AUD176.3 Project 3:

Final Audio Production

Student Name:

Student Number:

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1. Session Plan

Project Overview

(Brief description of the recording; sound source, duration, genre)

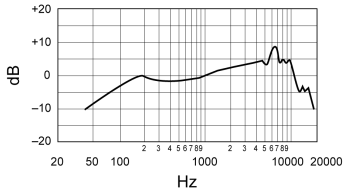
This will be an original song from the two piece band Double Berth. Double Berth consists of _____ (drums and vocals) & ___ (guitar and vocals) write folk, country and soulful songs drawing inspiration from their roots and tales of immersive experiences with a living land. The piece will be a few minutes long. The band is a well rehearsed outfit, with a plan of laying down a live recording first to use as a guide track. We will then layer drums, guitars, bass and vocals before experimenting with relevant other instruments to enhance the diversity of the track.

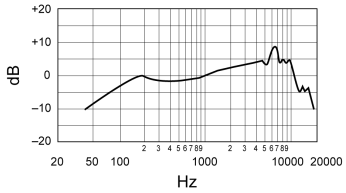
Tracking Schedule

Date	Time	Sound Source
29/07/2023	6pm	Team meeting, organize times, what to bring, transport from Newcastle and a run through of the chosen track.
12/08/2023	10am-5pm	Full day of recording. Live recording for guide track before recording, drums guitar, bass, vocals and experimenting with other sounds. No Click track

Input List

Sound Source	Microphone Choice	Justification
Kick	Beyer M88	We decided to use the Beyer M88, for our kick drum as it has a high SPL capability meaning we can place it close to our louder sources. It also has a humbucking feature (-20db), which I am intrigued to use and test this out to see how quiet the microphone can be. Due to the low weight of the M88 it also has a faster transient response too. This will be handy in recording the kick (small attack time).
Snare	Beyer M201	The Beyer M201, has a unidirectional polar pattern, as it will only be picking up sound from where its directly pointed toward this will help us minmise spill from the rest of the drum kit. In terms of its frequency response it has a boost in the low end around 100 hz and then a pretty flat mis range before in the high end it boosts a bit around 10 kHz before a little roll off at the end.
Hi-Hats	Shure SM7B	This is a dynamic microphone with a cardioid polar pattern. Its frequency range of 50Hz-20kHz means that when recording Hi Hats, the range is wide

		enough to capture the entire sound. The sensitivity is −59 dBV/Pa. Which is quite low, but we will just need to keep this in mind when boosting the gain from the pre amp.
OHR	Audio Technica 2035	The AT 2035, is a smooth sounding condenser mic with a side address cardioid polar pattern. The condenser's sensitivity will be great for micing the drums overhead and capturing a bit of the live room sound also. We will use a shock mount with these mics. This is because of its sensitivity and having it on a high stand near the drums we aim to limit the floor vibrations.
OHL	Audio Technica 2035	The AT 2035, is a smooth sounding condenser mic with a side address cardioid polar pattern. The condenser's sensitivity will be great for micing the drums overhead and capturing a bit of the live room sound also. We will use a shock mount with these mics. This is because of its sensitivity and having it on a high stand near the drums we aim to limit the floor vibrations.
Electric Guitar	Shure SM7B	The Shure SM7B, is an extremely well reviewed dynamic microphone. We are really excited to try this mic out as it seems to be a further step in our progress,using a microphone that is popular with talented and experienced audio engineers. Often an amp can sound better at a louder volume, with an attenuation pad on the SM7B we can record without the microphone distorting. This is a nice option to have. Its frequency range of 50 Hz – 20 kHz will allow us to capture all frequencies within the guitars.
Bass	DI (Did not have enough time)	The advantage of recording bass through a DI box is the way it provides a clean, direct signal without microphone coloration or room ambiance, allowing for precise control during mixing and ensuring a focused and consistent bass tone in the final mix. This is also a technique that will help us save time due to the ease and accessibility of this process.
Vocal 1 (Sammy)	Shure 55SH - Changed to: Warm Audio 87 Microphone.	Our chosen vocal microphone has a frequency range of 50 to 15,000 Hz and has a frequency response as shown in this photo. As you can see there is a nice boost in the high end, especially around the 6-8 khz region. This will hopefully add a brightness and shimmer and airiness to the vocals in the pieces. It is well reviewed and known for its crisp clear tonal reproduction. However as we will be dealing with two different vocalists the best method we can use would be to test out a couple of microphones on each of them to see which one reacts better to which voice.  NOTE: We actually ended up swapping microphones for the vocals when we started recording. After some concerned looks when booking out the Shure 55sh, the tech ops team were quick to suggest that we would be better suited recording with the readily available and generously offered Warm Audio 87 large diaphragm condenser microphone. This microphone has lovely warm tonal qualities that really brighten the vocals whilst also keeping the smooth and nice raspiness present. Its frequency range of 20hz-20kHz allows for subtle breaths and airyness too. For the takes we had the mic in a cardioid polar pattern, with a pop filter and shock mount.

