

# Portfolio

**Jill Schmid**

Dean's List industrial design student at Rochester  
Institute of Technology with professional experience  
in design, manufacturing, and teaching



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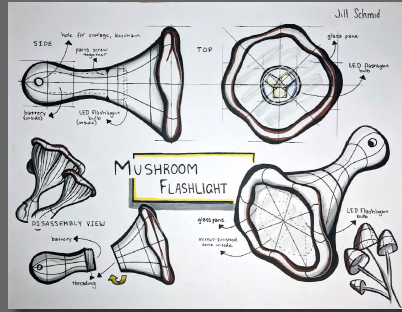
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# Experience

I am an Industrial Design major with a minor in Manufacturing Systems at Rochester Institute of Technology. With knowledge and work experience in both design and manufacturing, I have a broad understanding of product development. Industrial design areas I have particular interest in include musical instruments, children's toys, and architectural features.

At 16, I started an internship at Nova Labs, a makerspace in the DC metropolitan area. In this internship, I was given the opportunity to learn about digital fabrication, prototyping techniques, woodworking, and metalworking as I helped maintain and improve the makerspace. I was later hired by the makerspace as an instructor for their makerschool summer program, where I taught students CAD, laser cutting, vinyl cutting, 3D Printing, electronics, and other related skills for two summers. While in college, I work at the Fab Lab, where I manage, troubleshoot, and run digital fabrication requests for various processes, including 3D printing, vinyl, waterjet, and laser cutting, and CNC routing.

Website and expanded portfolio: [www.JLLSCHMD.com](http://www.JLLSCHMD.com)





# Featured Projects



**Hex Blox**

*Toys, packaging design,  
prototyping, CAD*



**Kumiko Lamp**

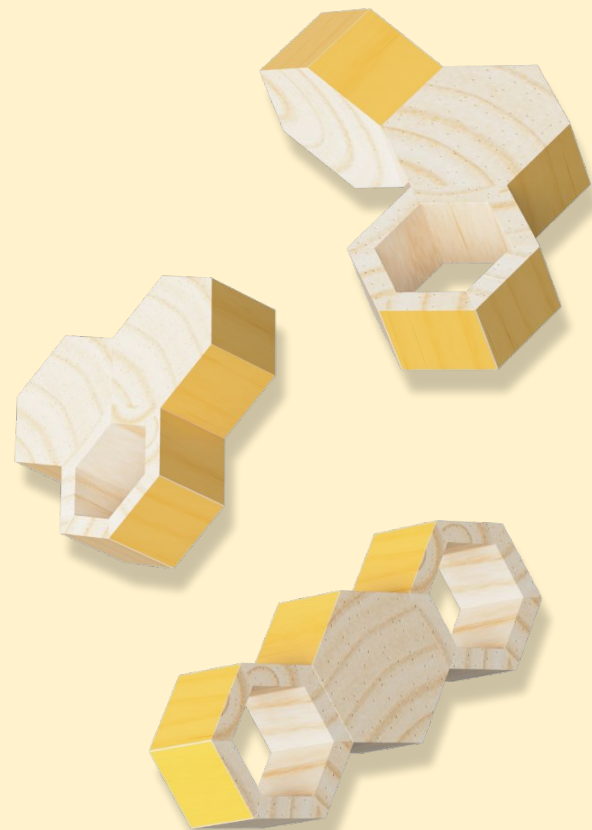
*Lighting, Woodworking, CAD  
Designs and Drawings*



**Audio Synthesis Blocks**

*Electronics, Programming,  
3d Printing, Rapid  
Prototyping*

# HEX BLOX

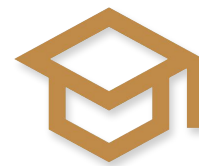




Made from  
natural,  
sustainable  
materials



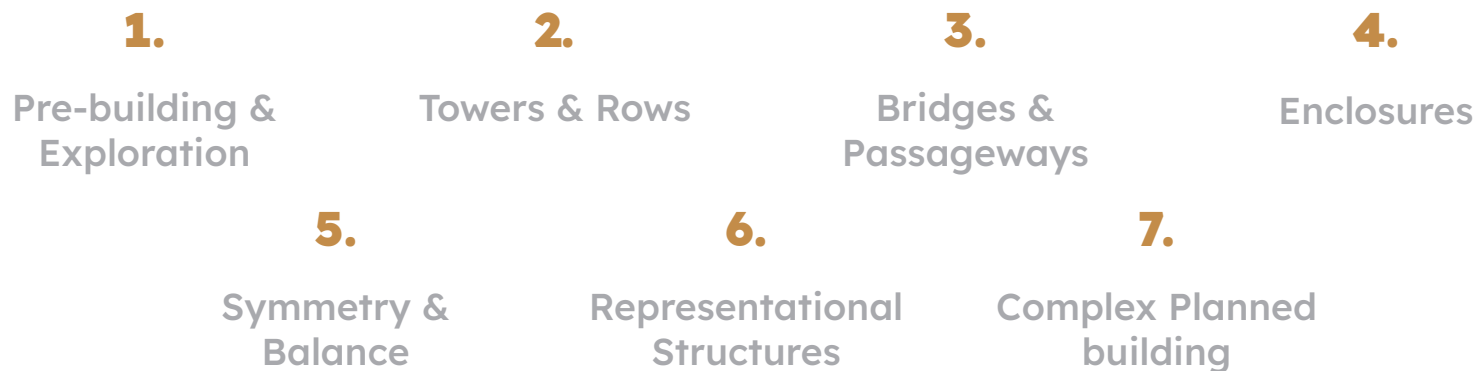
Designed to  
last, and to  
keep children's  
interest as  
they grow



Helps with  
children's  
brain  
development

# HIVETOys

In 1933, researcher & educator Harriet Johnson observed seven distinct “stages” of block play that children engage in throughout their development:

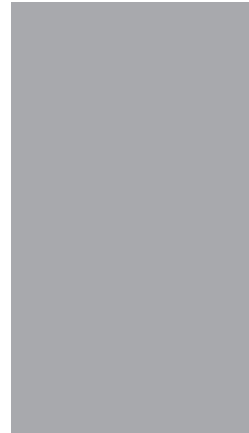
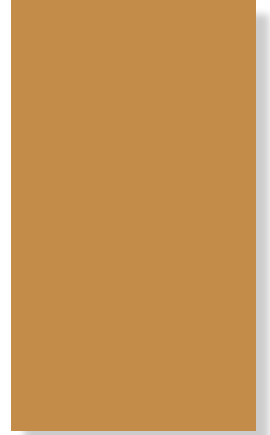
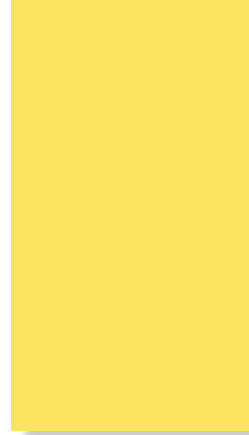
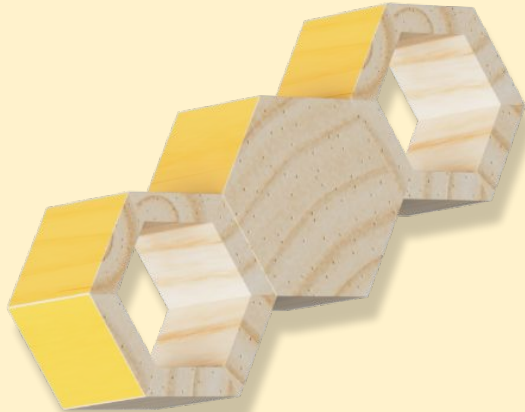


Many existing specialty block sets cater to a specific stage, which children will quickly outgrow.

