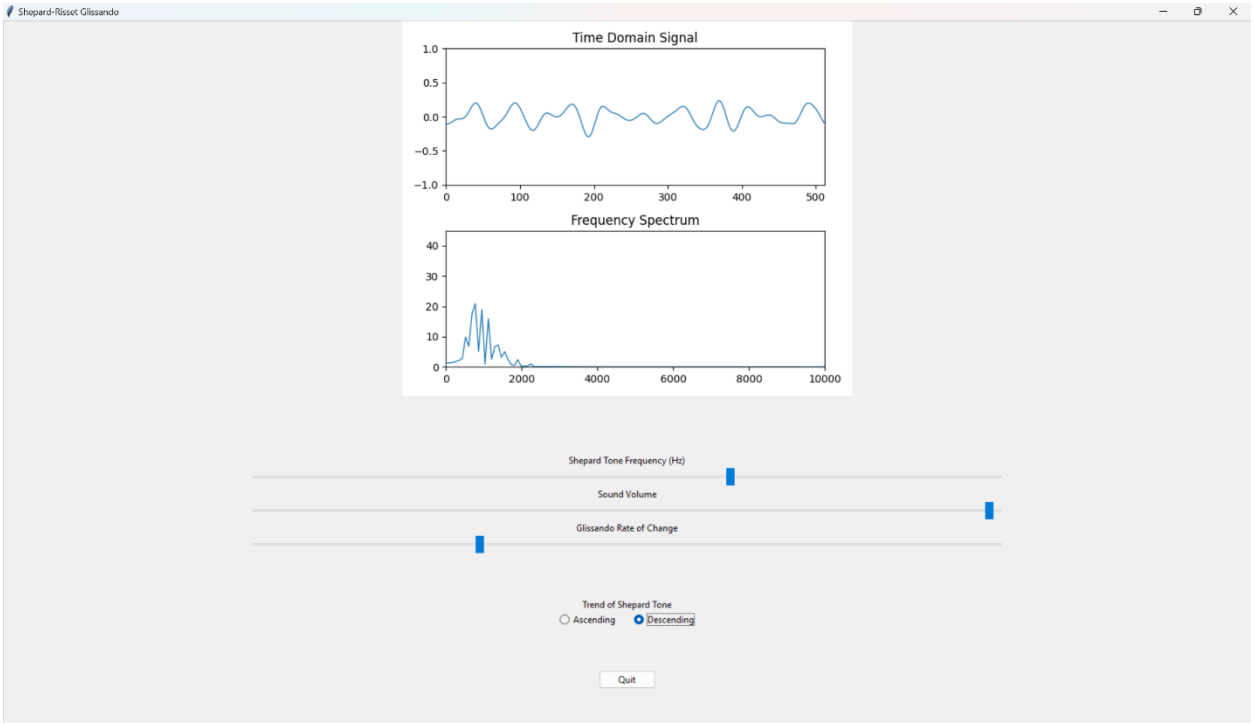
Written Comments for DSP exam problem

First of all, the screenshot picture of the GUI for the Shepard tone is presented at below, to show the appearance of user interface.



Component description

Slider of Shepard Tone Frequency: It controls the basic frequency of tones, which can be adjusted to lower frequency or higher frequency.

Slider of Sound Volume: It controls the volume of the Shepard tone that users can hear.

Slider of Glissando Rate of Change: It controls the certain rate of frequencies rise up or decline.

Radio buttons of Trend of Shepard Tone: By checking the radio button, it controls if the tone is increasing or decreasing.

Quit Button: By clicking the button, the program will be terminated and generated a wav file which contains the audio sound when the code was running.

Illusion of Shepard Tone

When the Shepard tone is playing, there are actually multiple tones playing at the same time. Each tone is separated by an octave and looping on its own continuously. At any given moment during playback, we can hear several tones are increasing or decreasing, and it creates the auditory illusion that the tone is kept going up or down all the time.