Vocal 2 (Tash)	Warm Audio 87	Our chosen vocal microphone has a frequency range of 50 to 15,000 Hz and has a frequency response as shown in this photo. As you can see there is a nice boost in the high end, especially around the 6-8 khz region. This will hopefully add a brightness and shimmer and airiness to the vocals in the pieces. It is well reviewed and known for its crisp clear tonal reproduction. However as we will be dealing with two different vocalists the best method we can use would be to test out a couple of microphones on each of them to see which one reacts better to which voice.  NOTE: We actually ended up swapping microphones for the vocals when we started recording. After some concerned looks when booking out the Shure 55sh, the tech ops team were quick to suggest that we would be better suited recording with the readily available and generously offered Warm Audio 87 large diaphragm condenser microphone. This microphone has lovely warm tonal qualities that really brighten the vocals whilst also keeping the smooth and nice raspiness present. Its frequency range of 20hz-20kHz allows for subtle breaths and airyness too. For the takes we had the mic in a cardioid polar pattern, with a pop filter and shock mount.
BV Harmonies	Warm Audio 87	‘ ‘

Additional Equipment

(For Example; stereo bar, instrument leads, headphone splitters, moon gel, patch leads, pop filter)

Moon gel, headphone splitter, XLR cables, TRS leads, TS, leads, pop filter, microphone cradle, drum sticks, personal desired instruments.

Contacts

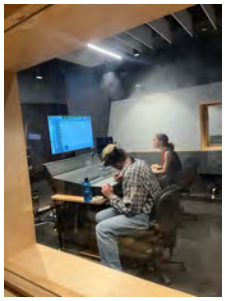
Name	Contact	Role	Notes
Finn Jesse Daeshan	1031119	-Recording/Mixing/Setup/Packdown -Recording/Mixing/Setup/Packdown -Recording/Mixing/Setup/Packdown	

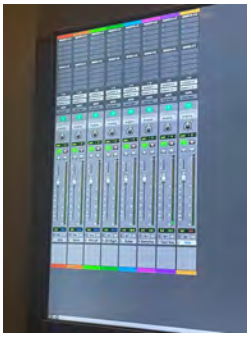
Tone Reference
Folk Bitch Trio - Analogue
Frazey Ford - Done

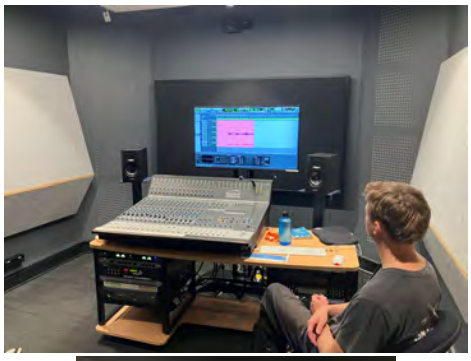
2. Evidence Of Process

TRACKING ORDER / MICROPHONE PLACEMENT / PHOTOS

1) GUIDE TRACK











Our first step was to set the room up with appropriate microphones in order to record a live guide track so the musicians could have this as a headphone mix when doing the proper takes. We checked the levels of the mics running through into the console, converter and in Pro Tools making sure we left between 6-10 db headroom, to avoid clipping and distortion. We then accordingly taped and labeled the console to help us stay oranised. This would be pretty similar to how we would mic the instruments when doing the final takes. Obviously it was hard to limit spill, but that was okay as we knew

this would only be for the musicians to use as a reference. We recorded the best, most in time take and proceeded to start recording the instruments one by one.