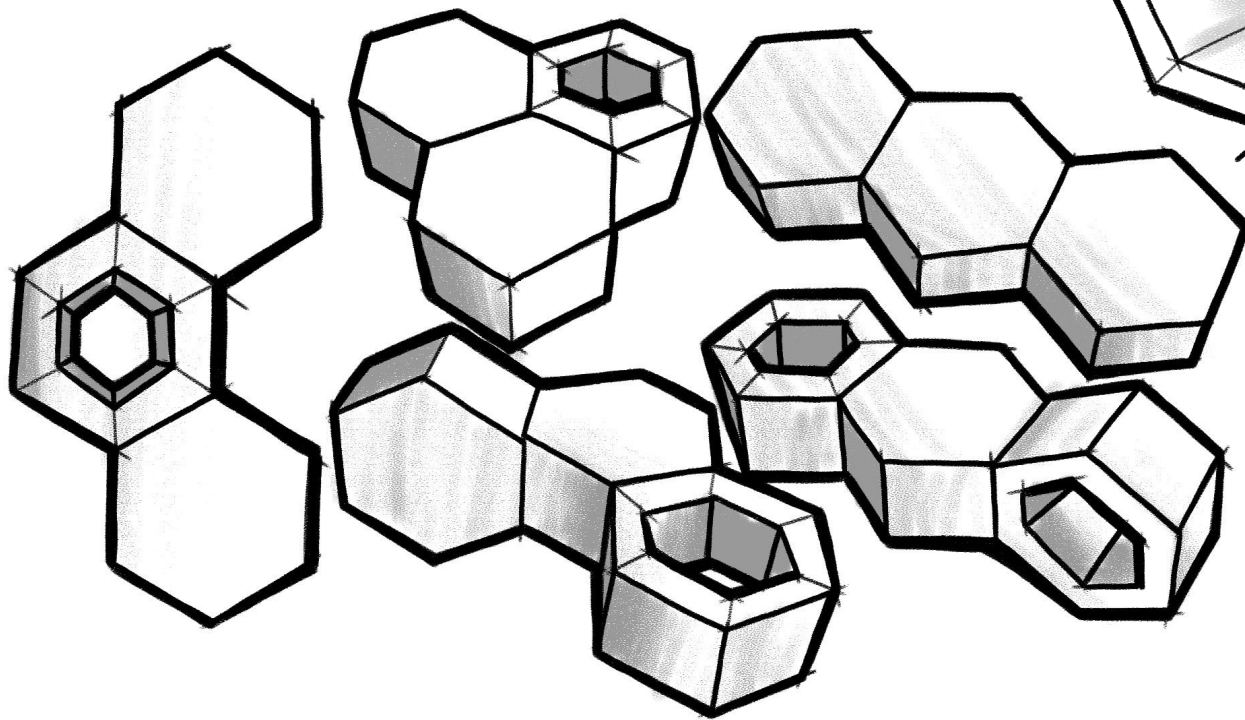
**Hex Blox is a sustainably produced specialty block set that offers interest to children in all stages of development**

# Colors, Materials, & Finishing

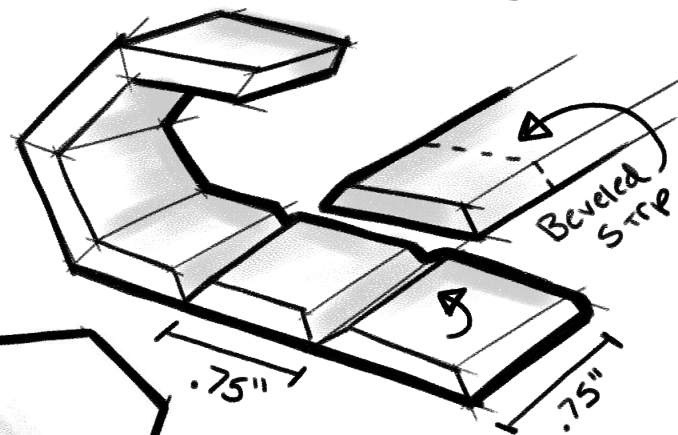
The blocks are made from pine and finished with non-toxic paint and food-safe oil



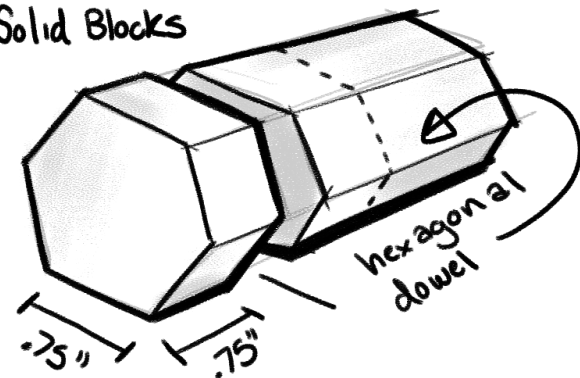
# Sketches



Hollow Blocks

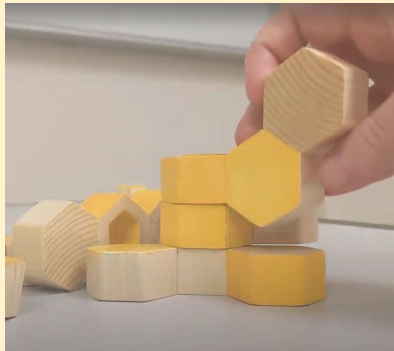
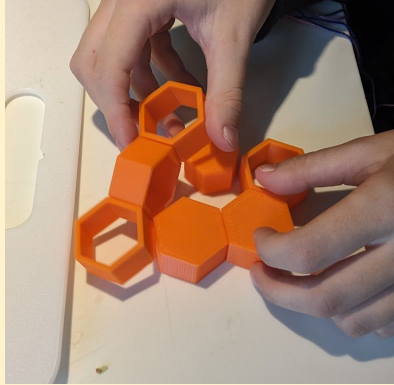


Solid Blocks

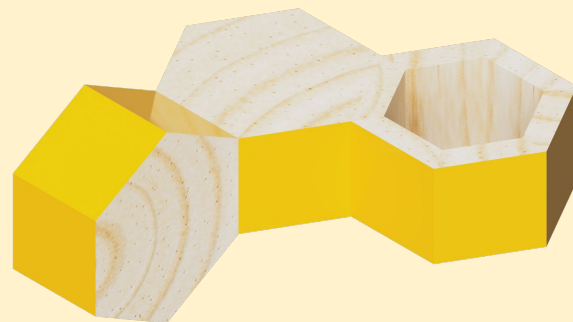
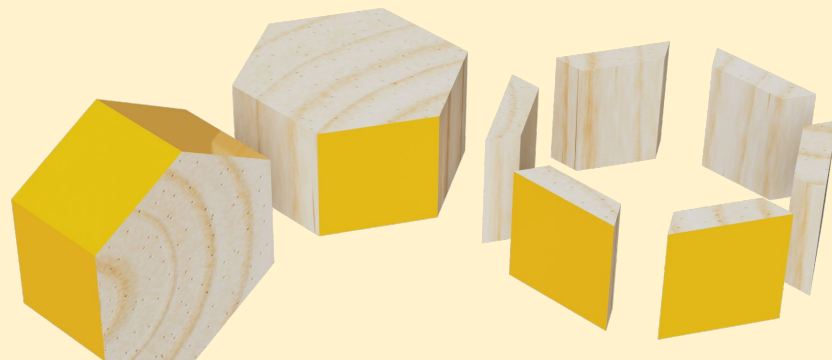
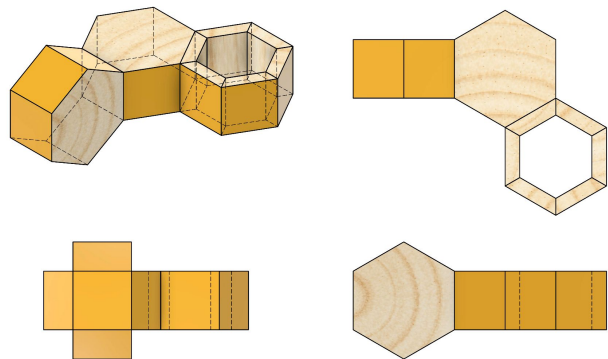




