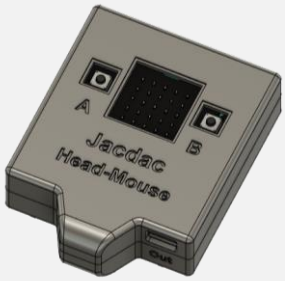

JACDAC HEADMOUSE

A head mouse concept based on Jacdac microcontrollers ecosystem.

Version 1.0

https://github.com/milador/Jacdac-HeadMouse

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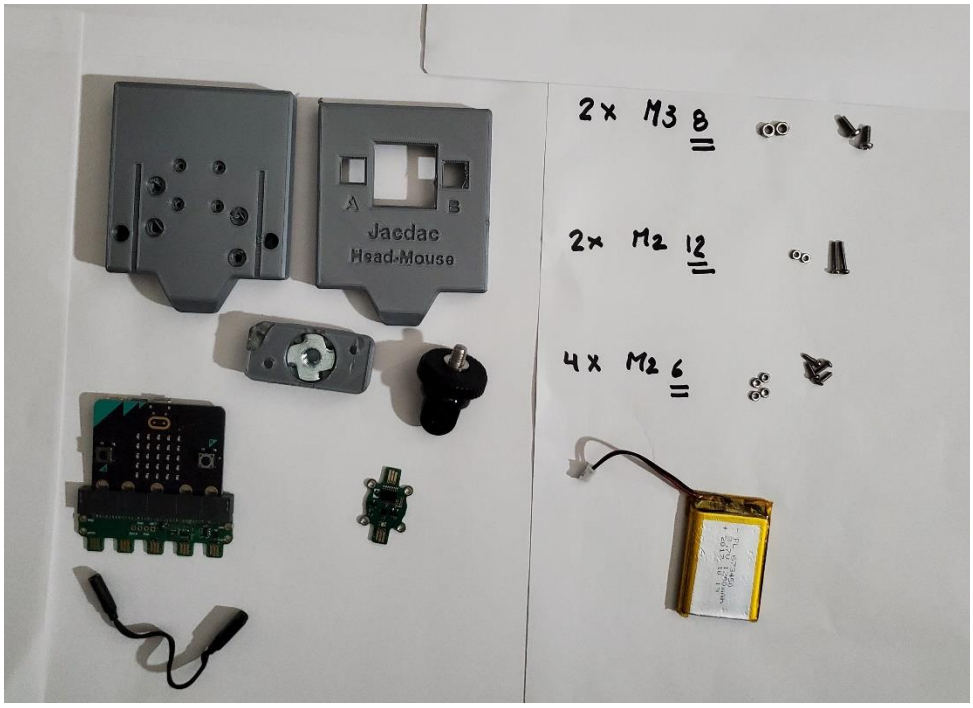
Components List

1. MICRO:BIT V2 **x 1**
2. MICRO:BIT JACDAPTOR **x 1**
3. JACDAC ACCELEROMETER MODULE **x 1**
4. JACDAC CABLE **x 2**
5. LITHIUM-ION POLYMER BATTERY- 3.7V 1200MAH **x 1**
6. M3 HEX NUT **x 2**

7. M3-8MM SCREW **x 2**
8. M2 HEX NUT **x 6**
9. M2-6MM SCREW **x 4**
10. M2-12MM SCREW **x 2**
11. AMAZON BASICS HEAD STRAP CAMERA MOUNT FOR GOPRO **x 1**
12. GOPRO MOUNT TO 1/4-INCH 20 CAMERA ADAPTER **x 1**
13. 1/4-INCH 20 TEE NUT **x 1**
14. **(OPTIONAL)** JACDAC ACCESS SWITCH OUTPUT MODULE **x 1**



- Item 14 is optional, and it's only required if you would like to control an access switch instead of cursor.

Software

The demo code written using MakeCode blocks is available and it can be accessed through following link.

https://makecode.microbit.org/_heFTpmWCwD0o

JavaScript Demo Code

You can also copy and paste the following code to MakeCode JavaScript code editor field:

```
input.onButtonPressed(Button.A, function () {
    initialize()
})
function initialize () {
    counter = 3
    while (counter >= 0) {
        basic.showNumber(counter)
        basic.pause(1000)
        counter += -1
    }
    basic.pause(200)
    soundExpression.hello.play()
    x_init = modules.accelerometer1.x()
    y_init = modules.accelerometer1.z()
}
let y_val = 0
let x_val = 0
let counter = 0
```

```
let y_init = 0
let x_init = 0
let count = 0
let x_threshold = 0.05
let y_up_threshold = 0.22
let y_down_threshold = 0.05
x_init = -0.2
y_init = 0.1
initialize()
basic.forever(function () {
    led.stopAnimation()
    if (modules.accelerometer1.x() < x_init - x_threshold) {
        x_val = 1
    } else if (modules.accelerometer1.x() > x_init + x_threshold) {
        x_val = -1
    } else {
        x_val = 0
    }
    if (modules.accelerometer1.z() < y_init - y_up_threshold) {
        y_val = 1
    } else if (modules.accelerometer1.z() > y_init + y_down_threshold) {
        y_val = -1
    } else {
        y_val = 0
    }
    if (x_val == 0 && y_val == 0) {
        basic.showLeds(`
            . . . . .
            . . . . .
            . . # . .
            . . . . .
```

```
        . . . . .
        `)
    modules.hidKeyboard1.clear()
} else if (x_val == 0 && y_val != 0) {
    if (y_val > 0) {
        basic.showArrow(ArrowNames.North)
        modules.hidKeyboard1.key(jacdac.HidKeyboardAction.Press, jacdac.HidKeyboardModifiers.None,
jacdac.HidKeyboardKey.UpArrow)
    } else {
        basic.showArrow(ArrowNames.South)
        modules.hidKeyboard1.key(jacdac.HidKeyboardAction.Press, jacdac.HidKeyboardModifiers.None,
jacdac.HidKeyboardKey.DownArrow)
    }
} else if (x_val != 0 && y_val == 0) {
    if (x_val > 0) {
        basic.showArrow(ArrowNames.East)
        modules.hidKeyboard1.key(jacdac.HidKeyboardAction.Press, jacdac.HidKeyboardModifiers.None,
jacdac.HidKeyboardKey.LeftArrow)
    } else {
        basic.showArrow(ArrowNames.West)
        modules.hidKeyboard1.key(jacdac.HidKeyboardAction.Press, jacdac.HidKeyboardModifiers.None,
jacdac.HidKeyboardKey.RightArrow)
    }
} else if (x_val != 0 && y_val != 0) {
    if (x_val > 0 && y_val > 0) {
        basic.showArrow(ArrowNames.NorthEast)
    } else if (x_val < 0 && y_val > 0) {
        basic.showArrow(ArrowNames.NorthWest)
    } else if (x_val < 0 && y_val < 0) {
        basic.showArrow(ArrowNames.SouthWest)
    } else if (x_val < 0 && y_val > 0) {
        basic.showArrow(ArrowNames.SouthEast)
```

```
    } else {


    }
  } else {
  }
})
```