2) DRUMS

We used 5 microphones on the drum kit.

Kick: The Beyer M88 on the kick was placed approximately an inch away from the skin of the kick drum. We intended to have it close to use the proximity effect and capture the entire low end of the kick. We also had the microphone slightly off center in order to keep a lot of the attack in the kick but not losing the low end by pulling it too close to the rim. However in the end, the kick drum was unusable as its sound was very poppy and harsh to hear. As to be discussed in the mix section I replaced the kick with an online sample.

Snare: On the snare we used the Beyer M201 and only miced the top of the snare. We directed the microphone at the center of the snare and placed it about 2 inches away from the skin for 2 main reasons. The first being practically we did not want the microphone in the way of the drummer so we decided to step it back a little and also for tonality. (Fuston, 2017) We also wanted to capture a wider frequency range and by stepping it back a little we could capture more of the entire snare and diminish the proximity effect.

Hi-Hat: The Shure SM7B was chosen for the Hi-Hats. I think there were many lessons to be learnt from the Hi-Hat microphone process. We had the mic positioned relatively close to the Hi-Hat, but unfortunately it also was picking up a lot of cymbal spill at the same time. In the future I would like to focus more on isolating the Hi-Hat and perhaps use a microphone with a unidirectional polar pattern as opposed to a cardioid that is not directly pointing at the Hi-Hats.

Overheads L & R: We used two Audio Technica 2035's. These condenser microphones were chosen as we wanted to capture a bit of the room sound alswell as the kit. As the drums can often cause quite solid vibrations within the space, we used cradles to steady the microphones and ensure we limited as much handling noise as possible. Another important feature to our Overhead setup was checking the phase with the kick and snare more importantly. To ensure we didn't have phase cancellation, we used an XLR cable to measure the distance from the center of the snare to each of the overhead microphones, and make sure they were the same distance. Phase cancellation can lead to the drums sounding flat and dull when cutting out certain frequencies. (Audio, 2020) Our desire with the overheads was to capture the entire kit cohesively and glue it all together.

3) GUITAR

On the electric guitar we ran it straight into the Blackstar amplifier. The musicians adjusted the gain and effects settings to the desired amount in the amp. We then used a

torch to determine where the speakers were in the amp and positioned the Shure SM7B directly toward the center about 1 inch away from the mesh and used the proximity effect to capture a rich low end. (Eric, 2022) This was to limit drum spill for the guide track and then for the proper recording we only wanted the guitar and intended to limit the sound of the room. When doing the final takes we also made sure to minimise the room's sound by disengaging the snare and making sure the room was still.

4) VOCALS / BACKING VOCALS

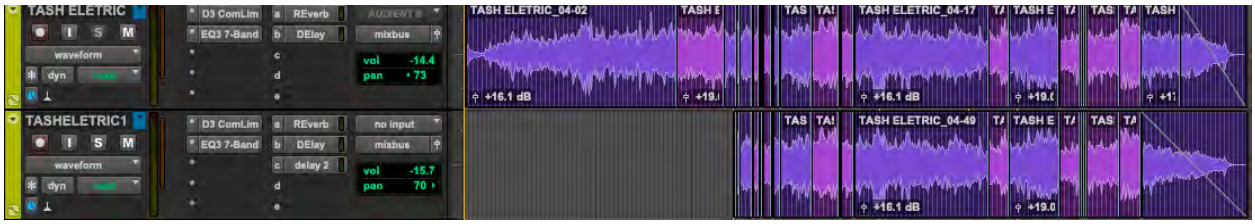
Fortunately, we had generously been given the opportunity to use two Warm Audio 87 microphones for our vocal recordings. We set these large diaphragm condenser's up with pop filters (not seen in photo but we did and cradles). As the two musicians wanted to sing at the same time for the takes, we set the microphones to cardioid polar patterns and positioned them a few meters apart from each other facing toward each other (so the mic directions were crossing) to prevent spill between mics. This technique allowed them to see each other for visual cues and so they felt comfortable. We followed with this same technique for the backing vocal takes also.

