Goals: This lab is designed to familiarize you with the audio interface (the thing that gets audio from the computer to your headphones) at the lab station and how Pro Tools sends audio to that interface. Experimentation is highly encouraged. The sound you will be hearing in this lab is called White Noise which is the combination of all frequencies at the same gain (loudness) within the human frequency range of 20Hz to 20kHz. It is common to test and calibrate gear using white or pink noise. You need to know what it sounds like when unmodified and then be able to identify how it has been modified. You will get used to it. Sounds kind of like a waterfall. Manipulate it right and you can make the ocean or space ship taking off.

Before you run Pro Tools be sure there is a USB cable connecting the Fast Track Duo to the computer. If there is a USB cable connected, the power light will be on. The power light is on the front, in the lower right corner of the box.

Plug your headphones into the headphone jack located in the lower right corner of the Fast Track Duo, next to the power light.

Turn up the headphone volume to about 50% so you don’t blow your brains out when you hit play. The headphone volume knob is just above the headphone jack.

If you are still having trouble getting audio, turn up the Main Output to about 80%, located next to the headphone volume knob.

Make sure the “Direct Monitor” button is out; the off position.

One other thing you need to check: Chances are the function keys on the keyboard may have been set to be “Mac Operating System” keys and not as the individual function keys of the active application, in this case Pro Tools. If you press F8 and iTunes comes up, here is what you have to do:

In the upper left of your screen is an Apple icon. Click on it, pull down to “System Preferences” and click on it. A window pops up. In the row labeled “Hardware” click on Keyboard. A window similar to the one here will come up. Click on the “Keyboard” tab across the top of THIS window. Make sure there is a check in the box labeled “Use all F1, F2, etc...” as highlighted in this picture. This will keep the operating system from conquering the F (function) keys and allow the Pro Tools functionality of the F keys to behave normally. Pro Tools F Keys are critical to editing quickly. If you have a laptop – you can temporarily enable the F keys as Mac OS functions by pressing and holding the Fn key on your keyboard, then the desired F key.

Regarding Keyboard Shortcuts – I try to be consistent in the document, but it is a process. As a rule – you press and hold the key modifier, e.g. CMD, SHIFT, CTRL or OPT, then you tap the letter(s) command after that. The Save instructions are: “Press and Hold the CMD key and tap the S key.” Written CMD + S or CMD S.

If Pro Tools Runs fine then skip to “You are now finally ready to start the lab.” On page 2.
If Pro Tools Runs fine then skip to “*You are now finally ready to start the lab.” below.

If Pro Tools comes up saying the Sample Rate doesn’t match or the TCE is not supported then you need to do the following steps.

Press OK in that error window
Quit Pro Tools (CMD + Q)
Run Pro Tools again, but be ready to press and hold the “N” key on the keyboard.
Run Pro Tools and wait for the splash window, that purple rectangle, to come up. As soon as that splash window comes up, press and hold the “N” key until the “Playback Engine” window comes up (pictured above).
In that window, where it says Play Back Engine, chances are that Pro Tools Aggregate I/O is selected. Click and drag on that pull-down and select Fast Track Duo, then hit OK. No matter what your system has, just get it OFF of the Aggregate and select a specific piece of hardware. In the labs we use “Fast Track Duo”.

Pro Tools will begin to run, but you are not done, yet.
Once Pro Tools is up and running, go to the SetUp pull down menu and select I/O.

Another window pops up, defaulting to the OutPut Tab.
In the lower left quadrant of that window, click on the “Default” button. Then select the Bus tab from across the top of that window and click on the “Default” button again, then click OK. Repeat this one more time for the Input Tab. Any time Pro Tools seems to be confused with Inputs and Outputs just come back to this page, delete all I/Os and click on the “Default” button in the Input, and Outout tabs.

You now have just reset Pro Tools to acknowledge that there is a Fast Track Duo with the two inputs and two outputs of the Fast Track Duo.

* You are now finally ready to start the lab.

All this just to do BEFORE you get started – WHY???

Well, not every studio has the same hardware. You need to know how to resolve these issues because one day you will be the first person in the studio and it will be YOUR job to make sure all the plumbing is correct and working. If you can’t do this, you don’t stand a chance when it gets really hard. Get this nailed down – the rest is easy. Just use common sense – if the hardware only has two outputs then there is no way you can assign 10 outputs to it. The math doesn’t work. One input per hardware connection and ONE output per hardware connection. Kind of a simple rule, right?
Locate the Pro Tools session entitled AE1_Lab1_BC. It should be on the Hard Drive of the lab computer. All of my folders on these computers will be purple. Locate a purple Brad Cox folder. Double click that session icon and Pro Tools will automatically run with the proper settings.

