CODE :-

```
/*
 * Problem Statement :-
 *      Write a program to simulate Go back N and Selective Repeat Modes of Sliding
 *      Window Protocol in Peer-to-Peer mode.
*/

#include<bits/stdc++.h>
using namespace std;

class Frame
{
    friend class SlidingWindow;
    private:
        int data;
        bool ack;
    public:
        Frame()
        {
            data = 0;
            ack = true;
        }
};

class SlidingWindow
{
    private:
        Frame* frames;
    public:
        void sender(int);
        void recAck(int);
        void resendGb(int, int);
        void resendSr(int);
        void goBack(int, int);
        void selective(int, int);
};

void SlidingWindow:: sender(int n)
{
    frames = new Frame[n];

    for(int i=0; i<n; i++)
    {
        cout<<"\n\t Enter data for frame "<<i+1<<" : ";
        cin>>frames[i].data;
    }
}

void SlidingWindow::recAck(int r)
{
    frames[r].ack = false;
    cout<<"\n\t The Frame Number "<<r+1<<" is Not Received...!!"<<endl;

}
```

```
void SlidingWindow::resendGb(int n, int r)
{
    cout<<"\n\t Resending frame from "<<r+1<<"..."<<endl;
    for(int i=r; i<n; i++)
    {
        frames[i].ack = true;
        cout<<"\n\t Received Data of frame "<<i+1<<" , "<<frames[i].data<<endl;
    }
}

void SlidingWindow::resendSr(int r)
{
    cout<<"\n\t Resending Frame Number "<<r+1<<"..."<<endl;
    frames[r].ack = true;
    cout<<"\n\t Received Data from frame "<<r+1<<" , "<<frames[r].data<<endl;
}

void SlidingWindow::goBack(int n, int r)
{
    sender(n);
    recAck(r);
    resendGb(n, r);
    cout<<"\n\t All Frames Sent Successfully...!!"<<endl;
}

void SlidingWindow::selective(int n, int r)
{
    sender(n);
    recAck(r);
    resendSr(r);
    cout<<"\n\t All Frames Sent Successfully...!!"<<endl;
}

int main()
{
    int n, r, choice;
    SlidingWindow sw;

    while(true)
    {
        cout<<"\n\t === MainMenu === \n\t\t 1. Go Back n ARQ \n\t\t 2. Selective Repea
t ARQ \n\t\t 3. Exit";
        cout<<"\n\n\t Enter Choice : ";
        cin>>choice;

        if(choice == 1)
        {
            cout<<"\n\t Enter Number of Frames : ";
            cin>>n;
            r = rand()%n;
            sw.goBack(n, r);
        }
        else if(choice == 2)
        {
            cout<<"\n\t Enter Number of Frames : ";
            cin>>n;
            r = rand()%n;
            sw.selective(n, r);
```

```
        }
        else if(choice == 3)
        {
            cout<<"\n\n\t\t\t ___ Thank You...!! ___";
            exit(0);
        }
        else
        {
            cout<<"\n\t Invalid choice...!!"<<endl;
        }
    }
}
```

OUTPUT :-

```
=== Main-Menu ===
   1. Go Back n ARQ
   2. Selective Repeat ARQ
   3. Exit

Enter Choice : 1

Enter Number of Frames : 5

Enter data for frame 1 : 10

Enter data for frame 2 : 20

Enter data for frame 3 : 30

Enter data for frame 4 : 40

Enter data for frame 5 : 50

The Frame Number 2 is Not Received...!!

Resending frame from 2...

Received Data of frame 2 , 20

Received Data of frame 3 , 30

Received Data of frame 4 , 40

Received Data of frame 5 , 50

All Frames Sent Successfully...!!
```

```
=== Main-Menu ===
   1. Go Back n ARQ
   2. Selective Repeat ARQ
   3. Exit

Enter Choice : 2

Enter Number of Frames : 5

Enter data for frame 1 : 10

Enter data for frame 2 : 20

Enter data for frame 3 : 30

Enter data for frame 4 : 40

Enter data for frame 5 : 50

The Frame Number 3 is Not Received...!!

Resending Frame Number 3...

Received Data from frame 3 , 30

All Frames Sent Successfully...!!

=== Main-Menu ===
   1. Go Back n ARQ
   2. Selective Repeat ARQ
   3. Exit

Enter Choice : 3


     ___ Thank You...!! ___
```