# Prototyping



# Construction



# HEX BLOX



Children's Block  
Set

Ages 3+

HEX BLOX

Jill Schmid





# Kumiko Lamp

Elegant Tabletop Lighting Solution

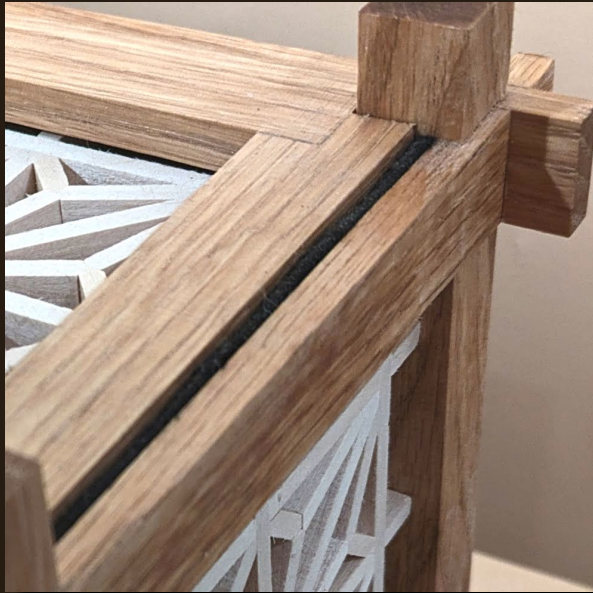
Winner of 2022 National Silver Medal, Scholastic Art & Writing Awards



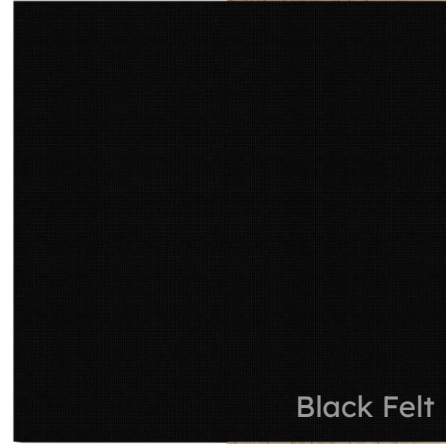
Kumiko is a traditional Japanese woodworking technique where a design is made using thin strips of wood cut at precise angles and tension-fit inside a lattice grid. It is typically used to make screens and room dividers, as well as smaller feature panels.



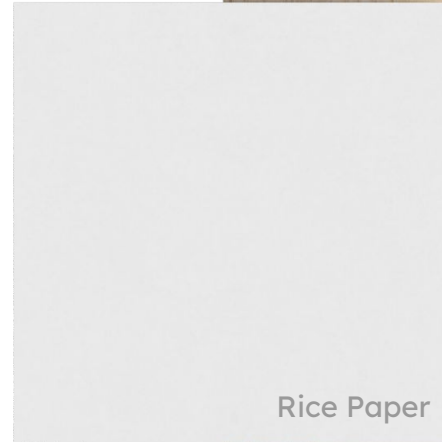
# Materials



Red Oak



Black Felt



Rice Paper

Basswood



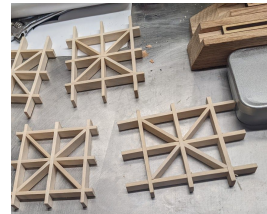
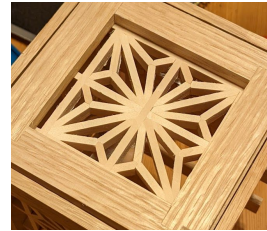
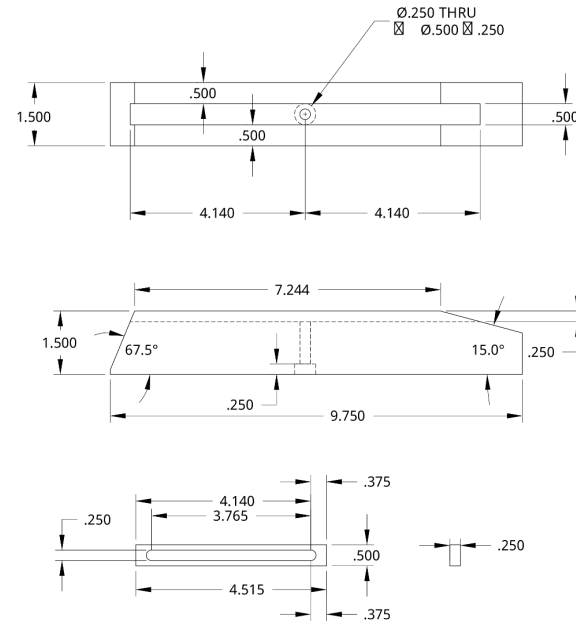
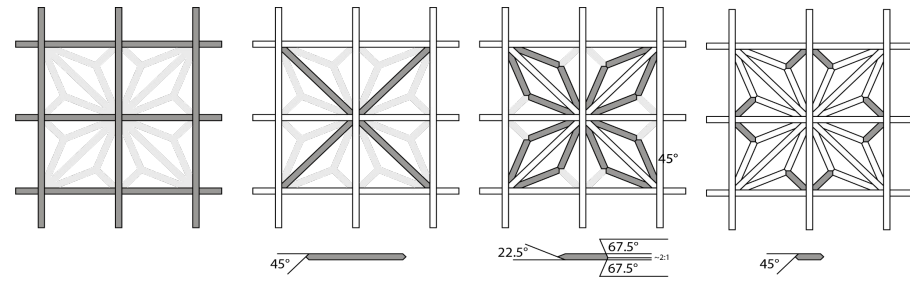


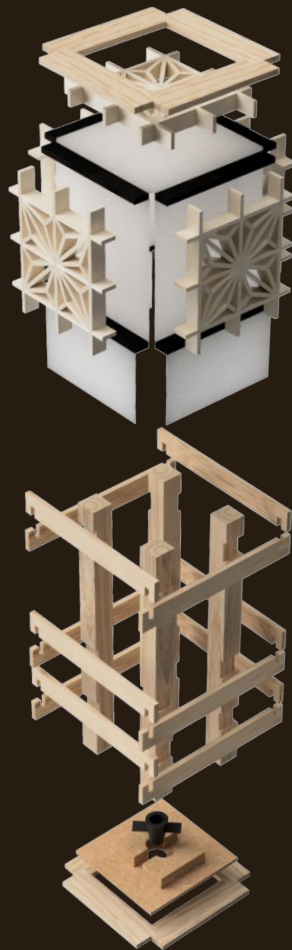
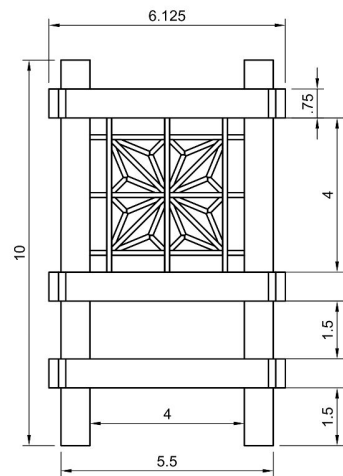
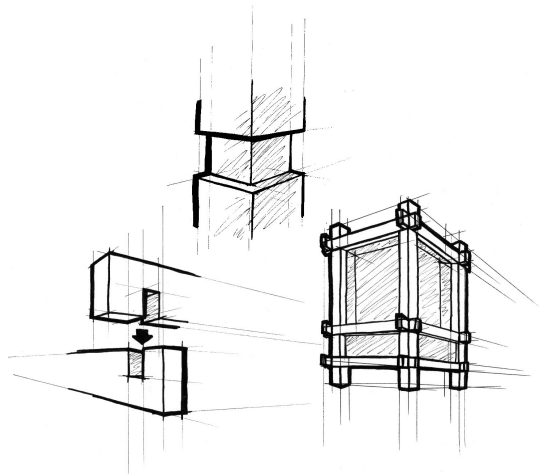
Prototype

# Creating Kumiko Sections

Traditionally, the precise angles used in kumiko designs are achieved using a chisel pressed against an angled block.

