BCSE 308 P -COMPUTER NETWROKS LAB

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Programme	B.Tech	Slot	L1+L2
Course	CSE	Semester	5
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Ex No : 3.a

Aim : To write a program for Go Back N ARQ

Code:

```cpp
#include <iostream>
#include <vector>

using namespace std;
void sendPackets(vector<int>& packets, int ws) {
    int n = packets.size();
    int base = 0;
    int nextSeqNum = 0;
    int ft = 0;
    int pm = 0;
    bool mp = false;

    while (base < n) {
        for (int i = base; i < min(base + ws, n); i++) {
            cout << "Sending packet: " << packets[i] << endl;
            ft++;
        }
        for (int i = base; i < min(base + ws, n); i++) {
            int ack;
            cout << "Enter acknowledgment for packet " << packets[i]
<< ": ";
            cin >> ack;
            if (ack != packets[i] + 1) {
                cout << "Packet " << packets[i] << " was missed!" <<
endl;
```

```cpp
                pm++;
                mp = true;
            } else {
                cout << "Received acknowledgment " << ack << " for
packet " << packets[i] << endl;
            }
        }
        if (mp) {
            cout << "Retransmitting the entire window..." << endl;
            mp = false;
            continue;
        }
        base += ws;
    }

    cout << "Total frames transmitted: " << ft << endl;
    cout << "Total packets missed: " << pm << endl;
}

int main() {
    vector<int> packets = {1, 2, 3, 4, 5, 6, 7, 8, 9,
10,11,12,13,14,15};
    int ws = 4;

    sendPackets(packets, ws);

    return 0;
}
```

Output Screen Shots:

```
Sending packet: 1
Sending packet: 2
Sending packet: 3
Sending packet: 4
Enter acknowledgment for packet 1: 2
Received acknowledgment 2 for packet 1
Enter acknowledgment for packet 2: 3
Received acknowledgment 3 for packet 2
Enter acknowledgment for packet 3: 4
Received acknowledgment 4 for packet 3
Enter acknowledgment for packet 4: 5
Received acknowledgment 5 for packet 4
Sending packet: 5
Sending packet: 6
Sending packet: 7
Sending packet: 8
Enter acknowledgment for packet 5: 5
Packet 5 was missed!
Enter acknowledgment for packet 6: 5
Packet 6 was missed!
Enter acknowledgment for packet 7: 5
Packet 7 was missed!
Enter acknowledgment for packet 8: 5
Packet 8 was missed!
Retransmitting the entire window...
Sending packet: 5
Sending packet: 6
Sending packet: 7
Sending packet: 8
Enter acknowledgment for packet 5: 6
Received acknowledgment 6 for packet 5
Enter acknowledgment for packet 6: 7
Received acknowledgment 7 for packet 6
Enter acknowledgment for packet 7: 7
Packet 7 was missed!
Enter acknowledgment for packet 8: 7
Packet 8 was missed!
Retransmitting the entire window...
Sending packet: 5
```

```
Sending packet: 5
Sending packet: 6
Sending packet: 7
Sending packet: 8
Enter acknowledgment for packet 5: 6
Received acknowledgment 6 for packet 5
Enter acknowledgment for packet 6: 7
Received acknowledgment 7 for packet 6
Enter acknowledgment for packet 7: 8
Received acknowledgment 8 for packet 7
Enter acknowledgment for packet 8: 9
Received acknowledgment 9 for packet 8
Sending packet: 9
Sending packet: 10
Sending packet: 11
Sending packet: 12
Enter acknowledgment for packet 9: 10
Received acknowledgment 10 for packet 9
Enter acknowledgment for packet 10: 10
Packet 10 was missed!
Enter acknowledgment for packet 11: 12
Received acknowledgment 12 for packet 11
Enter acknowledgment for packet 12: 13
Received acknowledgment 13 for packet 12
Retransmitting the entire window...
Sending packet: 9
Sending packet: 10
Sending packet: 11
Sending packet: 12
Enter acknowledgment for packet 9: 10
Received acknowledgment 10 for packet 9
Enter acknowledgment for packet 10: 11
Received acknowledgment 11 for packet 10
Enter acknowledgment for packet 11: 12
Received acknowledgment 12 for packet 11
```

```
Enter acknowledgment for packet 12: 13
Received acknowledgment 13 for packet 12
Sending packet: 13
Sending packet: 14
Sending packet: 15
Enter acknowledgment for packet 13: 14
Received acknowledgment 14 for packet 13
Enter acknowledgment for packet 14: 15
Received acknowledgment 15 for packet 14
Enter acknowledgment for packet 15: 15
Packet 15 was missed!
Retransmitting the entire window...
Sending packet: 13
Sending packet: 14
Sending packet: 15
Enter acknowledgment for packet 13: 14
Received acknowledgment 14 for packet 13
Enter acknowledgment for packet 14: 15
Received acknowledgment 15 for packet 14
Enter acknowledgment for packet 15: 16
Received acknowledgment 16 for packet 15
Total frames transmitted: 30
Total packets missed: 8


...Program finished with exit code 0
Press ENTER to exit console.
```

Result: Thus the program Go Back N ARQ was executed and verified.