PROGRAM 4

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- 2K18/SE/041

Aim:- Write a C++ program to implement Sliding Window Protocol.

Theory:- The sliding window is a technique for sending multiple frames at a time. It controls the data packets between the two devices where reliable and gradual delivery of data frames is needed. It is also used in TCP (Transmission Control Protocol).

In this technique, each frame has sent from the sequence number. The sequence numbers are used to find the missing data in the receiver end. The purpose of the sliding window technique is to avoid duplicate data, so it uses the sequence number.

CODE:-

```cpp
#include<bits/stdc++.h>

#include<cstdio>

#include<iostream>

using namespace std;


int main(){

int f,w;

int cnt=0;

cout<<"\nEnter the Window Size : ";

cin>>w;

cout<<"Enter the number of frames : ";
```

```cpp
cin>>f;

int i=1; int k=1;

cout<<"\nAfter sending "<<w<<" frames, sender waits for acknowledgment to be sent by receiver."<<endl;

while(i<=f) {

if(i==1){

for(int j=1;j<=w && j<=f;j++){

   cout<<"\nFrame "<<j<<" is sent "<<endl;

   cnt++;

  }

}

if(i != 1){

cout<<"Sent Frame "<<i<<endl;

cnt++;

}

cout<<"\nAcknowledgment is received for frame "<<k<<" by sender"<<endl;

 k++;

cout<<endl;

 if(i==1){

 i += w ;

 }

 else{

   i++;

 }
```

```cpp
}


for(int a=k; a<=f; a++){

    cout<<"\nAcknowledgment is received for frame "<<a<<" by sender"<<endl;

}

cout<<"\nTotal number of transmissions : "<<cnt<<endl;

return 0;

}
```

OUTPUT:-

```
C:\Users\Ashish\Desktop\slidingwindow.exe

Enter the Window Size : 3
Enter the number of frames : 8

After sending 3 frames, sender waits for acknowledgment to be sent by receiver.

Frame 1 is sent

Frame 2 is sent

Frame 3 is sent

Acknowledgment is received for frame 1 by sender

Sent Frame 4

Acknowledgment is received for frame 2 by sender

Sent Frame 5

Acknowledgment is received for frame 3 by sender

Sent Frame 6

Acknowledgment is received for frame 4 by sender

Sent Frame 7

Acknowledgment is received for frame 5 by sender

Sent Frame 8

Acknowledgment is received for frame 6 by sender


Acknowledgment is received for frame 7 by sender

Acknowledgment is received for frame 8 by sender

Total number of transmissions : 8

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Process exited after 10.37 seconds with return value 0
Press any key to continue . . . _
```

Learning Outcome:- We have successfully implemented sliding window protocol and we learnt its application in computer network.