(val);
        while (temp->next != NULL)
        {
            temp = temp->next;
        }
        temp->next = newnode;
    }
}
void display(node *head)
{
    node *temp = new node;
    temp = head;
    while (temp != NULL)
    {
```

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        cout << temp->data << " ";
        temp = temp->next;
    }
    cout << endl;
}
void inputing(node *&head, string flavour)
{
    int n, rollno;
    cout << "ENTER THE NUMBERS OF STUDENTS WHO LIKE " << flavour << "
ICECREAM:";
    cin >> n;
    cout << "ENTER ROLL.NO OF THAT STUDENT:" << endl;
    cin >> rollno;
    head = new node(rollno);
    for (int i = 1; i < n; i++)
    {
        cin >> rollno;
        addingset(head, rollno);
    }
}
void set_only_one(node *set1, node *set2)
{
    node *temp = new node;
    temp = set1;
    while (temp != NULL)
    {
        if (setmaking(set2, temp->data) == -1)
        {
            cout << temp->data << " ";
        }
        temp = temp->next;
    }
    node *temp2 = new node;
    temp2 = set2;
    while (temp2 != NULL)
    {
        if (setmaking(set1, temp2->data) == -1)
        {
            cout << temp2->data << " ";
        }
        temp2 = temp2->next;
    }
    cout << endl;
}

void intersection(node *set1, node *set2)
{
    node *temp = new node;
```

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        temp = set1;
        while (temp != NULL)
        {
            if (setmaking(set2, temp->data) != -1)
            {
                cout << temp->data << " ";
            }
            temp = temp->next;
        }
        cout << endl;
}

int neithernor(node *set1, node *set2, int total)
{
        int count = 0;
        for (int i = 1; i <= total; i++)
        {
            if ((setmaking(set1, i) != -1) and (setmaking(set2, i) != -1))
            {
                count++;
            }
        }
        return count;
}

int main()
{
        node *seta;
        node *setb;
        int choice, t;
        bool i = true;
        cout << "ENTER TOTAL NUMBER OF STUDENTS:";
        cin >> t;
        inputing(seta, "VANILLA");
        inputing(setb, "BUTTERSCOTCH");
        while (i)
        {
            cout << "1.DISPLAY UR DATA" << endl;
            cout << "2. SET OF STUDENTS WHO LIKE BOTH VANILLA AND BUTTERSCOTCH
ICECREAM" << endl;
            cout << "3. SET OF STUDENTS WHO EITHER LIKE VANILLA OR BUTTERSCOTCH
,NOT BOTH" << endl;
            cout << "4. SET OF STUDENTS WHO NEITHER LIKE VANILLA NOR BUTTERSCOTCH"
<< endl;
            cout << "5. EXIT" << endl;
            cout << "ENTER YOUR CHOICE:";
            cin >> choice;
            switch (choice)
```

```cpp
        {
        case 1:
            cout << "STUDENTS WHO LIKE VANILLA FLAVOUR ARE:";
            display(seta);
            cout << "STUDENTS WHO LIKE BUTTERSCOTCH FLAVOUR ARE: ";
            display(setb);
            break;
        case 2:
            cout << "ROLL.NO OF STUDENTS WHO LIKE BOTH VANILLA AND
BUTTERSCOTCH ICECREAM ARE: " << endl;
            intersection(seta, setb);
            break;


        case 3:
            cout << "ROLL.NO OF STUDENTS WHO EITHER LIKE VANILLA OR
BUTTERSCOTCH ,NOT BOTH" << endl;
            set_only_one(seta, setb);

            break;


        case 4:
            cout << "SET OF STUDENTS WHO NEITHER LIKE VANILLA NOR BUTTERSCOTCH
ARE: " << neithernor(seta, setb, t) << endl;
            break;


        case 5:
            i = false;
            break;