Before you begin, we need to be sure some things are true in Pro Tools. The problem is that we don’t know who was running Pro Tools before you and what they left on or turned off for this lab to work properly. Just go through and make sure these things are true. Many of the commands in this Lab require you to use a keyboard modifier (the Command key) and a keypad number. Just to make sure we are all on the same Macintosh page here is the Macintosh keyboard:

Press and hold the CMD key and tap Keypad 1 (The keypad is off to the right end of the keyboard) to bring up the transport window. You need to verify certain things are the same. When you are done, press CMD + KP1 again to hide the transport. If your transport doesn’t look like this, click on the triangle in the upper right corner of the transport, pull down to Expanded, then repeat the same step, but click on ALL.

Pre & Post Roll – OFF, click to toggle.
Loop mode OFF (Keypad 4 toggles this)
Wait for MIDI: OFF
Metronome: ON
MIDI Merge: OFF
Conductor: ON

Because I don’t know which version of Pro Tools you will be using I can’t address EVERY situation, I can give generalities that should get you going. The window below represents Pro Tools 8 through 10. Pro Tools has an additional box around here. Just make sure the first two boxes and last box are not highlighted. Click to toggle their status.

Across the top of the edit window, the window that has all the tracks where the waveforms show up, the buttons need to look like this: (Pictured – Pro Tools 8 – 10, Your version will be similar)

Slip Mode ON (F3)
Tab to Transient: OFF
Mirror MIDI Editing: ON
Automation Follows Edit: ON
Timeline & Edit Selection: ON
Insertion cursor follows Playback: OFF
Link Track & Edit Selection: ON
Any additional box your version of Pro Tools may have, make it blue. First 2 & last need to be gray.

Once all these things are true, you are ready to start. One more note – if you are using a laptop or a computer that does not have a 10 keypad, go to the Window Pulldown menu and select “Memory Locations” (CMD + Keypad 5). When the directions tell you to use the keypad, just click on the memory.
location number in this memory location window. Everything else will be the same. Open that memory location window just to see what it is like.

We need to be sure that the I/O (Input / Output) are being displayed. There is a column next to the track names that should be labeled I/O as in the picture below. If there is no I/O column then in the white box above the Audio1 track is the “Edit Window View Selector”. Click on it and make sure there is a check next to the I/O.

Because we don’t know who was using the system before you, we need to make sure the outputs for this session are properly assigned. On the keypad, tap .6. (period, Six, period). If you don’t have a 10 keypad then click on memory location #6. With the F7 tool – the selector tool – click on the name of track 1 – labeled Audio 1. Press and hold the shift key and click on Audio 8 track name. This will select all the tracks in between. Now Press and hold the Option (OPT) key. Click on the output of the track labeled Audio 1 and select Output 1-2. All of the other tracks will have their outputs changed to Output 1-2 as well. Sometimes, FastTrack renames Output 1-2 to something else, e.g. Front Left/Front Right – so, if the lab say Output 1-2, and your Pro Tools says Front Left / Front Right – consider them the same thing. Since we don’t know if anyone has changed the default name, always use the first “Orange” colored Inputs and Outputs.

On the keyboard’s keypad (if you don’t use the keypad this won’t work. The keypad is off to the right of the typing keyboard) tap .1. (period, 1, period) in that order and Pro Tools will show you a track whose output is set to Output 1-2. This means that the stuff on that track will go to the Fast Track Duo through the two channels 1 and 2, depending on where the panning knob is set. When you hit play (space bar), if this fader is turned up to Unity Gain, the level you see in Pro Tools should be same level getting on the meters and to your headphones.

When you press .1. (period 1 period) the channel fader should come up, “floating” over top of the tracks in the edit window. It looks like this diagram to the left. There are several things to know about this fader.

**Track Name:** No two tracks can have the same exact name. Track names are unique.

**Output View Selector:** Which output do you want THIS fader to display.

**Output Assignment:** Where audio from this track is going to from here.

**Automation status:** See Lab 9 for Automation Details – Leave it in Read. When that Safe button is green, it means that no new automation can be remembered on this track.

**Panning knob & Panning value:** How much audio from this track goes out the left or right. S – Solo or M – Mute: Solo = Automatically Mute all non Solo’d tracks. Mute = No audio from this track is heard. Press SHIFT and S, what happens? SHIFT and M – What happens? Watch the other track’s MUTE buttons when you solo a track. Then what happens when you actually click on the MUTE button.