EDITING AND ARRANGEMENT

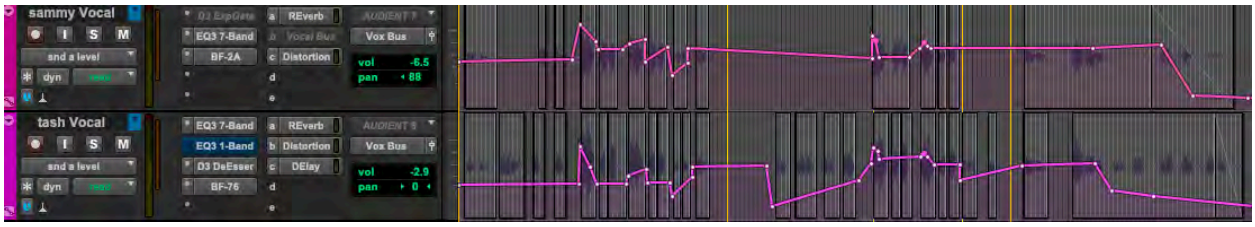
Due to not being able to get a drum take that stayed with the song's tempo, I comped together one take by taking the best bits from each of the playlists. I then applied a 10ms crossfade to eliminate any pops that might occur from the audio cutting in and out. In each of the different audio tracks I adjusted the gain so that there were no notable discrepancies between the takes. The drums were recorded from the beginning of the song, however in the arrangement I decided to bring the drums in on the chorus to announce the song and give it a bit more of a punch. I created a drum bus and routed all of the tracks to this bus so I could cohesively compress and send the entire drum bus to the desired aux inputs.

Unfortunately, the kick was not sounding how we desired. I am unsure as to why this occurred, however, I found the kick to be abrasive and poppy. So I muted and duplicated

the Kick Drum mic track and sourced a natural sounding kick from the internet. Using the tab to transient method in the duplicated track I went along cutting the original kick and replacing it with the online sample. (Stewart, 2016) I then applied crossfades and sent this to the drum bus for cohesion once again. (Brown, 2019)

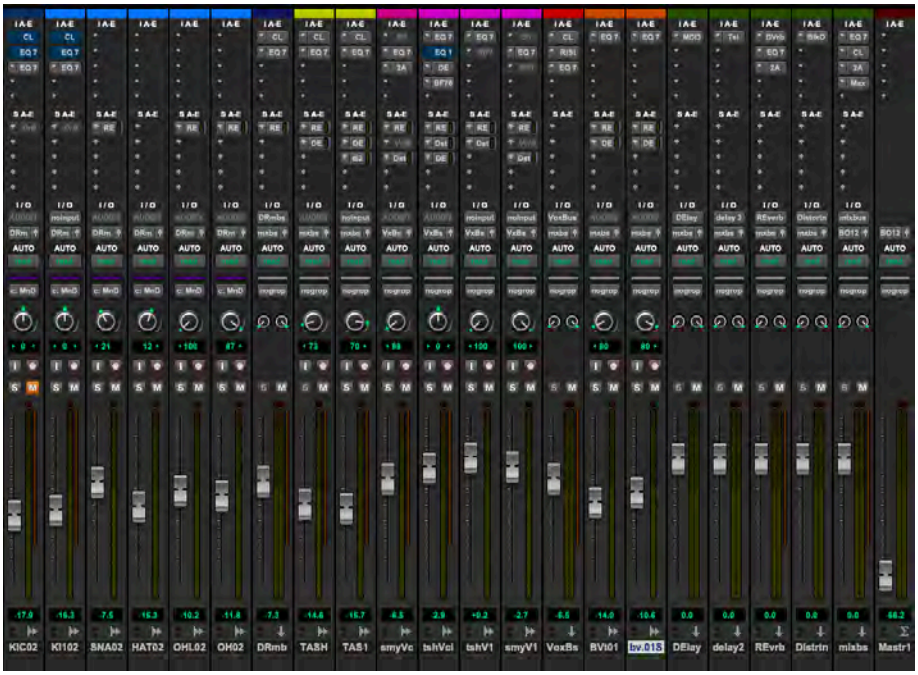


With the guitars, I once again comped together one rounded take from the multiple takes by creating a new playlist track and assembling the best bits together.
In the instrumental section before the second verse, I decided to duplicate the guitars and have them pan wide to create a stereo image. I felt that this gave the song a bit more body from its stripped back recording.