Hardware Assembly

Enclosure design

The enclosure/housing files in STL format can be downloaded from GitHub repository under Hardware directory.

https://github.com/milador/Jacdac-HeadMouse/tree/main/Hardware/Enclosure/STL

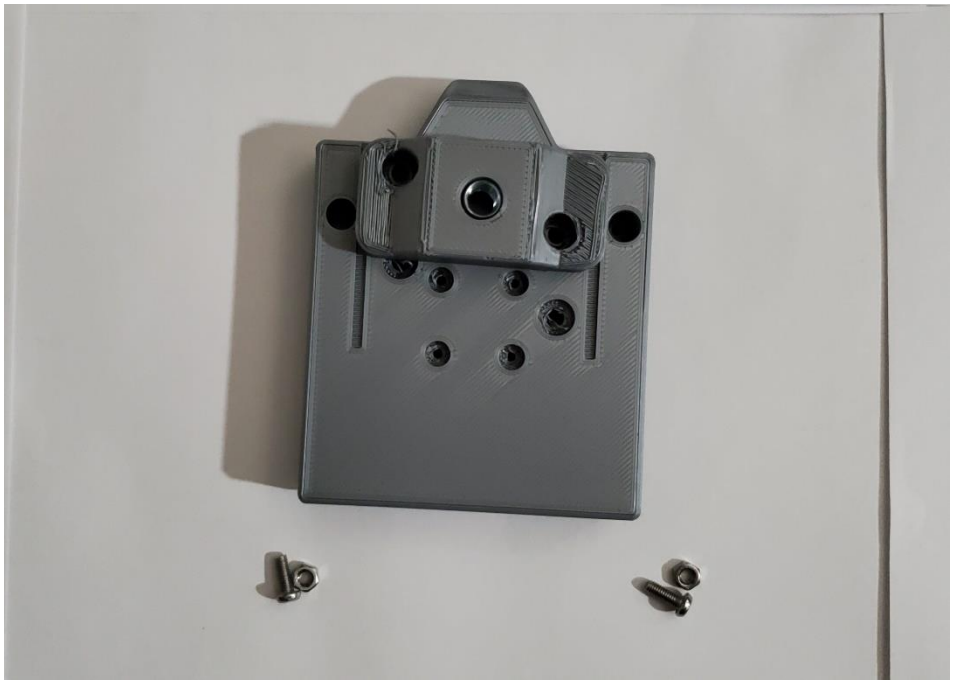
Please print the following STL files:

- Jacdac-HeadMouse-Top.stl **x 1**
- Jacdac-HeadMouse-Bottom.stl **x 1**
- Jacdac-HeadMouse-Mounting.stl **x 1**

Assembly

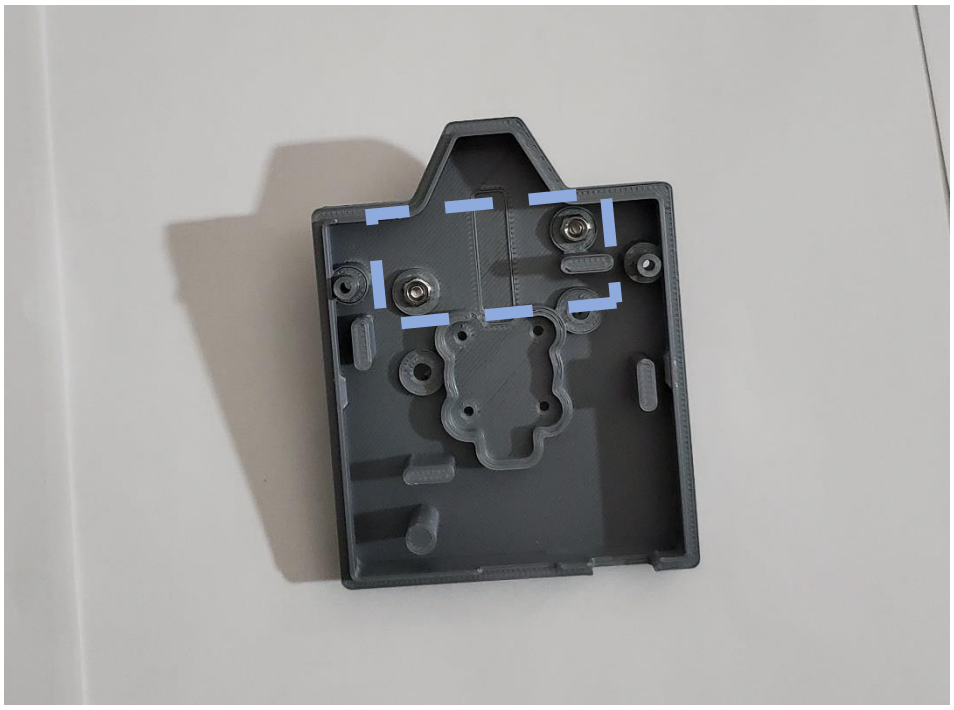
Step 1: Insert the 1/4-inch-20 Tee Nut into the mounting enclosure piece and press it inward using a soldering iron.

