**EXPERIMENT NO. 2(B)**

**AIM:** Write a MATLAB program to write an audio file, at different sampling rates, at different bits per sample.

**TOOL USED:** MATLAB 11

We can write ".wav" audio files by using the MATLAB command "wavwrite". The command format is

wavwrite(y, fs, nbits, waveFile);

Where "y" is the audio data, "fs" is the sample rate, "nbits" is the bit resolution, and "waveFile" is the .wav file to be written to.

We store the audio data in the data type 'uint8' and write the data to the wave file "filename.wav". We then invoke the corresponding application for ".wav" for the playback of the file. Since the variable "y" for the command "wavwrite" should be a double within the range [-1, 1], we need to do some conversion if the recorded data is in other data types, such as 'single', 'int16', or 'uint8'. Here is the table for conversion.

|  |  |
| --- | --- |
| **Data types of "y"** | **How to convert it to 'double' within [-1, 1]** |
| double | No conversion needed |
| single | y = double(y); |
| int16 | y = double(y)/32768; |
| uint8 | y = (double(y)-128)/128; |

MATLAB can also write other audio files, such as '.au', which are the audio files used in NeXT/Sun workstations. The corresponding command is "auwrite".

**STEPS FOLLOWED:**

1. Read the audio file given.

2. Get the values of sampling rate and bit resolution.

3. Write the audio file at 1000, 4000,8000,10000 sampling rate.

4. Play all saved files and observes the difference.

**RESULT:**

The audio signal is written successfully at different sampling rates.