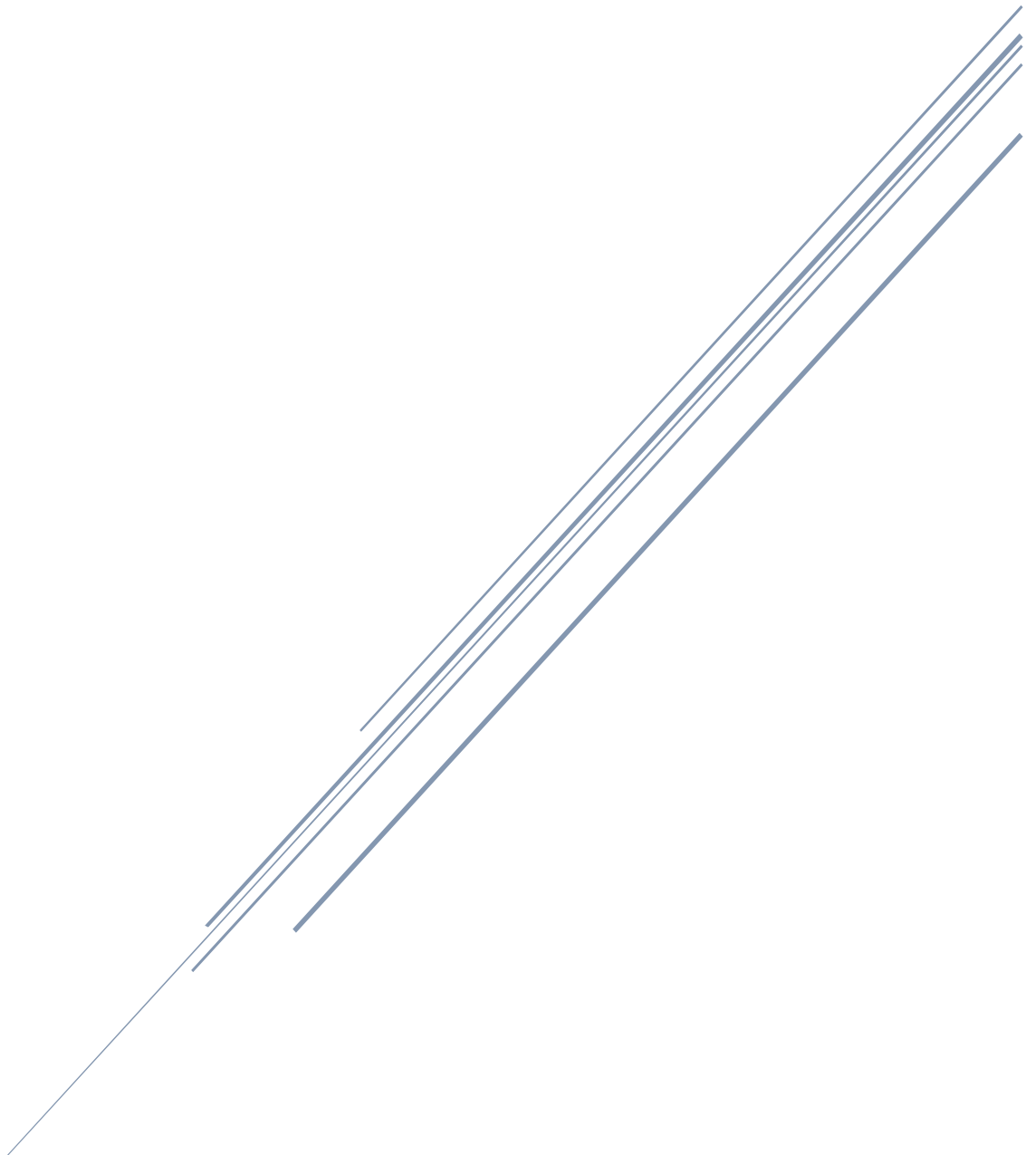


SYNTH CHALLENGE REPORT

28.12.2021



Tricaud Loan

- **1st task:** Musical instruments synthesis of Bohemian Rhapsody.

I chose to design instruments of the Queen's song "Bohemian Rhapsody". There are 11 instruments (Grand Piano, Distortion Guitar, Bass, Timpani, String Ensemble, Choir, Orchestral Hit, French Horn, Synth Brass, Sax Alto, English Horn) and 15 percussion sounds.

Several methods have been used to create these instruments. Most of them by additive synthesis. Then, I used filter synthesis and some different envelopes like basic exponential envelope or ADSR envelope when I wanted to be more precise. For some instruments like piano, bass or guitar I applied a reverb effect, created by convolution reverb.

- **2nd task:** Three octaves of the Major music scale.

For the second task I just took all of my instruments and I made them play two notes each in order to cover 3 octaves. To change a note, we had to multiply the frequency of the previous note by a proper rapport to reach the next note. And then, to change octave, we needed to multiply by 2 the previous frequency.

- **3rd task:** Arbitrary realization.

For the free realization I decided to create a sound which describe the path of an explosion. From the timer until the blast wave. To reach my goal I cut my signal in 3 parts. First, the timer designed by the successive "bip" and silent with different frequencies. Then, the start of the spark and the fire were designed by a noise and an exponential envelope. Finally, the explosion was imagined like a shock wave propagating in the space. With this in mind, I used my kick previously created in the first task. I added a reverb and a decreasing sinusoidal envelop to increase the propagating effect.

References:

[1]. <https://freewavesamples.com/>

[2]. Course of Synthesis of Audio Signals by *Michal Novotný*.