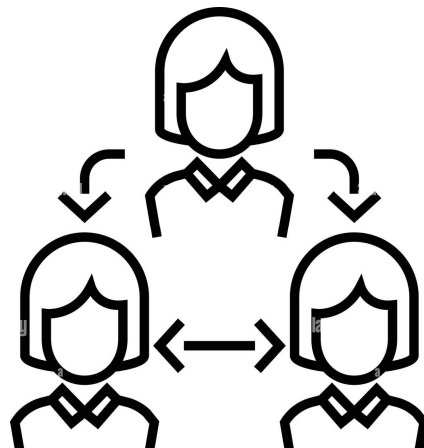
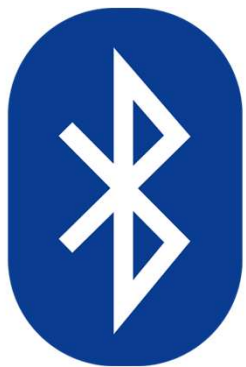


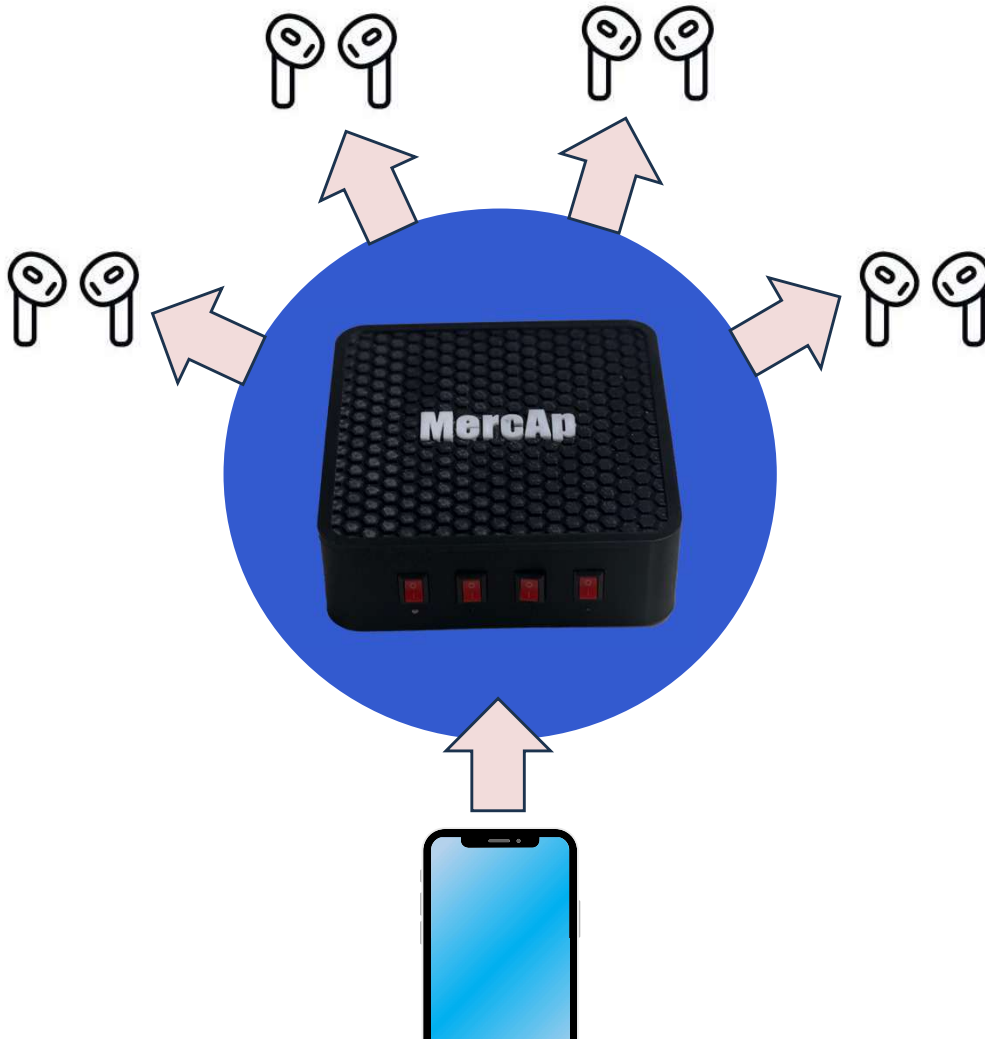
MercAp

The Ultimate Shared Audio Experience

A project by Team StrawHats



Imaduwege O.N.H – 230258D
Rathnayake M.A.G.K.N – 230544C
Dilhan W.A – 230145E
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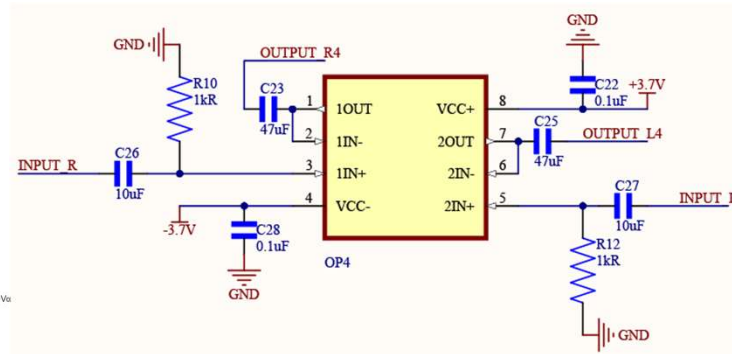
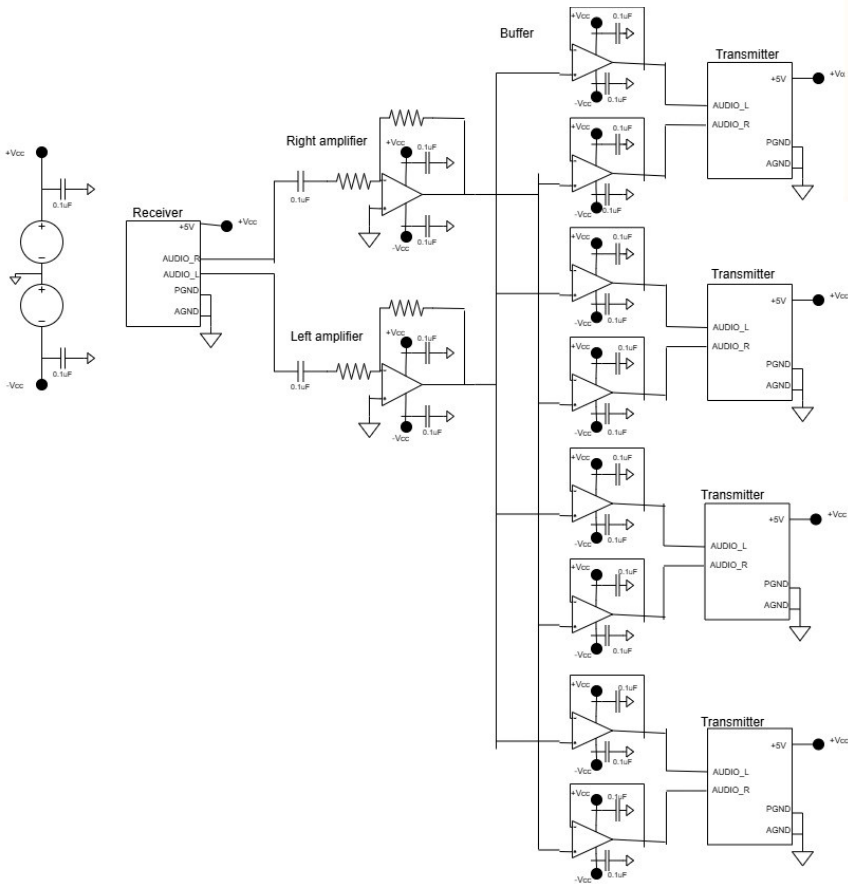
Problem description

Most devices we typically use in day-to-day life come with a built-in speaker system to allow us to share entertainment with ease. However, this approach has its limitations.

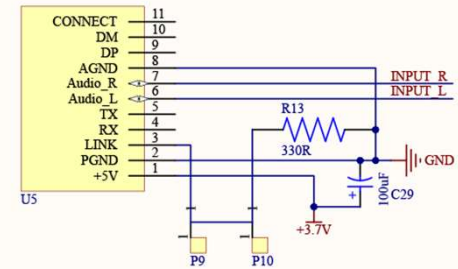
What if you're in a crowded or noisy environment where background sounds make it difficult to hear? What if you're in a quiet space, such as a library or study room where playing audio out loud isn't an option? Or perhaps you're in a setting where privacy is a concern? In such cases, the obvious solution is to use headphones. The modern world has rapidly seen a shift towards the usage of wireless earbuds; and yet with current technology, connecting multiple wireless headphones to a single device is either impossible or highly inconvenient.

