## INTRODUCTION

In this activity, you are to write a program *reverse.c* in *reverse* directory, which will play your audio in a reverse direction. The reverse directory will hang off from *clab* directory. We will use the RRA audio format.

Download the arplay, rplay and song.rra files from LMS or dropbox account. Note that *arplay* and *rplay* are both executables and hence need to change the permission values before using these files as shown below.

```
chmod a+x arplay
chmod a+x rplay
```

## PLAYING THE SONG

You can play the audio file *song.rra* by using *arplay* or *rplay* utility tools. But before testing the *arplay* and *rplay* tool, make sure that you close any other audio plugins running in your browser. For example youtube web page should be closed. You can then run the audio file using the tool as shown below.

```
./arplay song.rra
```

If you get any error saying *Device or resource busy*, try *rplay* instead of *arplay*.

```
./rplay song.rra
```

Make sure that your sound settings is not in mute position. Your task is to write a C program in *reverse.c* to reverse the song. The final output of reverse program is sent to the screen. The next command sends the output to the arplay utility, which plays the song:

```
./reverse song.rra | ./arplay
```

If *arplay* does not work, try *rplay*.

Instead of playing the output, you can save it to a file. As an example, the command:

```
./reverse song.rra > new.rra
```

saves the processed audio in a file named *new.rra*. You can look at both the original file and the newly saved file using *vim* and you can play the new file using *arplay*:

```
./arplay new.rra
```

As you already know the RRA format is divided into two section: *Header* and *data*. The two sections will be divided by %% signature. The header must start with the token `RRAUDIO`, while the token `%%` indicates the end of the header. The RRA sound data follows the header as shown below:

```
RRAUDIO
%%
0
0
1
-2
...
```

In between the `RRAUDIO` token and the `%%` token, information about the audio file may appear as shown below.

```
RRAUDIO
createdBy: songlib
samples: 000002345102
modifiedBy: wnoise
%%
0
0
1
-2
...
...
...
300
500
0
0
0
0
```

After running your reverse program on song.rra, you will see the following output:

```
RRAUDIO
createdBy: songlib
samples: 000002345102
modifiedBy: wnoise
%%
0
0
0
0
```

```
500
300
...
...
...
-2
1
0
0
```

## SUBMISSION INSTRUCTIONS

Change to the directory containing your activity *reverse*. Do an *ls* command. You should see something like this:

```
reverse.c song.rra new.rra reverse
```

among other files.

Submit your activity using the following command:

```
submit clab mr reverse <your-iiitb.org-email-address>
```