**ECHO ADDITION AND ECHO REMOVAL:**

**CODE:**

clc

clear all

close all

%Reading the original audio signal

fs=44100;

y=audioread

%Playing the original song

p=audioplayer(y,fs);

play(p);

stop(p);

%Adding echo

num=[1,zeros(1,4800),0.8];

den=[1];

x=filter(num,den,y);

p=audioplayer(x,fs);

play(p);

stop(p);

%Removing echo

den=[1,zeros(1,4800),0.8];

num=[1];

r=filter(num,den,x);

p=audioplayer(r,fs);

play(p);

stop(p);

w=-pi:0.01:pi;

num=[1 zeros(1,10) 0.8];

den=[1];

h=freqz(num,den,w);

subplot(2,1,1);

plot(w/pi,abs(h),'b');

ylabel('Magnitude');

subplot(2,1,2);

plot(w/pi,angle(h));

ylabel('Phase');

%Noisy sound signal generation

N=5000;

x=randn(1,N);

sound(x,8000)

%Comb filter implementation

w=-pi:0.01:pi;

den=[1,zeros(1,10),0.9];

num=[1];

h=freqz(num,den,w);

subplot(2,1,1);

plot(w/pi,abs(h),'b');

ylabel('Magnitude');

subplot(2,1,2);

plot(w/pi,angle(h));

ylabel('Phase');

%Filtering noisy signal through comb filter

y=filter(num,den,x);

sound(y,8000)