**Meter:** Indicates that there is audio on the track and what that audio is doing.

**Volume Fader and Fader value:** This is called the “Fader”, says how much audio comes out in relation to the originally recorded levels.

Click and drag on the Panning knob Up & Down then Left & Right – observe and listen to what happens. Why is this important? What does “Panning” really mean? What is it really doing?

Click and drag on the volume fader. What is it really doing? What kind of number is it? What does this number mean?
If you are not hearing anything, then someone has really messed up the system and it needs to be corrected now. The troubleshooting steps are rather advanced, but if you follow the step-by-step you will be fine. Your first option is to get the lab guy and make it his problem - let the lab guy fix it. If for some reason the lab dude can’t fix this problem, isn’t there or this is YOUR system at home, here is what you have to do: Check the Trouble Shooting steps at the end of this document. Systematically check each one.

**Lab continued (assuming you have audio):**

Press and hold the CMD Key and tap the “ = ” key. This will toggle the Mixer window. While playing back, experiment with the faders to see how to turn the signal up or down (louder or quieter). Try the Channel Fader, headphone volume (fader) on the Fast Track Duo. Watch the lights above the master faders. What happens when you turn up the signal? What happens when you turn down the signal? Once you get audio, experiment with the mute buttons to see how it affects your audio.

On the computer keyboard’s keypad. Press . 2 . (period 2 period) You will see 8 tracks come up with audio regions staggered. When you hit play you will hear a noise burst out of both speakers. If you have headphones on it will sound like it is inside your head. Go to the mixer (CMD =) and move the panning of the odd numbered tracks to the far hard left – the value should read pan <100. Take the even numbered channels and pan them hard right – the value should read pan 100>. Looks like this diagram.

Each burst lasts 5 seconds before going on to the next track. If you put Pro Tools into Loop Play Mode before you hit play (CTRL + Click on the play button) this will repeat over and over until you hit stop.

On the computer keyboard’s keypad. Press . 3 . (period 3 period) Press play and you should hear the noise start in your left ear in channel one, then pan (travel) to your right ear as channel two begins to play. Then as track three plays audio travels back and forth. Watch the lights on the mixing console. What do they do? How do they represent what is going on?

On the computer keyboard’s keypad. Press . 4 . (period 4 period). The edit window comes up with noise on track one and nothing on the other tracks. Press play to verify that the noise is coming out of the left channel.

With the F8 (grabber tools) click and drag that audio region to the next track down. Press play and notice what happens. Continue to drag this audio to tracks 4, 5, and so on until you reach track 8. Notice what happens every time you move the audio. In an earlier step you panned the odd tracks left and the even tracks right. Notice that the meters on the main output reflect which track you moved the audio to.

With the F8 (grabber tool) put the audio back onto track 1. Press and hold the CTRL + OPT key and drag the audio down to the next track. This duplicates the audio onto that next track. Hit play and notice the change in your Master Fader meters. Did it get louder or quieter? Repeat the CTRL + OPT drag again to the next track. How did the meters change, if at all? Keep going until you fill all 8 tracks. As long as you didn’t change the mixing console this signal should be pretty loud. You can adjust the faders on the console or on the individual tracks in Pro Tools if it gets too loud. Try just adjusting the “Phones” fader or “Main Mix” fader.

What does this tell you about playing multiple pieces of audio at the same time? What does it do to your overall volume? How could this affect your mix?

On the computer keyboard’s keypad. Press . 5 . (period 5 period). A single
track will come up and the Pro Tools mixer will come up. To toggle between the mix and edit windows, press CMD = and those windows will toggle to be the most forward window.

Press play and notice where the audio comes out on the master fader. Press STOP and change that track’s output to be Output 1 by clicking on the output of that track and drag to Output 1 (mono) and hit play again. Change the output to be Output 2 (mono) What changes? Notice that you are not moving the audio around in Pro Tools, but you are reassigning where that audio is routed or piped.

One last experiment using the Pan Knob:

With the output of this track still set to Output 2 (mono) go to the mixer and move the pan knob. What happens? Change the output again to Output 1 (mono) and play with the pan tool again. What happens?

You can’t pan anything when the output of the track is set to ONE output. Panning only becomes available when the output of a track is set to more than ONE output.

**What did you learn:**

- How to change the output of one track and all selected tracks
- How to pan (route) audio on one track to the opposite output using the pan knob.

These are the fundamental concepts of getting audio out of Pro Tools and into another device for mixing. These rules do not change if you are going to a $300 mixing console, the Control 24 in the control room, a multi-million dollar SSL mixing console. The rules still apply, universally. Learn one, you have them all.

