

```
/*selective repeat ARQ*/
```

```
#include <stdio.h>
```

```
#include <stdbool.h>
```

```
// Function prototypes
```

```
void sendFrames(int frames[], int start, int end);
```

```
void receiveAcknowledgments(bool ack[], int start, int end);
```

```
int main() {
```

```
    int num_frames, window_size;
```

```
    printf("Enter window size: ");
```

```
    scanf("%d", &window_size);
```

```
    printf("Enter number of frames to transmit: ");
```

```
    scanf("%d", &num_frames);
```

```
    int frames[num_frames];
```

```
    bool ack[num_frames];
```

```
    printf("Enter %d frames: ", num_frames);
```

```
    for (int i = 0; i < num_frames; i++)
```

```
        scanf("%d", &frames[i]);
```

```
    printf("\nWith Selective Repeat ARQ, the frames will be sent in the following manner (assuming no corruption of frames)\n\n");
```

```
    for (int i = 0; i < num_frames; i += window_size) {
```

```
        printf("Sending frames from %d to %d\n", i, i + window_size - 1);
```

```
        sendFrames(frames, i, i + window_size);
```

```

printf("Waiting for acknowledgments...\n");
// Simulating acknowledgment for frames within the window
for (int j = i; j < i + window_size; j++) {
    // Simulating some frames being lost or corrupted
    if (j % 2 == 0) {
        ack[j] = true; // Assume acknowledgment received
    }
}
receiveAcknowledgments(ack, i, i + window_size);
}

printf("\nAll frames transmitted and acknowledged successfully.\n");

return 0;
}

// Function to simulate the sending of frames
void sendFrames(int frames[], int start, int end) {
    for (int i = start; i < end; i++) {
        printf("Sending frame %d\n", frames[i]);
    }
}

// Function to simulate the receiving of acknowledgments
void receiveAcknowledgments(bool ack[], int start, int end) {
    for (int i = start; i < end; i++) {
        if (ack[i]) {
            printf("Acknowledgment received for frame %d\n", i);
        } else {
            printf("Timeout: Resending frame %d\n", i);
        }
    }
}

```

```
}  
  
}
```

```
Enter window size: 4  
Enter number of frames to transmit: 4  
Enter 4 frames: 0 1 2 3  
  
With Selective Repeat ARQ, the frames will be sent in the following manner (assuming no corruption of frames)  
  
Sending frames from 0 to 3  
Sending frame 0  
Sending frame 1  
Sending frame 2  
Sending frame 3  
Waiting for acknowledgments...  
Acknowledgment received for frame 0  
Acknowledgment received for frame 1  
Acknowledgment received for frame 2  
Acknowledgment received for frame 3  
  
All frames transmitted and acknowledged successfully.  
  
-----  
Process exited after 10.91 seconds with return value 0  
Press any key to continue . . . |
```