A channel keeps the wooden strip in place, and a sliding stop block controls the piece's length.



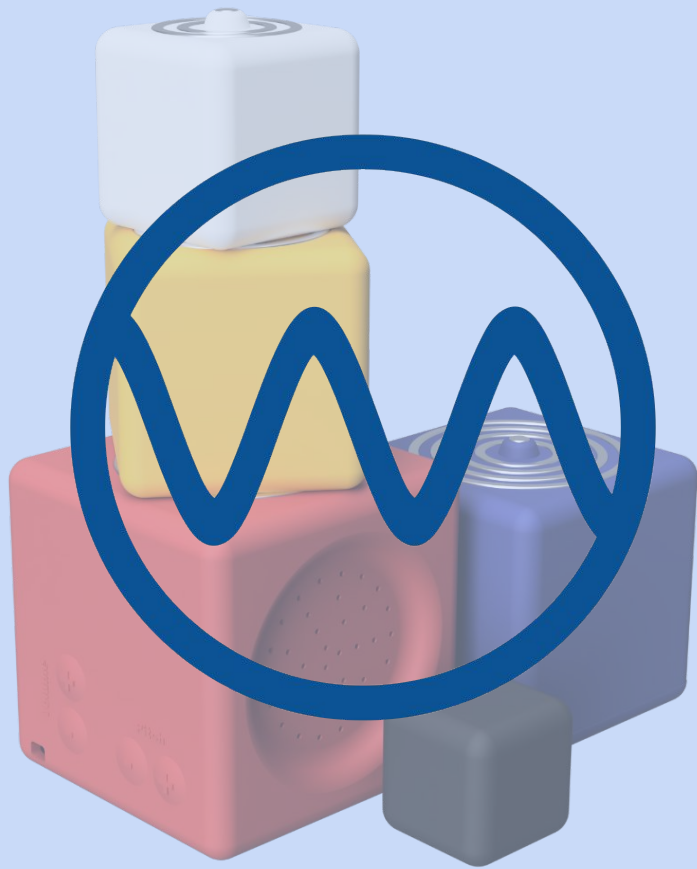


CAD Renderings & Drawings

# Synthesis Blocks







# Synthesis Blocks

Synthesis Blocks are a teaching tool that demonstrates how additive synthesis can be used to generate tones for electronic instruments.

Synthesis Blocks use additive synthesis, which creates timbre by adding together multiple pure sine tones. In its simplest form, it contains a fundamental tone and a series of harmonic tones which decrease in volume.

Base block will play a pure sine-wave fundamental tone

With each additional block that is stacked, a new harmonic is added

By stacking only certain blocks, different combinations of harmonics can be achieved



# Colors & Materials



Red  
Plastic

Blue  
Plastic

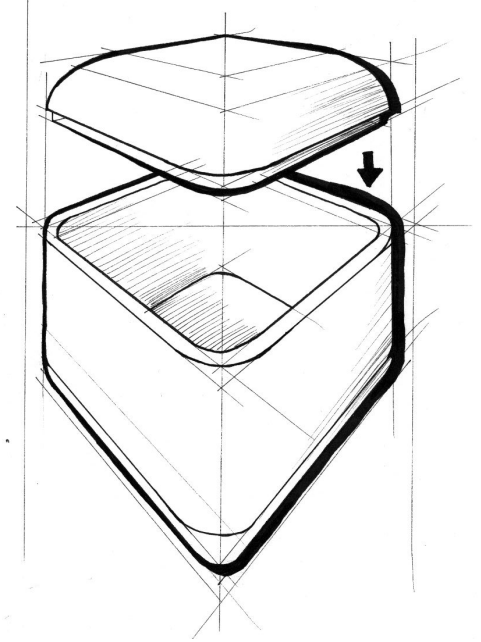
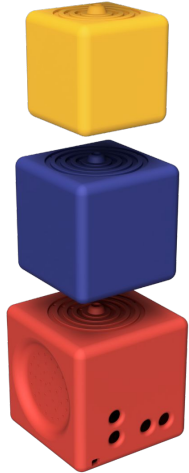
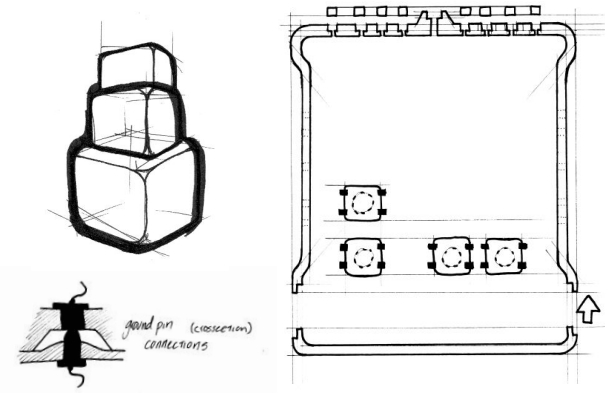
Yellow  
Plastic

Black  
Plastic

Aluminum  
Rings

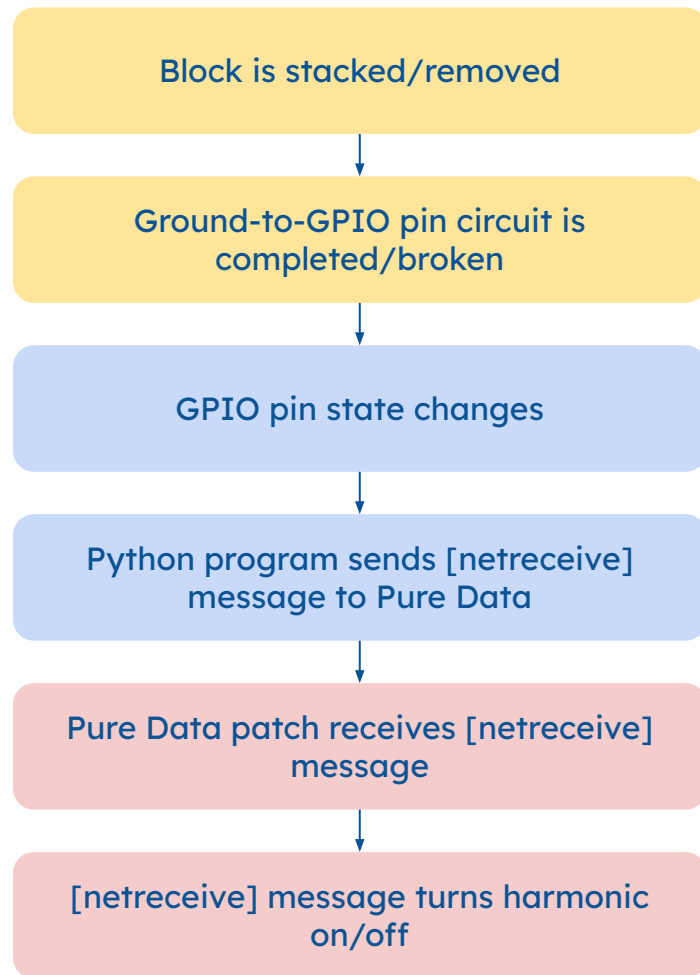
# Ideation & Prototyping

3d printed prototypes to demonstrate tactile, electronic, and software functionality