With the lead vocals I chopped them all up to eliminate any breaths and dead air. However in the outro I left the vocals as they are because I thought that the raw breaths and energy created by leaving the takes natural, emphasized emotion in the back of the song.
This image also shows the automation I applied to the reverb send. I did this toy with the dynamics of the song. In the chorus, the vocals are sent to a lot more reverb to give it more of a grand feeling, however, the vocals come right back in front of the listener in the verse and it really highlights the lyrics and leaves the listener feeling very close to the vocals in these sections. (Waves Audio, 2019)
The vocals were all routed through a vocal bus that then takes them to the mix bus before the master. All the vocals have individual EQ and de-essers, however in the vocal bus I applied a further EQ, compression and saturation to once again help the vocals work together.

MIX/LEVELS/PANNING



Here you can see my choice of levels and panning. I had the hats quite low in the mix as the microphone was picking up a lot of spill from the cymbals and decided to rely more on the OHL and OHR mics panned L and R. In this mix the vocals are right up the front and almost over the top. This is because I believe they are the greatest feature of the track and by playing with automation on some of the aux sends I found it to not overpower the overall track too much. The BV pans are set L and R accordingly however there is automation on sections of the BV so it pans across. The guitar starts mono and centered however when the song breaks away into the instrumental sections there is also automation on the guitar for when it splits into stereo. In this image the master fader is right down as at the end of the track it is automated to fade out.

PROCESSING

EQ

Here is an example of some of the EQ I applied. This is the equalization placed on the drum bus. As you can see I have added a lot of frequencies here in the low end, mid/highs and high end. I found that these boosts opened the drums up a bit more. I then gain matched after adding db boosts. I took a scoop from 164hz to clear out a bit of muddiness and rolled off

from 11.7khz with a low pass filter to inhibit any hiss or unwanted inaudible high frequencies.

Secondly, here is the EQ applied to the main vocal track. When referencing Folk Bitch Trio's track 'Analogue', I was really struggling to get the same level of breathiness in the high end and initially was boosting around the 5khz mark. After close referencing and assistance from Guy, he suggested I move the boost right up to around the 12khz mark. I found this really brightened up the vocal and gave the shimmer I desired. I found a slight flat boost with a low Q ratio in the mid range added warmth after a slight scoop in a muddy range around 164hz.

DE-ESSER

This is the De-Esser I applied on the main vocalist's track. After looping a section with an 'S' hiss and applying a frequency sweep I found her harsh 'S' hisses to be around the 8.7khz mark and set the range accordingly to -1.5db.

COMPRESSION

My compression example is the one applied to the lead vocal. I decided to use the BF - 76 compressor as I found it really added warmth and clarity to the tracks. Running the vocals through this compressor was really nice for the tonality of the tracks. I mainly adjusted the knobs by ear, whilst referencing other tracks and paying attention to the gauge. I set the attack to be quite fast whilst leaving the release a bit longer so the compressor didn't just cut out too quickly. I used this compressor on all the vocals to enhance cohesion and bring out the warmth for both vocal tracks.

REVERB

I created a reverb aux input send. After experimenting with different sounds I settled with a church reverb and tweaked the pre-delay and decay to my desired amounts.

On my aux input inserts, I actually decided to run the reverb through the BF-76 compressor as well, to use its warmth and to refine it to make sure the reverb doesn't jump out too much in sections of the song. This was quite an experiment but I really liked what it added. Through the compressor I was able to adjust the output of the reverb too. I also applied an EQ to the reverb also. I used a high pass filter to reduce the low end and then a slight boost in the high end to let the reverb shimmer and give an airy quality.

DELAY

I used two different delays subtly on two different aux input tracks. I automated the delay to come in on the vocals toward the end of the song and used a subtle slap back delay on the guitars.

MIX BUS

I created a mix bus and routed all the tracks and buses through the mix bus. In the mix bus I inserted a slight EQ to scoop unwanted frequencies in the low/mid and high/mid range. I also boosted the low end with a low shelf and cut off an unwanted hiss with a low pass filter.
I ran the entire mix through the BF-76. Without compressing it too much, my intention was mainly to add the warmth and tonality that this compressor contributes.
Finally, I used a limiter to make sure the track didn't clip and to boost the overall level of the track. I set the ceiling to -0.1db and adjusted the threshold until I was attenuating just below 2db.

