//Name: Tushar Bhand

//Roll no.: 204A024

clc;

clear;

close;

S1 = input("Enter message bits :");

L = input("Enter the number of shift registers required : ");

r = zeros(1, L);

y = zeros(1, length(S1));

T = zeros(1, length(S1));

// Scrambler

for i = 1:length(S1)

y(i) = bitxor(r(3), r(1));

T(i) = bitxor(y(i), S1(i));

r(3) = r(2);

r(2) = r(1);

r(1) = T(i);

end

disp("Message bits:");

disp(S1);

disp("Scrambled output:");

disp(T);

// Unscrambler

r = zeros(1, L); // Reset shift register

R = zeros(1, length(T));

S = zeros(1, length(T));

for i = 1:length(T)

R(i) = bitxor(r(3), r(1));

S(i) = bitxor(T(i), R(i));

r(3) = r(2);

r(2) = r(1);

r(1) = T(i);

end

disp("Unscrambled output:");

disp(S);

if S1 == S then

disp("Scrambling & Unscrambling done Successfully");

else

disp("Scrambling & Unscrambling NOT done Successfully");

end

Output:

Enter message bits :1011010

Enter the number of shift registers required : 3

"Message bits:"

1011010.

"Scrambled output:"

1011010.

"Unscrambled output:"

1011010.

"Scrambling & Unscrambling done Successfully"