Step 2-a: Identify the mounting screw holes of bottom enclosure piece and insert the mounting piece over.



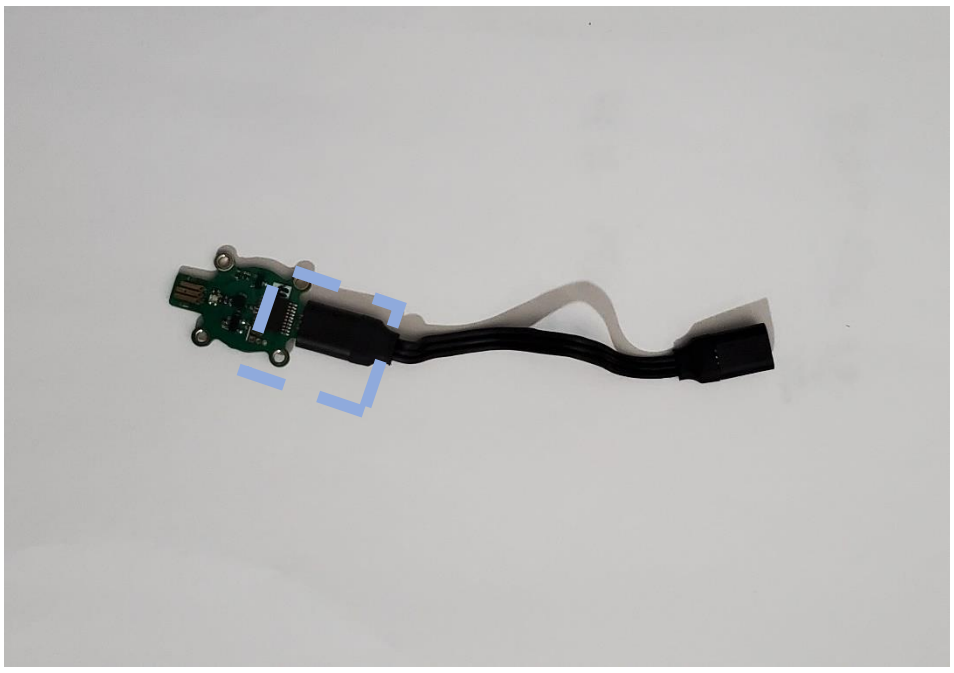
Step 2-b: Identify two M3-8MM screws and two M3 hex nuts.

Step 2-c: Insert the M3 screws from outside the bottom enclosure.

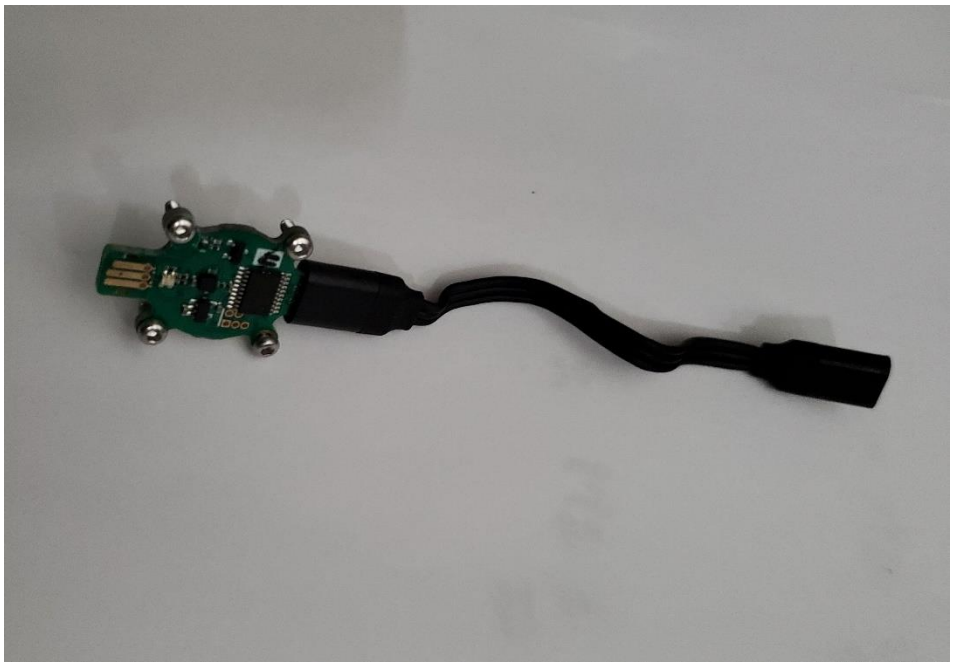


Step 2-d: Insert the M3 hex nuts from bottom enclosure piece and tighten them to secure the mounting piece.

