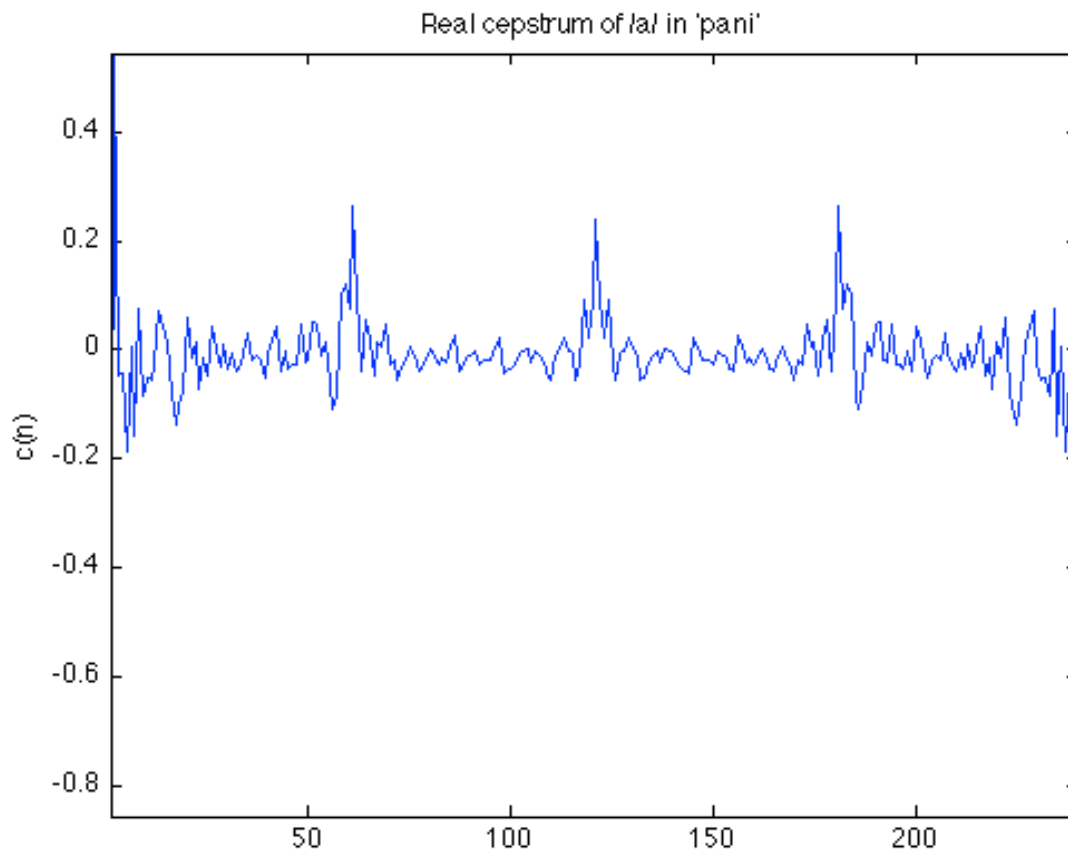


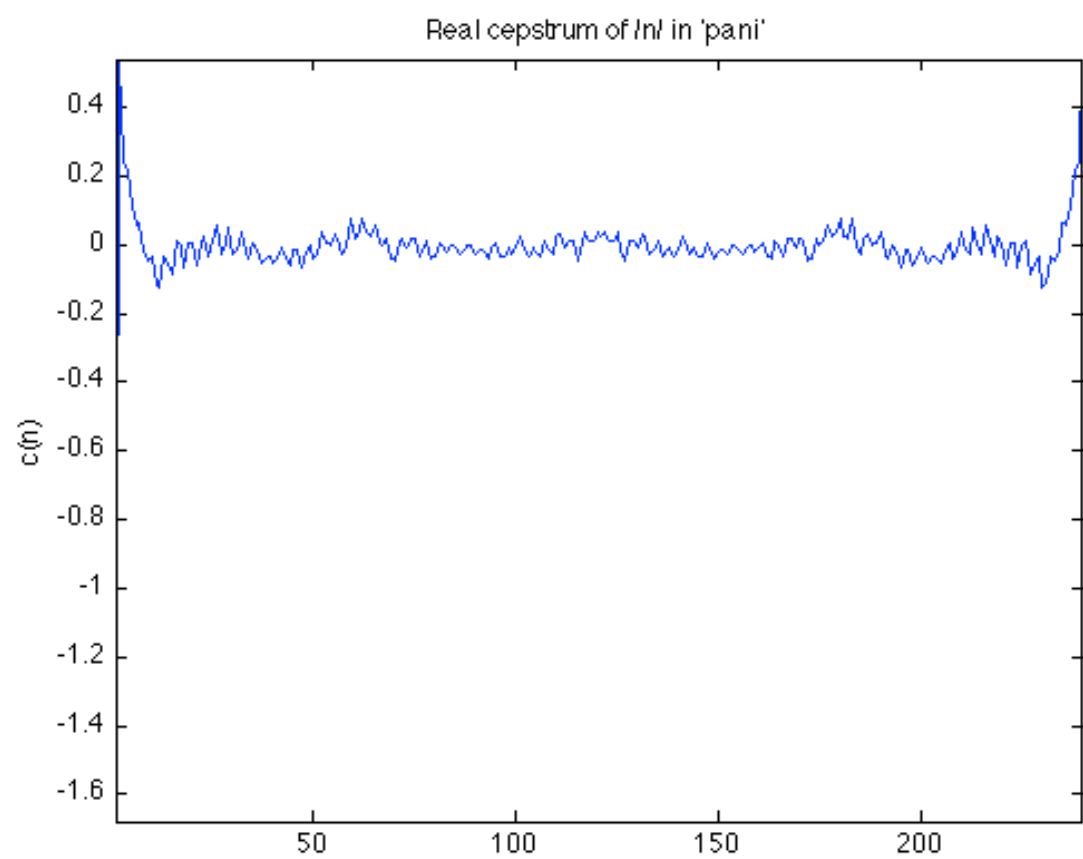
EE 679 Computing