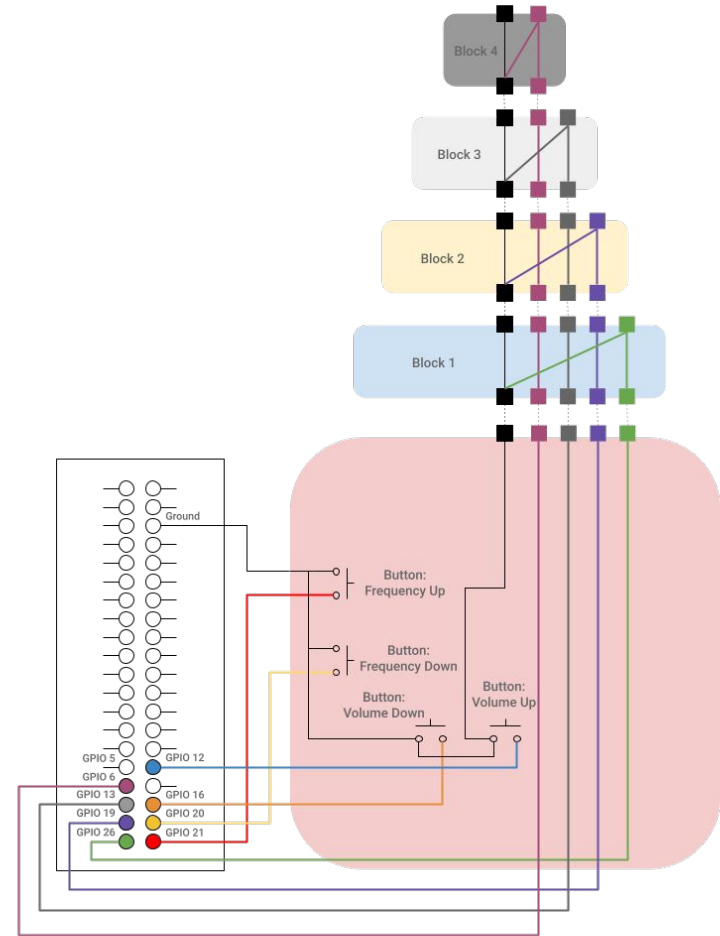
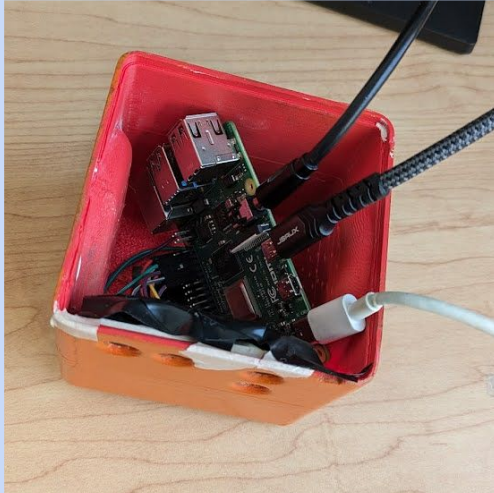
A Raspberry Pi microprocessor, speaker, and all active electronics are housed in the base block.

Blocks connect to Raspberry Pi GPIO pins, then a Python program sends a message to a Pure Data synthesizer patch.



# Electronics

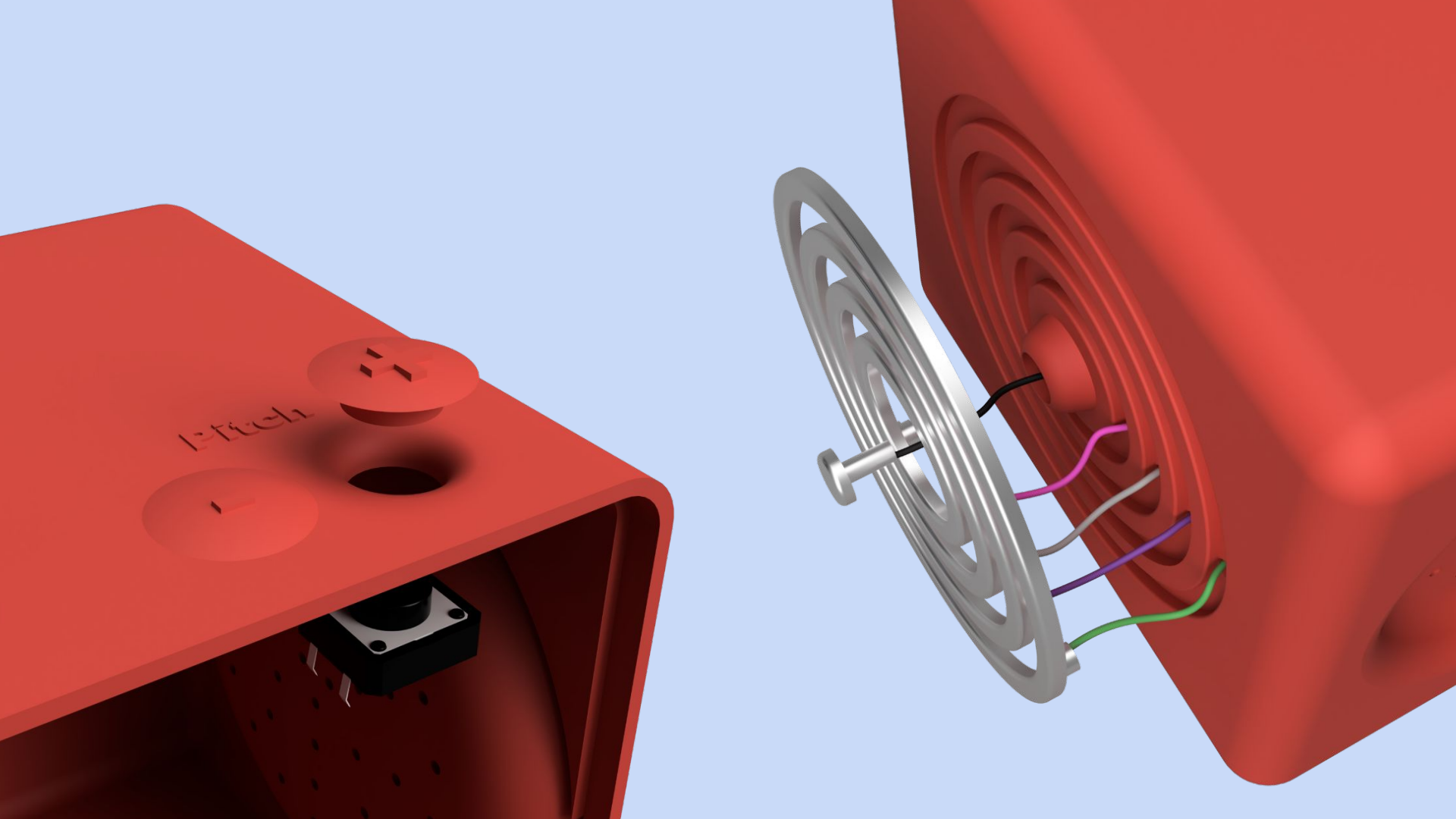
The blocks work as switches: when placed, the outermost ring of each block connects with the ground, which identifies the block placed and changes the GPIO pin state.