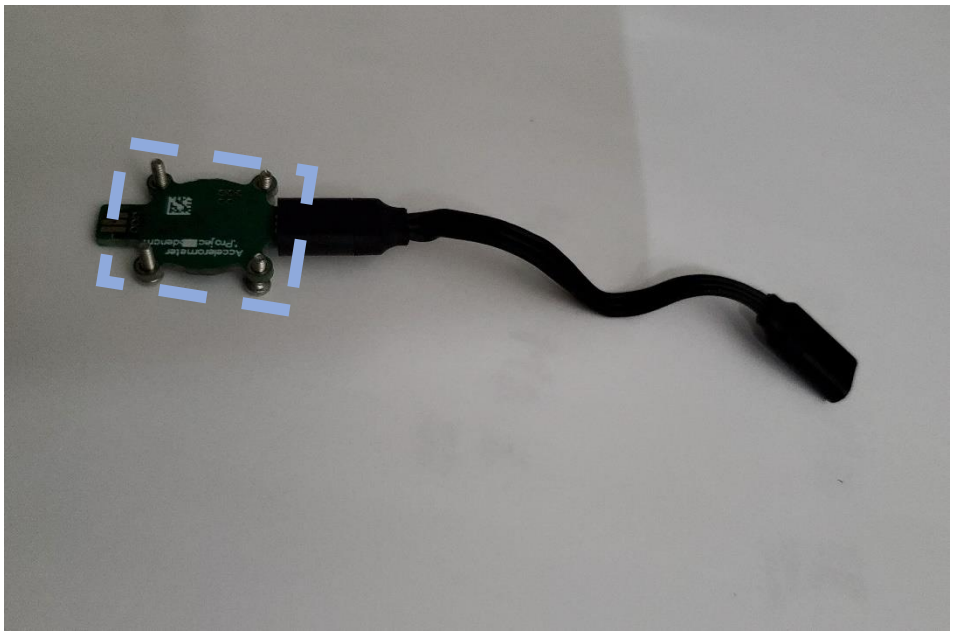
Step 3-a: Prepare components to secure accelerometer module in the bottom enclosure piece.



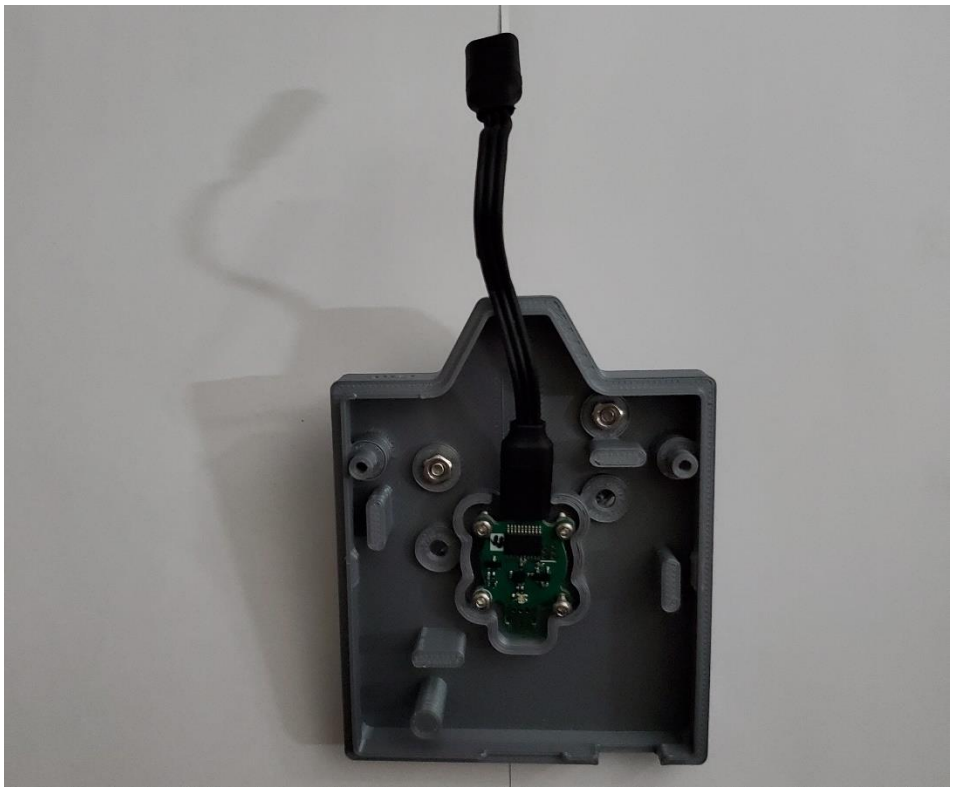
Step 3-b: Connect a Jacdac cable to one of the two Jacdac connectors in the accelerometer module.



Step 4-a: Insert all the four M2-6MM screws into the accelerometer module.