**ON THE QUIZ:** Terms on the test #1 that will not be covered in class, yet, but they will be on a terms test. You have to be able to define each of these terms in BOLD below.

- **Track** = an individual instrument or sounds on a single row (in the editor) Column in the Mixer.
- **Solo** = Automatically Mute all other tracks.
- **Mute** = Disable this track’s output temporarily, but still processes all plug-ins and audio.
- **Fader** = Makes the sound on a track louder or softer.
- **Panning** = says how much a channel goes out which output.
- **Meter** = The dancing lights next to a fader indicating there is a signal and how that signal behaves.
- **CMD** = (equal key next to the delete key) = toggles between Mix and Edit windows.
- **How to jump to a memory location** = Keypad (KP) period, memory location #, KP Period.
- **Human Frequency Range** = 20Hz to 20,000Hz (20kHz).
- **White Noise** = All frequencies from 20Hz to 20kHz at the same gain.
- **Input** = How audio get into Pro Tools.
- **Output** = How audio gets out of Pro Tools.

**What to hand in:** Just the Session File, the .PTX file

The naming structure should always follow this protocol:

   The Class_YourLastName_What It is.Program Suffix so…

The name of this file (If I were handing it in) should be AE1_Cox_Lab01.ptx Every other name is wrong.

Press F7 – Turns on the Selector tool, Click within Track 1
Recall Memory Location #6 – (this only shows all tracks vertically and turns on the ALL group)
Press CMD A to select all
Press OPT F to fill the screen with all audio
Press CTRL OPT CMD Down Arrow to resize all tracks to the current window.
File > Save As >
Label it: AE1__YourLastName_Lab01.PTX (failure to follow the naming protocol costs you points on the lab. You MUST be able to meet client delivery specifications regardless of how you feel about it.)
Audio Trouble Shooting Check List

If you are not getting audio out of the Fast Track Duo you need to try several things.

- If Pro Tools can’t locate the interface then make sure it is turned on and plugged in via the USB port of the computer. There should be a light in the lower right corner of the faceplate of the Fast Track Duo. If there is no light then either the unit has no power or the LED is burned out, which is highly unlikely. There is no power switch to worry about.
- Are your headphones plugged into the correct port?
- Do your headphones work on a different system?
- Do you have a Stereo to Mono 1/8” to ¼” headphone adapter?
- Does that adapter have a problem. I’ve seen them disintegrate. Is it wobbly or firmly in place?
- Is Pro Tools output set to Output 1-2 and are you getting dancing lights on the meters within Pro Tools on the Master Fader?
- Are your Pro Tools tracks muted or solo’d?
- Are you Pro Tools Faders down? OPT Click on a fader to snap it to Unity Gain.
- If you are not getting meter movement in Pro Tools you won’t hear a thing coming from the M-Audio mixer.
- Did you cascade the outputs? OPT + CMD click on the output of track 1. Select Output 1, NOT Output 1-2 Odd tracks will be output 1, even tracks will be output 2.
- Do you have the headphones plugged into the headphones jack? Plugged in fully – into the headphones and Fast Track Duo unit? It is common for people to mistake the microphone input as a headphone input. Is your adapter made for those headphones?
- Check the volume of the headphones to at last 50%.
- Check the main output volume is set to be at least 50%
- Check the Pro Tools Playback Engine pull-down – make sure selected audio device is your current interface and NOT Pro Tools Aggregate.
- Are the meters on the tracks moving, in that is the playback cursor actually moving over audio?
- Is the track volume turned all the way down?

If you have verified these things then...

- Press CTRL + Eject. This brings up the computer shut down options
- Press <ENTER> to shut down the computer.
- Go get the Lab dude

File Management:

It has already been discussed that you should work from the Student folder not your Flash drive. Pro Tools will not run properly from a Flash drive, especially if it is in the keyboard USB port. You won’t be able to record or save files if you run labs from the Lab Files Drive. The best thing to do:

- Create a folder on the Student Drive that is your name.
- Copy your lab to that folder.
• Work only from that folder, and save often.
• When you’re done, copy that session to your flash drive.
• Create a folder on your Flash Drive labeled AE1_Labs_Completed
• All but Lab 3, you can copy just the .PTX file to the flash drive.
• Lab 3 you will have to copy the whole folder because you create new audio in that lab.

When you hand in a lab, I will only look in the AE1_Labs_Completed folder for your .PTX file. Pay special attention to naming. You are graded on naming and FOLLOWING THE DIRECTIONS.