Assignment 4

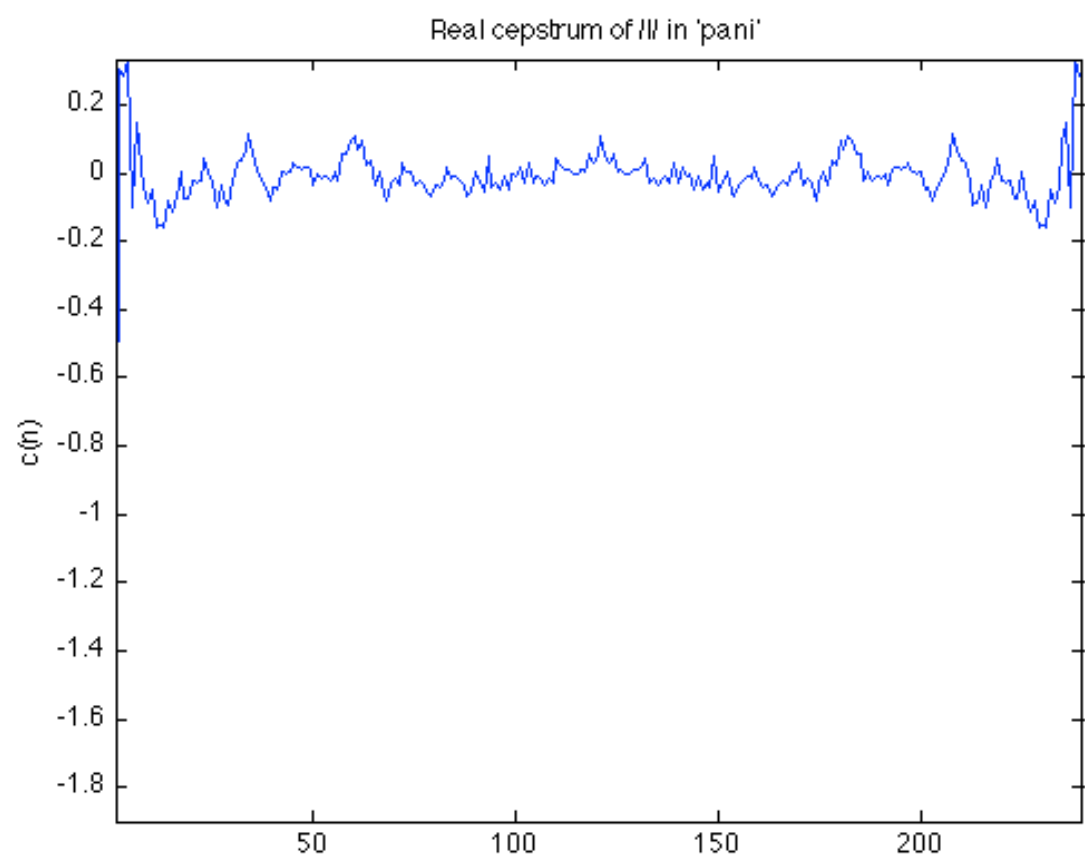
Name: Swrangsar Basumatary Roll: 09d07040