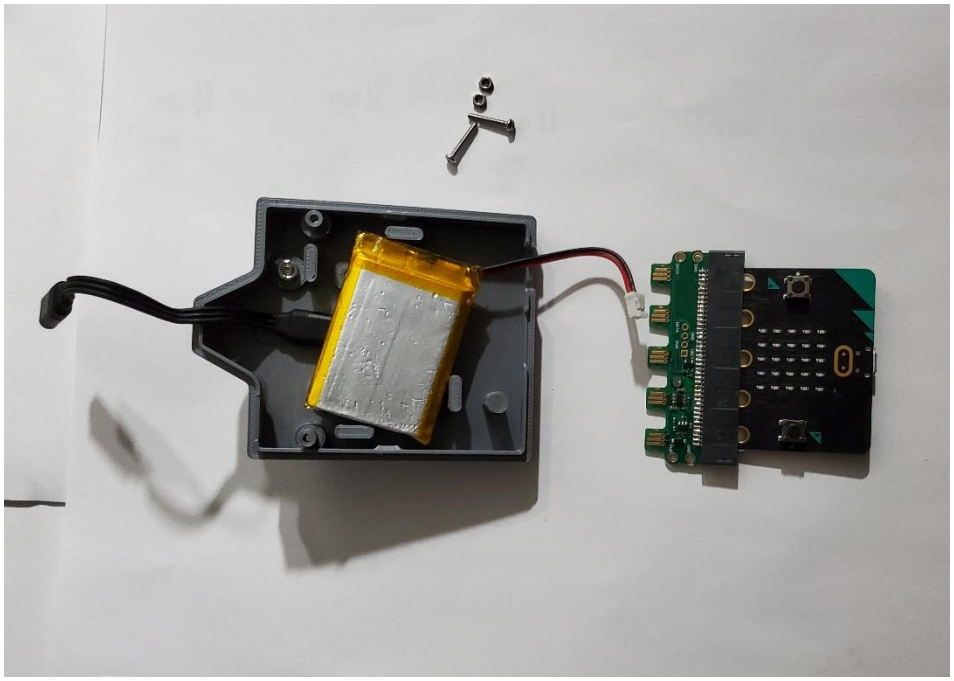


Step 4-b: Make sure all the four M2-6MM screws are inserted into the accelerometer module.

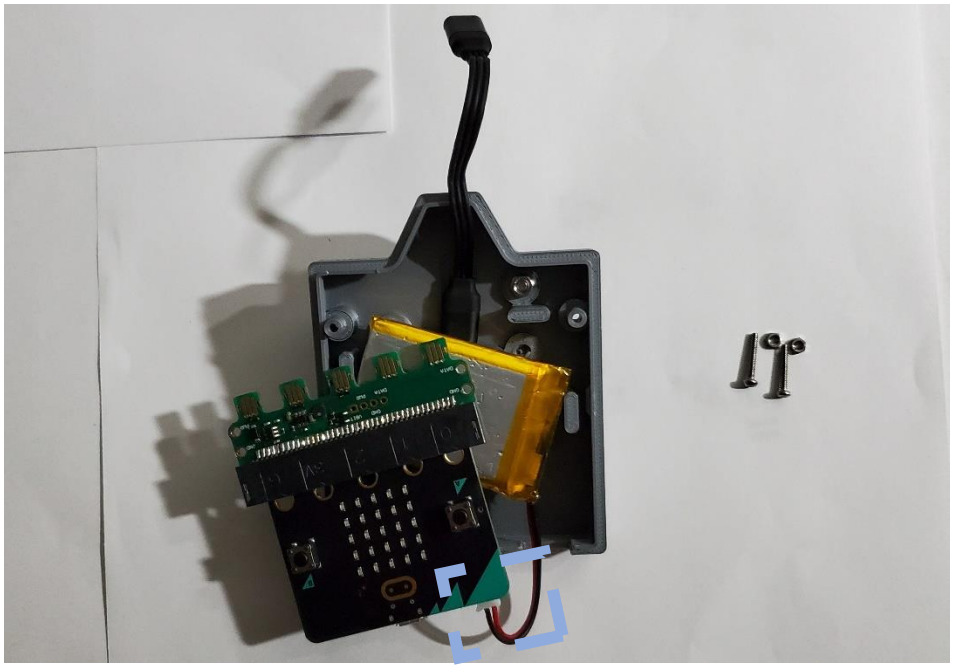


Step 4-c: Insert the accelerometer module into the bottom enclosure piece.

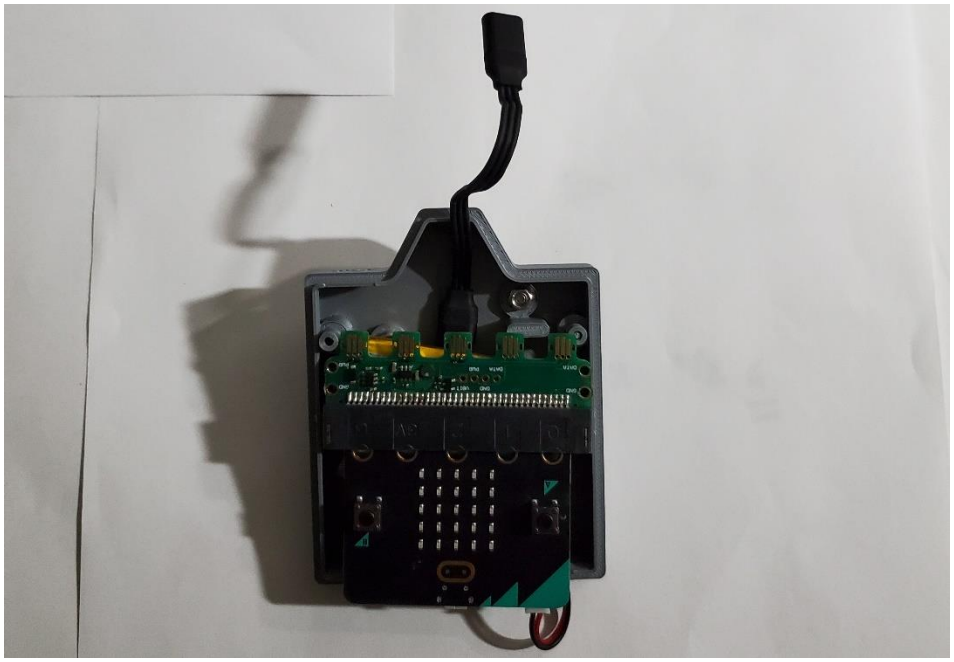
Step 4-d: Secure the accelerometer module by inserting four M2 hex nuts. The M2 hex nuts need to be tightened to prevent the module from moving.