3. Deliverables

Insert link to Pro Tools session folder here

Insert link to 24 Bit 48kHz WAV here

4. Project Reflections

Mid-Project Reflection

(250 words min. APA7 references)

Given that we have decided to record an external band, there has been a fair bit more organising and planning that has gone toward making sure everyone's availability lines up and preparing for our recording session on Saturday. First and foremost, it was important that we set a date and immediately after finding a date that worked for everybody I booked the studio. Due to most of the group having to get Saturday work off and traveling down from Newcastle I emailed tech ops to see if it would be possible to book out the studio for a few extra hours than the normal allowance. "It's often a good idea to create your own "desert island" favorite mix disc or directory—a compilation of several of your favorite songs." (Huber & Runstein, 2017) This is what we put to the band. We asked them to create a playlist of songs that they like the sounds of and want to model their own recording from. This was great as we received many helpful reference tracks and it gave Jesse, Daeshan and myself clear direction and inspiration.

This project is pretty well set up on the back of communication. I have found that in previous projects, the clearer the plan the smoother in turn the better the recording session goes. Once again we decided to catch up for a coffee with the band and discuss how we would like Saturday to run. We mentioned that perhaps they would like to bring some of their own personal gear down to record with. We also communicated that the recording day would take part over SAE's open day. We just wanted to be clear and give them the heads up on this so they were prepared for people to be watching the tracking sessions. Another important part of communication has been with tech ops. I sent them an email quite early on in the project asking for permission to book the studio for a little extra time and thankfully they accepted.

With this project, I feel as though my learning is really benefiting from not playing and focusing all my attention on the recording process. This has been something I am more and more enjoying. Before starting on my project documentation, I downloaded the SAE handbook that had a detailed list of the microphones available. After studying this I then proceeded to research the potential microphones and where they have previously been used. I then arranged which microphones I thought we should use based on the playlist that the artist had sent through, trying to replicate those tonal qualities. I have found that listening to a lot of the genre specific music before we do the recording has helped narrow my focus and as a group we can work to achieve the desired sound. As opposed to just using reference tracks in the post production. (Sound Girls, 2019)

Project-Completion Reflection

Despite challenges galore, this project has been a successful exposure to the process of recording an external band. I personally feel like I have learnt many skills and tips that will be prevalent in the industry always. It was successful as we managed to get a recording done and Daeshan, Jesse and myself's part was done well. We had no real issues with the micing and getting sound through the Audient desk and out of the monitors. However, many challenges did arise. We ran out of time to record a few instruments, this may have been due to some external reasons that meant it took longer than we had anticipated to set up. We have also been faced with the challenge of mixing rums that weren't played to a click track. However, despite it being a bit of a tedious process to correct the timing of the drums, I feel as though I have learnt and sped up my ability to comp bits together and use the tab to transient method to fix timing issues. It was also great working with the team, I think having 3 of us running around labeling the desk, running cables, organising pro tools, communicating with the band etc was a great way to go about it and I would have really struggled had I been all by myself. (Belbin, 1993/2010)

One of the greatest obstacles I have found in this project has actually been when showing the artist a rough mix for feedback. Unfortunately they did not really enjoy the vibe that I had given the song and were expecting it to sound quite different to how I had mixed it. This feedback was quite dampening on my mixing experience as I was unsure of my capabilities. However, after digesting this experience, I have found it to be immensely helpful and not to take it to heart too much. This is an ever learning process and I feel at the very start of my recording/mixing journey. Realising that I had done my best and not getting too caught up with the ego hit from the artist not loving my mix has been a great breakthrough that I have taken big lessons from. When doing the mix you have to be able to adapt and work with other people's opinions. Even if you think that something would sound better like this, at the end of the day you need to work with the client and what they desire.

Looking ahead to future projects, one aspect that I was not able to apply was using the analogue compressor for the live recording. I would love to utilise this piece of knowledge and learning in a future project. I think something I would do differently next time is take more breaks when recording. Unfortunately, as we were pressed for time we were unable to stop and have outside breaks, this led to the room feeling a little stale and we were all pretty tired and depleted toward the end of the day. Something I really enjoyed and will continue to practice is running my aux input through compressors and EQ (Madore, 2020.) This I feel really paid off and added a lot of warmth to the reverb in particular.

5. Reference List

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