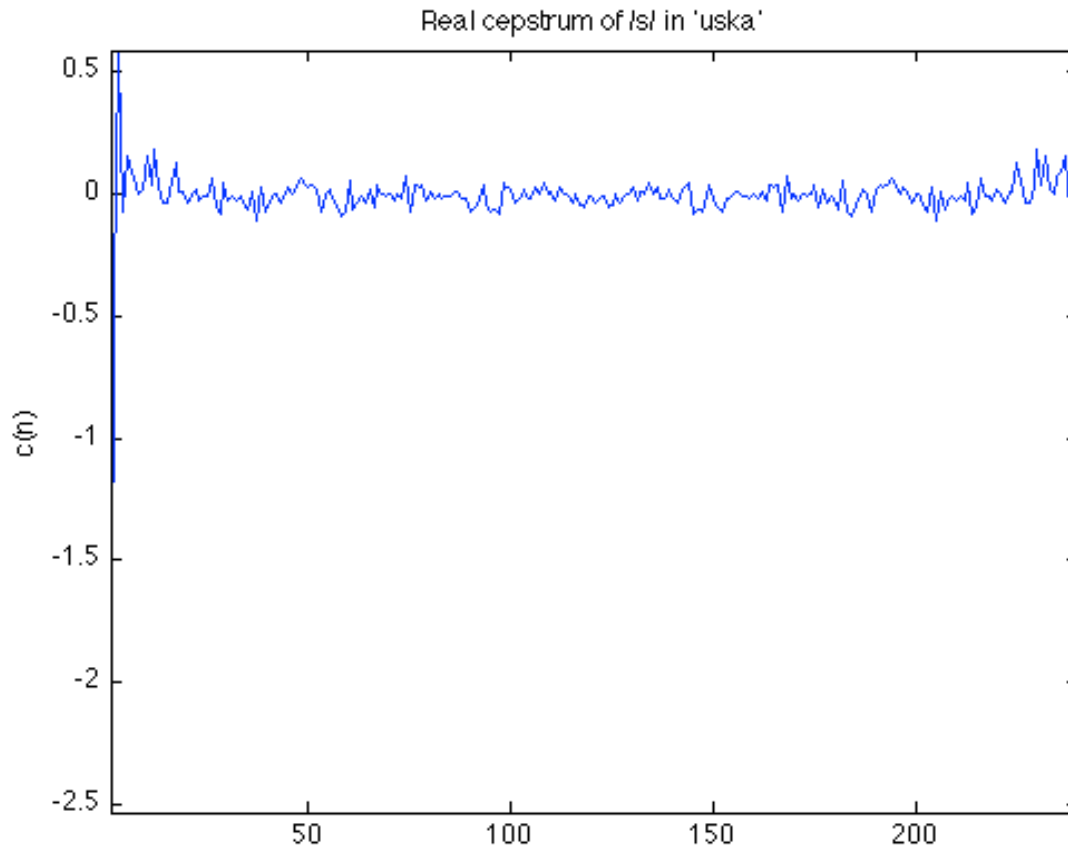
Question 1

The plots:









The functions:

```
function [realCepstrum, fs] = getRealCepstrum(speechSegment)

[windowedSignal, fs] = getWindowedSignal(speechSegment);
logMagnitudeSpectrum = getLogMagnitudeSpectrum(windowedSignal);
realCepstrum = ifft(logMagnitudeSpectrum);
```

```
end
```

```
%% get a 30 ms window of speech signal
```

```
function [windowedSignal, fs] = getWindowedSignal(inputFile)
```

```
windowDuration = 0.030; % in ms
```

```
[y, fs] = wavread(inputFile);
length = size(y, 1);
centralIndex = round(length/2);
M = round(windowDuration * fs);
```

```
startIndex = round(centralIndex - M/2);  
windowedSignal = y(startIndex:startIndex + M-1);
```

```
end
```

```
%% get logarithm of the magnitude spectrum
```

```
function logMagnitudeSpectrum =  
getLogMagnitudeSpectrum(windowedSignal)
```

```
mag = fft(windowedSignal);  
logMagnitudeSpectrum = log(abs(mag));
```

```
end
```

The script:

```
close all; clear all;
```

```
addpath /Users/swrangsarbasumatary/Desktop/speechAssignment4/  
dataFiles/  
addpath /Users/swrangsarbasumatary/Desktop/speechAssignment4/  
addpath /Users/swrangsarbasumatary/Desktop/speechAssignment4/q1/
```

```
%% plot real cepstrum of /a/ in 'pani'
```

```
rc1 = getRealCepstrum('a_pani.wav');  
figure(100); clf;  
plot(rc1); axis tight;  
title('Real cepstrum of /a/ in 'pani'');  
ylabel('c(n)');
```

```
%% plot real cepstrum of /n/ in 'pani'
```

```
rc2 = getRealCepstrum('n_pani.wav');  
figure(200); clf;  
plot(rc2); axis tight;  
title('Real cepstrum of /n/ in 'pani'');  
ylabel('c(n)');
```

```
%% plot real cepstrum of /I/ in 'pani'
```

```
rc3 = getRealCepstrum('i_pani.wav');  
figure(300); clf;  
plot(rc3); axis tight;
```

```
title('Real cepstrum of /I/ in ''pani'');
ylabel('c(n)');

%% plot real cepstrum of /s/ in 'uska'

rc4 = getRealCepstrum('s_uska.wav');
figure(400); clf;
plot(rc4); axis tight;
title('Real cepstrum of /s/ in ''uska'');
ylabel('c(n)');

rmpath /Users/swrangsarbasumatary/Desktop/speechAssignment4/q1/
rmpath /Users/swrangsarbasumatary/Desktop/speechAssignment4/
rmpath /Users/swrangsarbasumatary/Desktop/speechAssignment4/
dataFiles/
```