        default:
            cout << "ENTER VALID CHOICE" << endl;
            break;
        }
    }
    return 0;
}
```

OUTPUT:

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL                                    > Code + ∨  ⬚  🗑

PS D:\New folder> cd "d:\New folder\" ; if ($?) { g++ l1.cpp -o l1 } ; if ($?) { .\l1 }
ENTER TOTAL NUMBER OF STUDENTS:15
ENTER THE NUMBERS OF STUDENTS WHO LIKE VANILLA ICECREAM:7
ENTER ROLL.NO OF THAT STUDENT:
1
2
3
4
5
6
7
ENTER THE NUMBERS OF STUDENTS WHO LIKE BUTTERSCOTCH ICECREAM:3
ENTER ROLL.NO OF THAT STUDENT:
4
6
9
1.DISPLAY UR DATA
2. SET OF STUDENTS WHO LIKE BOTH VANILLA AND BUTTERSCOTCH ICECREAM
3. SET OF STUDENTS WHO EITHER LIKE VANILLA OR BUTTERSCOTCH ,NOT BOTH
4. SET OF STUDENTS WHO NEITHER LIKE VANILLA NOR BUTTERSCOTCH
5. EXIT
ENTER YOUR CHOICE:1
STUDENTS WHO LIKE VANILLA FLAVOUR ARE:1 2 3 4 5 6 7
STUDENTS WHO LIKE BUTTERSCOTCH FLAVOUR ARE: 4 6 9
1.DISPLAY UR DATA
2. SET OF STUDENTS WHO LIKE BOTH VANILLA AND BUTTERSCOTCH ICECREAM
3. SET OF STUDENTS WHO EITHER LIKE VANILLA OR BUTTERSCOTCH ,NOT BOTH
4. SET OF STUDENTS WHO NEITHER LIKE VANILLA NOR BUTTERSCOTCH
5. EXIT
ENTER YOUR CHOICE:2
ROLL.NO OF STUDENTS WHO LIKE BOTH VANILLA AND BUTTERSCOTCH ICECREAM ARE:
4 6
1.DISPLAY UR DATA
2. SET OF STUDENTS WHO LIKE BOTH VANILLA AND BUTTERSCOTCH ICECREAM
3. SET OF STUDENTS WHO EITHER LIKE VANILLA OR BUTTERSCOTCH ,NOT BOTH
```

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL                                    > Code + ∨  ⬚  🗑

3. SET OF STUDENTS WHO EITHER LIKE VANILLA OR BUTTERSCOTCH ,NOT BOTH
4. SET OF STUDENTS WHO NEITHER LIKE VANILLA NOR BUTTERSCOTCH
5. EXIT
ENTER YOUR CHOICE:1
STUDENTS WHO LIKE VANILLA FLAVOUR ARE:1 2 3 4 5 6 7
STUDENTS WHO LIKE BUTTERSCOTCH FLAVOUR ARE: 4 6 9
1.DISPLAY UR DATA
2. SET OF STUDENTS WHO LIKE BOTH VANILLA AND BUTTERSCOTCH ICECREAM
3. SET OF STUDENTS WHO EITHER LIKE VANILLA OR BUTTERSCOTCH ,NOT BOTH
4. SET OF STUDENTS WHO NEITHER LIKE VANILLA NOR BUTTERSCOTCH
5. EXIT
ENTER YOUR CHOICE:2
ROLL.NO OF STUDENTS WHO LIKE BOTH VANILLA AND BUTTERSCOTCH ICECREAM ARE:
4 6
1.DISPLAY UR DATA
2. SET OF STUDENTS WHO LIKE BOTH VANILLA AND BUTTERSCOTCH ICECREAM
3. SET OF STUDENTS WHO EITHER LIKE VANILLA OR BUTTERSCOTCH ,NOT BOTH
4. SET OF STUDENTS WHO NEITHER LIKE VANILLA NOR BUTTERSCOTCH
5. EXIT
ENTER YOUR CHOICE:3
ROLL.NO OF STUDENTS WHO EITHER LIKE VANILLA OR BUTTERSCOTCH ,NOT BOTH
1 2 3 5 7 9
1.DISPLAY UR DATA
2. SET OF STUDENTS WHO LIKE BOTH VANILLA AND BUTTERSCOTCH ICECREAM
3. SET OF STUDENTS WHO EITHER LIKE VANILLA OR BUTTERSCOTCH ,NOT BOTH
4. SET OF STUDENTS WHO NEITHER LIKE VANILLA NOR BUTTERSCOTCH
5. EXIT
ENTER YOUR CHOICE:4
SET OF STUDENTS WHO NEITHER LIKE VANILLA NOR BUTTERSCOTCH ARE: 2
1.DISPLAY UR DATA
2. SET OF STUDENTS WHO LIKE BOTH VANILLA AND BUTTERSCOTCH ICECREAM
3. SET OF STUDENTS WHO EITHER LIKE VANILLA OR BUTTERSCOTCH ,NOT BOTH
4. SET OF STUDENTS WHO NEITHER LIKE VANILLA NOR BUTTERSCOTCH
5. EXIT
ENTER YOUR CHOICE:5
PS D:\New folder> ▮
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