Code:

% Parameters

num\_users = 4;

% Number of users

num\_bits = 100;

% Number of bits per user

SNR dB = 10;

% Signal-to-Noise Ratio (in dB)

% Generate random data for each user

user\_data randi([0,1], num\_users, num\_bits);

% Generate spreading codes for each user

spreading codes round(rand(num\_users, num\_bits))\*2-1; % BPSK

% Modulate data using spreading codes

spread\_data user\_data. spreading\_codes;

% Add noise to the transmitted signal

SNR=10^(SNR\_dB/10); % Convert SNR from dB to linear scale

noise\_power1/SNR; % Noise power

noise = sqrt(noise\_power/2)\* (randn(num\_users, num\_bits) + li \*randn(num\_users, num\_bits));

received\_signal spread\_data + noise;

% Demodulate received signal using the same spreading codes

demodulated\_data = received\_signal. spreading\_codes;

% Decode data for each user

decoded data sum(demodulated\_data, 2) > 0;

% Display results

for i=1:num\_users

disp(['User', num2str(i), Original Data:', num2str(user\_data(i,:))]);

disp(['User', num2str(i), 'Decoded Data: ', num2str(decoded\_data(i,:))]);

end