Our product aims to solve this problem. It connects to a phone or any other Bluetooth audio source and simultaneously splits and transmits the audio to multiple Bluetooth headphones. Whether you're watching a movie, listening to music, or attending an online lecture, you can now enjoy the experience together -- without interruptions.

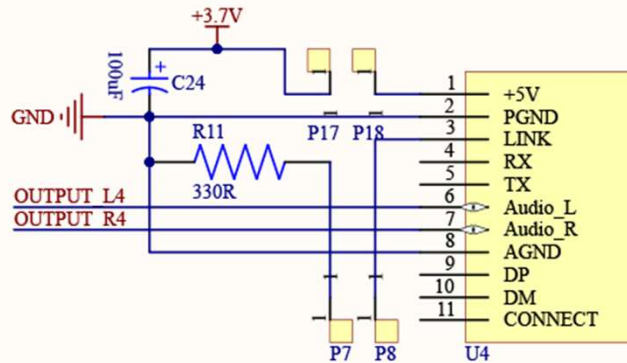
Circuit design



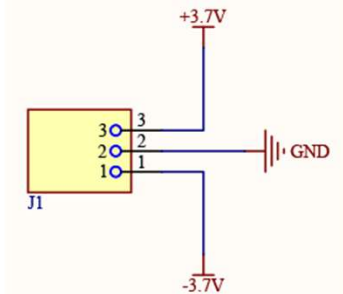
Operational Amplifier Buffer/Splitter



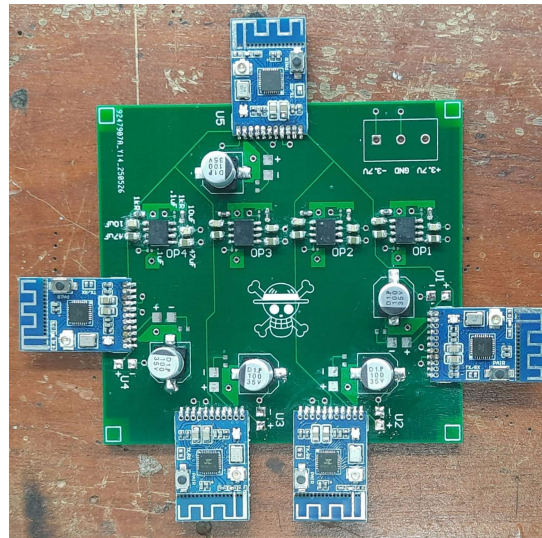
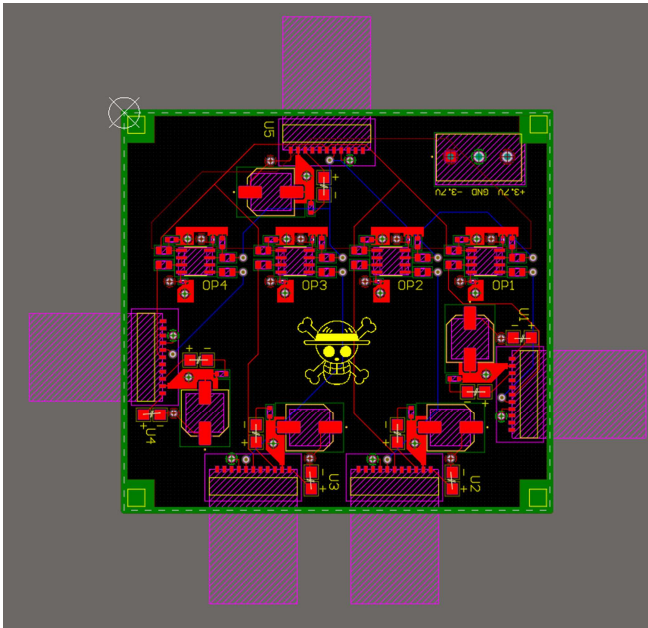
Bluetooth Reciever



Transmitter



Split-Rail Power Supply



PCB design

Our PCB consists of 4 layers; the top and bottom layer contain the L and R audio channels, the 2nd and 3rd layers are the Ground and Power Planes respectively.



Enclosure design

The Enclosure is made with 3D printed PLA plastic. The enclosure consists of 2 parts, the base with the PCB attached to it, and the cover with switches and LED indicators.

Task allocation

Name	Tasks
Imaduwege O.N.H – 230258D	PCB design, Circuit design
Rathnayake M.A.G.K.N – 230544C	Enclosure design, 3D printing
Dilhan W.A – 230145E	Product Design, Assembly
Ilankoon I.M.M.K.B – 230256U	Soldering, Circuit analysis