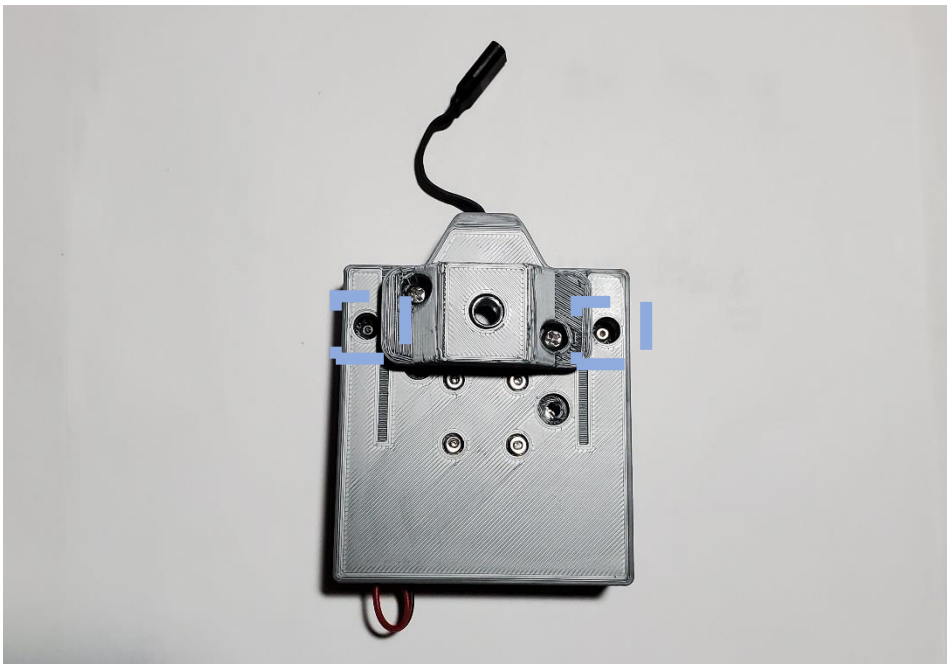
Step 5-a: Insert the battery into the bottom enclosure piece.



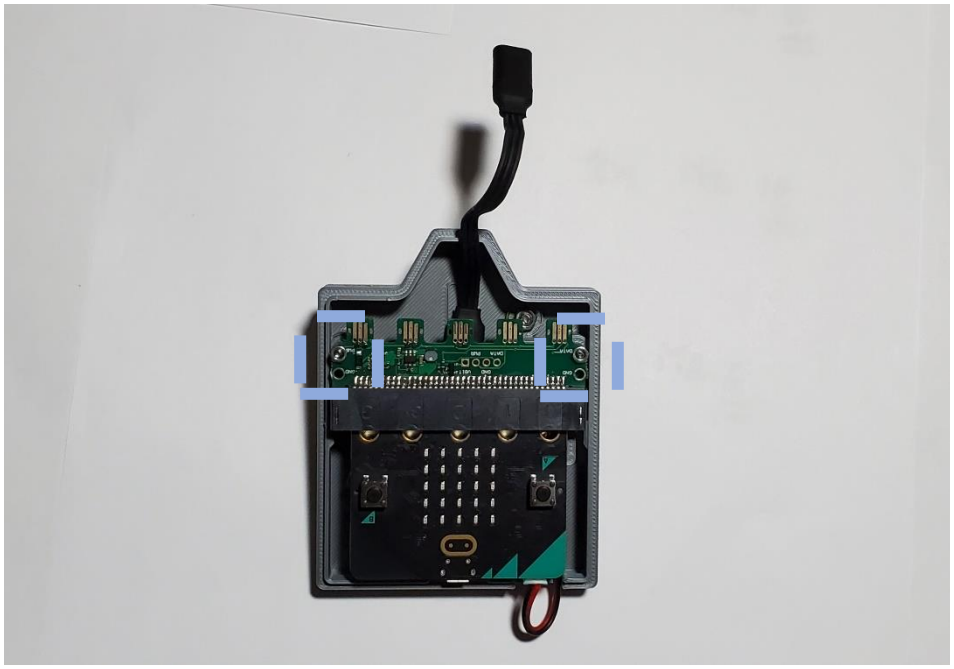
Step 5-b: Connect the battery to the micro:bit board via JST connector.