# Programs

A Python program is alerted to the GPIO state changes, and sends a message to Pure Data, which changes the sound according to the message.

```
Thorny - /home/jill/Documents/Synthesis_Blocks/pd_buttons.py @ 151.1
File Edit View Run Tools Help
pd_buttons.py x
44 try:
45     while True:
46         time.sleep(0.01)
47         B1_state = GPIO.input(B1)
48         B2_state = GPIO.input(B2)
49         B3_state = GPIO.input(B3)
50         B4_state = GPIO.input(B4)
51         VolUp_state = GPIO.input(VolUp)
52         VolDown_state = GPIO.input(VolDown)
53         FreqUp_state = GPIO.input(FreqUp)
54         FreqDown_state = GPIO.input(FreqDown)
55
56         #BLOCKS
57
58         #for block 1
59         if B1_state != previous_B1_state:
60             #port = '3000'
61             previous_B1_state = B1_state
62             if B1_state == GPIO.LOW:
63                 #Click action goes here
64                 message = '0 1;'
65                 send2Pd(message)
66             else:
67                 #Release action goes here
68                 message = '0 0;'
69                 send2Pd(message)
70
71         #for block 2
72         if B2_state != previous_B2_state:
73             previous_B2_state = B2_state
74             if B2_state == GPIO.LOW:
75                 #Click action goes here
76                 message = '0 2;'
77                 send2Pd(message)
78
79         #for block 3
80         if B3_state != previous_B3_state:
81             previous_B3_state = B3_state
82             if B3_state == GPIO.LOW:
83                 #Click action goes here
84                 message = '0 3;'
85                 send2Pd(message)
86
87         #for block 4
88         if B4_state != previous_B4_state:
89             previous_B4_state = B4_state
90             if B4_state == GPIO.LOW:
91                 #Click action goes here
92                 message = '0 4;'
93                 send2Pd(message)
94
95         #for block 5
96         if VolUp_state != previous_VolUp_state:
97             previous_VolUp_state = VolUp_state
98             if VolUp_state == GPIO.LOW:
99                 #Click action goes here
100                 message = '0 5;'
101                 send2Pd(message)
102             else:
103                 #Release action goes here
104                 message = '0 6;'
105                 send2Pd(message)
106
107         #for block 6
108         if VolDown_state != previous_VolDown_state:
109             previous_VolDown_state = VolDown_state
110             if VolDown_state == GPIO.LOW:
111                 #Click action goes here
112                 message = '0 7;'
113                 send2Pd(message)
114             else:
115                 #Release action goes here
116                 message = '0 8;'
117                 send2Pd(message)
118
119         #for block 7
120         if FreqUp_state != previous_FreqUp_state:
121             previous_FreqUp_state = FreqUp_state
122             if FreqUp_state == GPIO.LOW:
123                 #Click action goes here
124                 message = '0 9;'
125                 send2Pd(message)
126             else:
127                 #Release action goes here
128                 message = '0 10;'
129                 send2Pd(message)
130
131         #for block 8
132         if FreqDown_state != previous_FreqDown_state:
133             previous_FreqDown_state = FreqDown_state
134             if FreqDown_state == GPIO.LOW:
135                 #Click action goes here
136                 message = '0 11;'
137                 send2Pd(message)
138             else:
139                 #Release action goes here
140                 message = '0 12;'
141                 send2Pd(message)
142
143         #for block 9
144         if B1_state != previous_B1_state:
145             previous_B1_state = B1_state
146             if B1_state == GPIO.LOW:
147                 #Click action goes here
148                 message = '0 13;'
149                 send2Pd(message)
150             else:
151                 #Release action goes here
152                 message = '0 14;'
153                 send2Pd(message)
154
155         #for block 10
156         if B2_state != previous_B2_state:
157             previous_B2_state = B2_state
158             if B2_state == GPIO.LOW:
159                 #Click action goes here
160                 message = '0 15;'
161                 send2Pd(message)
162             else:
163                 #Release action goes here
164                 message = '0 16;'
165                 send2Pd(message)
166
167         #for block 11
168         if B3_state != previous_B3_state:
169             previous_B3_state = B3_state
170             if B3_state == GPIO.LOW:
171                 #Click action goes here
172                 message = '0 17;'
173                 send2Pd(message)
174             else:
175                 #Release action goes here
176                 message = '0 18;'
177                 send2Pd(message)
178
179         #for block 12
180         if B4_state != previous_B4_state:
181             previous_B4_state = B4_state
182             if B4_state == GPIO.LOW:
183                 #Click action goes here
184                 message = '0 19;'
185                 send2Pd(message)
186             else:
187                 #Release action goes here
188                 message = '0 20;'
189                 send2Pd(message)
190
191         #for block 13
192         if VolUp_state != previous_VolUp_state:
193             previous_VolUp_state = VolUp_state
194             if VolUp_state == GPIO.LOW:
195                 #Click action goes here
196                 message = '0 21;'
197                 send2Pd(message)
198             else:
199                 #Release action goes here
200                 message = '0 22;'
201                 send2Pd(message)
202
203         #for block 14
204         if VolDown_state != previous_VolDown_state:
205             previous_VolDown_state = VolDown_state
206             if VolDown_state == GPIO.LOW:
207                 #Click action goes here
208                 message = '0 23;'
209                 send2Pd(message)
210             else:
211                 #Release action goes here
212                 message = '0 24;'
213                 send2Pd(message)
214
215         #for block 15
216         if FreqUp_state != previous_FreqUp_state:
217             previous_FreqUp_state = FreqUp_state
218             if FreqUp_state == GPIO.LOW:
219                 #Click action goes here
220                 message = '0 25;'
221                 send2Pd(message)
222             else:
223                 #Release action goes here
224                 message = '0 26;'
225                 send2Pd(message)
226
227         #for block 16
228         if FreqDown_state != previous_FreqDown_state:
229             previous_FreqDown_state = FreqDown_state
230             if FreqDown_state == GPIO.LOW:
231                 #Click action goes here
232                 message = '0 27;'
233                 send2Pd(message)
234             else:
235                 #Release action goes here
236                 message = '0 28;'
237                 send2Pd(message)
238
239         #for block 17
240         if B1_state != previous_B1_state:
241             previous_B1_state = B1_state
242             if B1_state == GPIO.LOW:
243                 #Click action goes here
244                 message = '0 29;'
245                 send2Pd(message)
246             else:
247                 #Release action goes here
248                 message = '0 30;'
249                 send2Pd(message)
250
251         #for block 18
252         if B2_state != previous_B2_state:
253             previous_B2_state = B2_state
254             if B2_state == GPIO.LOW:
255                 #Click action goes here
256                 message = '0 31;'
257                 send2Pd(message)
258             else:
259                 #Release action goes here
260                 message = '0 32;'
261                 send2Pd(message)
262
263         #for block 19
264         if B3_state != previous_B3_state:
265             previous_B3_state = B3_state
266             if B3_state == GPIO.LOW:
267                 #Click action goes here
268                 message = '0 33;'
269                 send2Pd(message)
270             else:
271                 #Release action goes here
272                 message = '0 34;'
273                 send2Pd(message)
274
275         #for block 20
276         if B4_state != previous_B4_state:
277             previous_B4_state = B4_state
278             if B4_state == GPIO.LOW:
279                 #Click action goes here
280                 message = '0 35;'
281                 send2Pd(message)
282             else:
283                 #Release action goes here
284                 message = '0 36;'
285                 send2Pd(message)
286
287         #for block 21
288         if VolUp_state != previous_VolUp_state:
289             previous_VolUp_state = VolUp_state
290             if VolUp_state == GPIO.LOW:
291                 #Click action goes here
292                 message = '0 37;'
293                 send2Pd(message)
294             else:
295                 #Release action goes here
296                 message = '0 38;'
297                 send2Pd(message)
298
299         #for block 22
300         if VolDown_state != previous_VolDown_state:
301             previous_VolDown_state = VolDown_state
302             if VolDown_state == GPIO.LOW:
303                 #Click action goes here
304                 message = '0 39;'