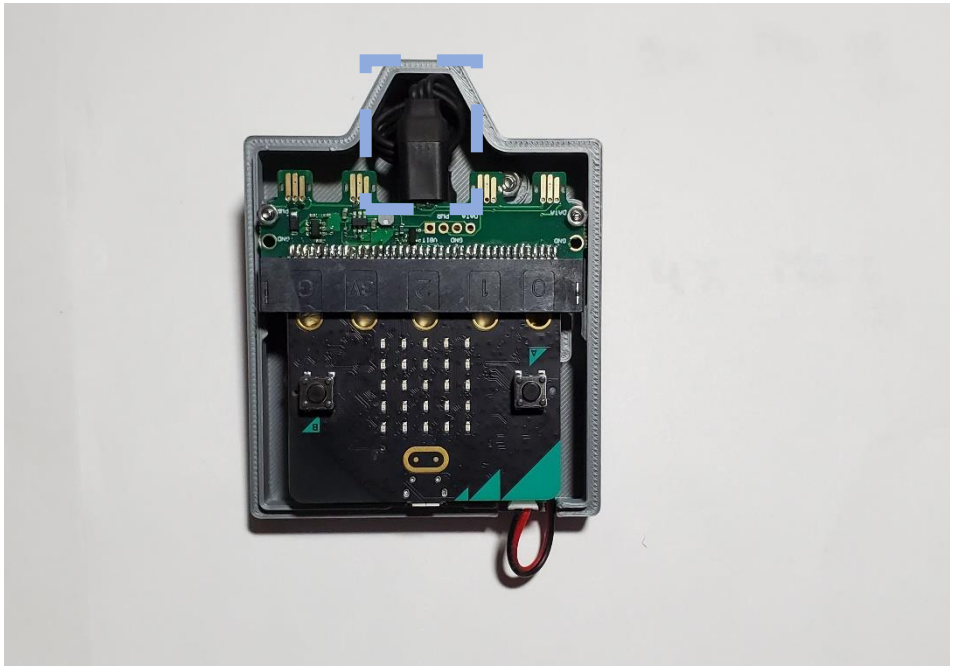
Step 5-c: Insert the micro:bit board into the bottom enclosure piece.



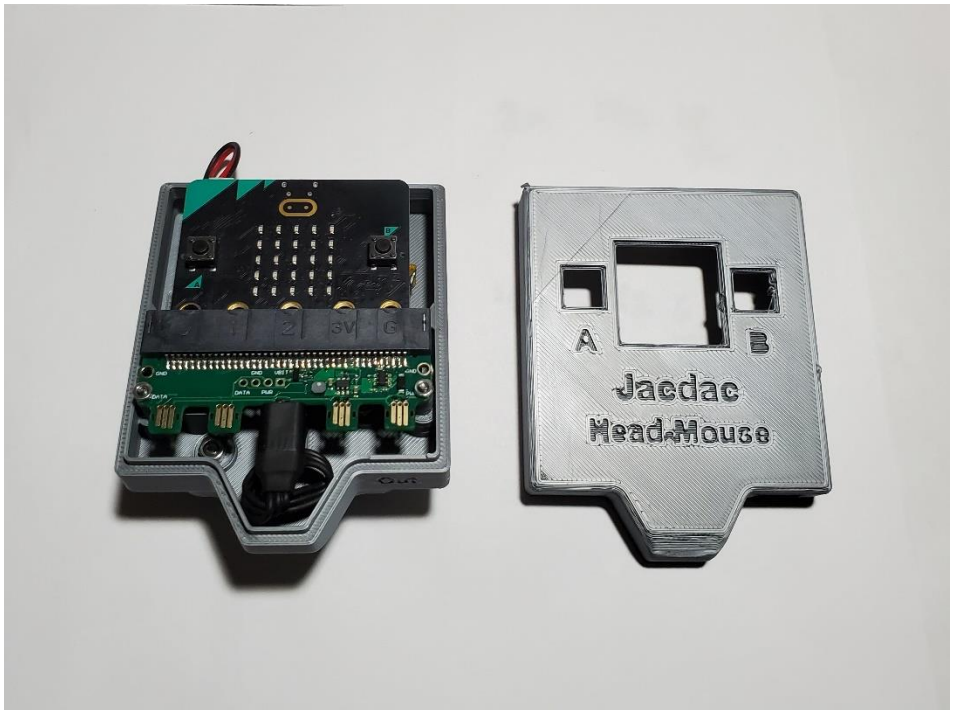
Step 5-d: Insert two M2-12MM screws into the micro:bit screw holes of the bottom enclosure piece.



Step 5-e: Secure the micro:bit board by inserting four M2 hex nuts. The M2 hex nuts need to be tightened to prevent the board from moving.

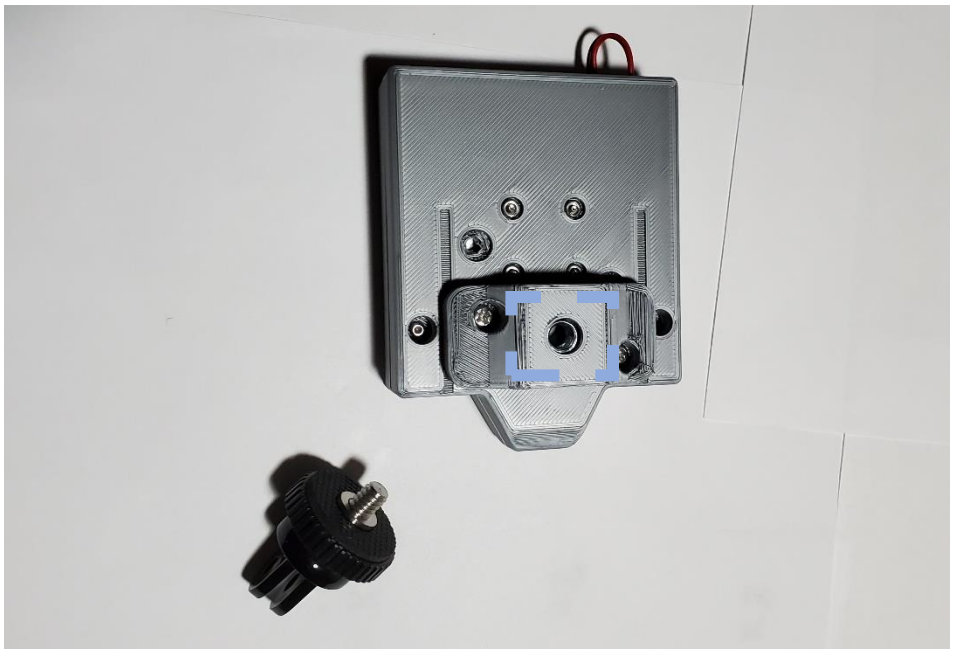


Step 6: Connect the other end of the Jacdac cable into the middle connector of the Jacdaptor. The cable must be kept tucked away down in the bottom enclosure piece.

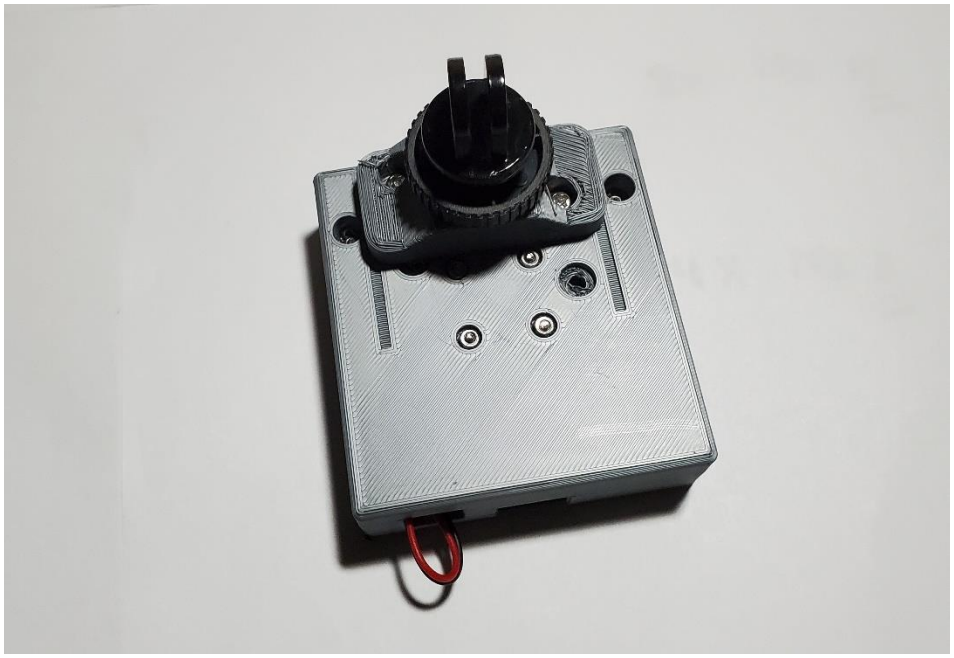


Step 7-a: Identify the top enclosure piece.

Step 7-b: Insert the top enclosure piece over the bottom enclosure and snap them together.

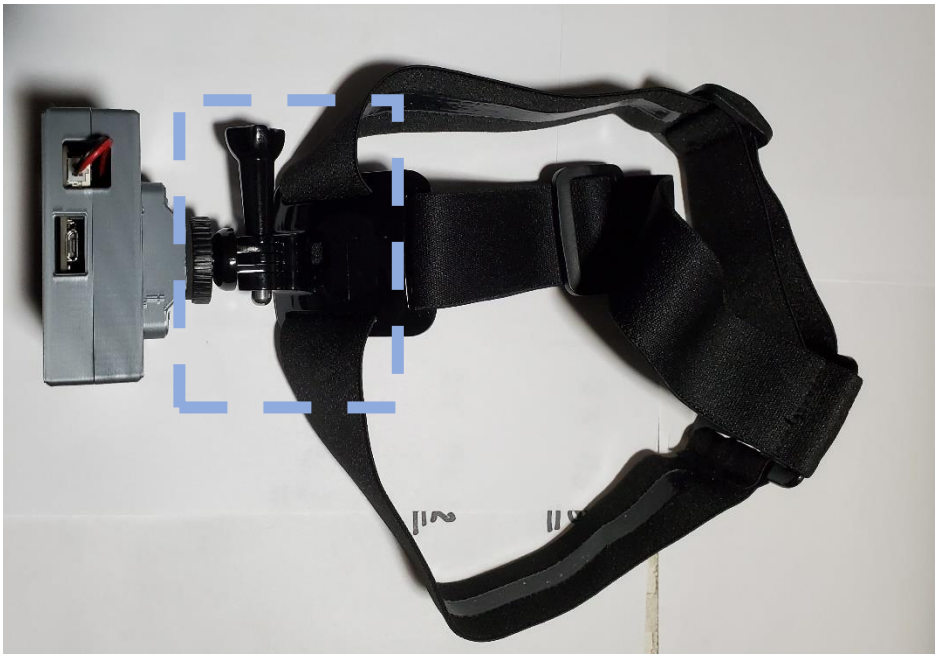


Step 8-a: Identify the 1/4-Inch 20 camera adapter.



Step 8-b: Insert and screw the 1/4-Inch 20 camera adapter into Jacdac Headmouse mounting piece.

Step 8-c: Identify the head strap camera mount.



Step 8-d: Connect the head strap camera mount to the Jacdac HeadMouse enclosure.

Step 9: The Jacdac HeadMouse is now fully assembled.