305                 send2Pd(message)
306             else:
307                 #Release action goes here
308                 message = '0 40;'
309                 send2Pd(message)
310
311         #for block 23
312         if FreqUp_state != previous_FreqUp_state:
313             previous_FreqUp_state = FreqUp_state
314             if FreqUp_state == GPIO.LOW:
315                 #Click action goes here
316                 message = '0 41;'
317                 send2Pd(message)
318             else:
319                 #Release action goes here
320                 message = '0 42;'
321                 send2Pd(message)
322
323         #for block 24
324         if FreqDown_state != previous_FreqDown_state:
325             previous_FreqDown_state = FreqDown_state
326             if FreqDown_state == GPIO.LOW:
327                 #Click action goes here
328                 message = '0 43;'
329                 send2Pd(message)
330             else:
331                 #Release action goes here
332                 message = '0 44;'
333                 send2Pd(message)
334
335         #for block 25
336         if B1_state != previous_B1_state:
337             previous_B1_state = B1_state
338             if B1_state == GPIO.LOW:
339                 #Click action goes here
340                 message = '0 45;'
341                 send2Pd(message)
342             else:
343                 #Release action goes here
344                 message = '0 46;'
345                 send2Pd(message)
346
347         #for block 26
348         if B2_state != previous_B2_state:
349             previous_B2_state = B2_state
350             if B2_state == GPIO.LOW:
351                 #Click action goes here
352                 message = '0 47;'
353                 send2Pd(message)
354             else:
355                 #Release action goes here
356                 message = '0 48;'
357                 send2Pd(message)
358
359         #for block 27
360         if B3_state != previous_B3_state:
361             previous_B3_state = B3_state
362             if B3_state == GPIO.LOW:
363                 #Click action goes here
364                 message = '0 49;'
365                 send2Pd(message)
366             else:
367                 #Release action goes here
368                 message = '0 50;'
369                 send2Pd(message)
370
371         #for block 28
372         if B4_state != previous_B4_state:
373             previous_B4_state = B4_state
374             if B4_state == GPIO.LOW:
375                 #Click action goes here
376                 message = '0 51;'
377                 send2Pd(message)
378             else:
379                 #Release action goes here
380                 message = '0 52;'
381                 send2Pd(message)
382
383         #for block 29
384         if VolUp_state != previous_VolUp_state:
385             previous_VolUp_state = VolUp_state
386             if VolUp_state == GPIO.LOW:
387                 #Click action goes here
388                 message = '0 53;'
389                 send2Pd(message)
390             else:
391                 #Release action goes here
392                 message = '0 54;'
393                 send2Pd(message)
394
395         #for block 30
396         if VolDown_state != previous_VolDown_state:
397             previous_VolDown_state = VolDown_state
398             if VolDown_state == GPIO.LOW:
399                 #Click action goes here
400                 message = '0 55;'
401                 send2Pd(message)
402             else:
403                 #Release action goes here
404                 message = '0 56;'
405                 send2Pd(message)
406
407         #for block 31
408         if FreqUp_state != previous_FreqUp_state:
409             previous_FreqUp_state = FreqUp_state
410             if FreqUp_state == GPIO.LOW:
411                 #Click action goes here
412                 message = '0 57;'
413                 send2Pd(message)
414             else:
415                 #Release action goes here
416                 message = '0 58;'
417                 send2Pd(message)
418
419         #for block 32
420         if FreqDown_state != previous_FreqDown_state:
421             previous_FreqDown_state = FreqDown_state
422             if FreqDown_state == GPIO.LOW:
423                 #Click action goes here
424                 message = '0 59;'
425                 send2Pd(message)
426             else:
427                 #Release action goes here
428                 message = '0 60;'
429                 send2Pd(message)
430
431         #for block 33
432         if B1_state != previous_B1_state:
433             previous_B1_state = B1_state
434             if B1_state == GPIO.LOW:
435                 #Click action goes here
436                 message = '0 61;'
437                 send2Pd(message)
438             else:
439                 #Release action goes here
440                 message = '0 62;'
441                 send2Pd(message)
442
443         #for block 34
444         if B2_state != previous_B2_state:
445             previous_B2_state = B2_state
446             if B2_state == GPIO.LOW:
447                 #Click action goes here
448                 message = '0 63;'
449                 send2Pd(message)
450             else:
451                 #Release action goes here
452                 message = '0 64;'
453                 send2Pd(message)
454
455         #for block 35
456         if B3_state != previous_B3_state:
457             previous_B3_state = B3_state
458             if B3_state == GPIO.LOW:
459                 #Click action goes here
460                 message = '0 65;'
461                 send2Pd(message)
462             else:
463                 #Release action goes here
464                 message = '0 66;'
465                 send2Pd(message)
466
467         #for block 36
468         if B4_state != previous_B4_state:
469             previous_B4_state = B4_state
470             if B4_state == GPIO.LOW:
471                 #Click action goes here
472                 message = '0 67;'
473                 send2Pd(message)
474             else:
475                 #Release action goes here
476                 message = '0 68;'
477                 send2Pd(message)
478
479         #for block 37
480         if VolUp_state != previous_VolUp_state:
481             previous_VolUp_state = VolUp_state
482             if VolUp_state == GPIO.LOW:
483                 #Click action goes here
484                 message = '0 69;'
485                 send2Pd(message)
486             else:
487                 #Release action goes here
488                 message = '0 70;'
489                 send2Pd(message)
490
491         #for block 38
492         if VolDown_state != previous_VolDown_state:
493             previous_VolDown_state = VolDown_state
494             if VolDown_state == GPIO.LOW:
495                 #Click action goes here
496                 message = '0 71;'
497                 send2Pd(message)
498             else:
499                 #Release action goes here
500                 message = '0 72;'
501                 send2Pd(message)
502
503         #for block 39
504         if FreqUp_state != previous_FreqUp_state:
505             previous_FreqUp_state = FreqUp_state
506             if FreqUp_state == GPIO.LOW:
507                 #Click action goes here
508                 message = '0 73;'
509                 send2Pd(message)
510             else:
511                 #Release action goes here
512                 message = '0 74;'
513                 send2Pd(message)
514
515         #for block 40
516         if FreqDown_state != previous_FreqDown_state:
517             previous_FreqDown_state = FreqDown_state
518             if FreqDown_state == GPIO.LOW:
519                 #Click action goes here
520                 message = '0 75;'
521                 send2Pd(message)
522             else:
523                 #Release action goes here
524                 message = '0 76;'
525                 send2Pd(message)
526
527         #for block 41
528         if B1_state != previous_B1_state:
529             previous_B1_state = B1_state
530             if B1_state == GPIO.LOW:
531                 #Click action goes here
532                 message = '0 77;'
533                 send2Pd(message)
534             else:
535                 #Release action goes here
536                 message = '0 78;'
537                 send2Pd(message)
538
539         #for block 42
540         if B2_state != previous_B2_state:
541             previous_B2_state = B2_state
542             if B2_state == GPIO.LOW:
543                 #Click action goes here
544                 message = '0 79;'
545                 send2Pd(message)
546             else:
547                 #Release action goes here
548                 message = '0 80;'
549                 send2Pd(message)
550
551         #for block 43
552         if B3_state != previous_B3_state:
553             previous_B3_state = B3_state
554             if B3_state == GPIO.LOW:
555                 #Click action goes here
556                 message = '0 81;'
557                 send2Pd(message)
558             else:
559                 #Release action goes here
560                 message = '0 82;'
561                 send2Pd(message)
562
563         #for block 44
564         if B4_state != previous_B4_state:
565             previous_B4_state = B4_state
566             if B4_state == GPIO.LOW:
567                 #Click action goes here
568                 message = '0 83;'
569                 send2Pd(message)
570             else:
571                 #Release action goes here
572                 message = '0 84;'
573                 send2Pd(message)
574
575         #for block 45
576         if VolUp_state != previous_VolUp_state:
577             previous_VolUp_state = VolUp_state
578             if VolUp_state == GPIO.LOW:
579                 #Click action goes here
580                 message = '0 85;'
581                 send2Pd(message)
582             else:
583                 #Release action goes here
584                 message = '0 86;'
585                 send2Pd(message)
586
587         #for block 46
588         if VolDown_state != previous_VolDown_state:
589             previous_VolDown_state = VolDown_state
590             if VolDown_state == GPIO.LOW:
591                 #Click action goes here
592                 message = '0 87;'
593                 send2Pd(message)
594             else:
595                 #Release action goes here
596                 message = '0 88;'
597                 send2Pd(message)
598
599         #for block 47
600         if FreqUp_state != previous_FreqUp_state:
601             previous_FreqUp_state = FreqUp_state
602             if FreqUp_state == GPIO.LOW:
603                 #Click action goes here
604                 message = '0 89;'
605                 send2Pd(message)
606             else:
607                 #Release action goes here
608                 message = '0 90;'
609                 send2Pd(message)
610
611         #for block 48
612         if FreqDown_state != previous_FreqDown_state:
613             previous_FreqDown_state = FreqDown_state
614             if FreqDown_state == GPIO.LOW:
615                 #Click action goes here
616                 message = '0 91;'
617                 send2Pd(message)
618             else:
619                 #Release action goes here
620                 message = '0 92;'
621                 send2Pd(message)
622
623         #for block 49
624         if B1_state != previous_B1_state:
625             previous_B1_state = B1_state
626             if B1_state == GPIO.LOW:
627                 #Click action goes here
628                 message = '0 93;'
629                 send2Pd(message)
630             else:
631                 #Release action goes here
632                 message = '0 94;'
633                 send2Pd(message)
634
635         #for block 50
636         if B2_state != previous_B2_state:
637             previous_B2_state = B2_state
638             if B2_state == GPIO.LOW:
639                 #Click action goes here
640                 message = '0 95;'
641                 send2Pd(message)
642             else:
643                 #Release action goes here
644                 message = '0 96;'
645                 send2Pd(message)
646
647         #for block 51
648         if B3_state != previous_B3_state:
649             previous_B3_state = B3_state
650             if B3_state == GPIO.LOW:
651                 #Click action goes here
652                 message = '0 97;'
653                 send2Pd(message)
654             else:
655                 #Release action goes here
656                 message = '0 98;'
657                 send2Pd(message)
658
659         #for block 52
660         if B4_state != previous_B4_state:
661             previous_B4_state = B4_state
662             if B4_state == GPIO.LOW:
663                 #Click action goes here
664                 message = '0 99;'
665                 send2Pd(message)
666             else:
667                 #Release action goes here
668                 message = '0 100;'
669                 send2Pd(message)
670
671         #for block 53
672         if VolUp_state != previous_VolUp_state:
673             previous_VolUp_state = VolUp_state
674             if VolUp_state == GPIO.LOW:
675                 #Click action goes here
676                 message = '0 101;'
677                 send2Pd(message)
678             else:
679                 #Release action goes here
680                 message = '0 102;'
681                 send2Pd(message)
682
683         #for block 54
684         if VolDown_state != previous_VolDown_state:
685             previous_VolDown_state = VolDown_state
686             if VolDown_state == GPIO.LOW:
687                 #Click action goes here
688                 message = '0 103;'
689                 send2Pd(message)
690             else:
691                 #Release action goes here
692                 message = '0 104;'
693                 send2Pd(message)
694
695         #for block 55
696         if FreqUp_state != previous_FreqUp_state:
697             previous_FreqUp_state = FreqUp_state
698             if FreqUp_state == GPIO.LOW:
699                 #Click action goes here
700                 message = '0 105;'
701                 send2Pd(message)
702             else:
703                 #Release action goes here
704                 message = '0 106;'
705                 send2Pd(message)
706
707         #for block 56
708         if FreqDown_state != previous_FreqDown_state:
709             previous_FreqDown_state = FreqDown_state
710             if FreqDown_state == GPIO.LOW:
711                 #Click action goes here
712                 message = '0 107;'
713                 send2Pd(message)
714             else:
715                 #Release action goes here
716                 message = '0 108;'
717                 send2Pd(message)
718
719         #for block 57
720         if B1_state != previous_B1_state:
721             previous_B1_state = B1_state
722             if B1_state == GPIO.LOW:
723                 #Click action goes here
724                 message = '0 109;'
725                 send2Pd(message)
726             else:
727                 #Release action goes here
728                 message = '0 110;'
729                 send2Pd(message)
730
731         #for block 58
732         if B2_state != previous_B2_state:
733             previous_B2_state = B2_state
734             if B2_state == GPIO.LOW:
735                 #Click action goes here
736                 message = '0 111;'
737                 send2Pd(message)
738             else:
739                 #Release action goes here
740                 message = '0 112;'
741                 send2Pd(message)
742
743         #for block 59
744         if B3_state != previous_B3_state:
745             previous_B3_state = B3_state
746             if B3_state == GPIO.LOW:
747                 #Click action goes here
748                 message = '0 113;'
749                 send2Pd(message)
750             else:
751                 #Release action goes here
752                 message = '0 114;'
753                 send2Pd(message)
754
755         #for block 60
756         if B4_state != previous_B4_state:
757             previous_B4_state = B4_state
758             if B4_state == GPIO.LOW:
759                 #Click action goes here
760                 message = '0 115;'
761                 send2Pd(message)
762             else:
763                 #Release action goes here
764                 message = '0 116;'
765                 send2Pd(message)
766
767         #for block 61
768         if VolUp_state != previous_VolUp_state:
769             previous_VolUp_state = VolUp_state
770             if VolUp_state == GPIO.LOW:
771                 #Click action goes here
772                 message = '0 117;'
773                 send2Pd(message)
774             else:
775                 #Release action goes here
776                 message = '0 118;'
777                 send2Pd(message)
778
779         #for block 62
780         if VolDown_state != previous_VolDown_state:
781             previous_VolDown_state = VolDown_state
782             if VolDown_state == GPIO.LOW:
783                 #Click action goes here
784                 message = '0 119;'
785                 send2Pd(message)
786             else:
787                 #Release action goes here
788                 message = '0 120;'
789                 send2Pd(message)
790
791         #for block 63
792         if FreqUp_state != previous_FreqUp_state:
793             previous_FreqUp_state = FreqUp_state
794             if FreqUp_state == GPIO.LOW:
795                 #Click action goes here
796                 message = '0 121;'
797                 send2Pd(message)
798             else:
799                 #Release action goes here
800                 message = '0 122;'
801                 send2Pd(message)
802
803         #for block 64
804         if FreqDown_state != previous_FreqDown_state:
805             previous_FreqDown_state = FreqDown_state
806             if FreqDown_state == GPIO.LOW:
807                 #Click action goes here
808                 message = '0 123;'
809                 send2Pd(message)
810             else:
811                 #Release action goes here
812                 message = '0 124;'
813                 send2Pd(message)
814
815         #for block 65
816         if B1_state != previous_B1_state:
817             previous_B1_state = B1_state
818             if B1_state == GPIO.LOW:
819                 #Click action goes here
820                 message = '0 125;'
821                 send2Pd(message)
822             else:
823                 #Release action goes here
824                 message = '0 126;'
825                 send2Pd(message)
826
827         #for block 66
828         if B2_state != previous_B2_state:
829             previous_B2_state = B2_state
830             if B2_state == GPIO.LOW:
831                 #Click action goes here
832                 message = '0 127;'
833                 send2Pd(message)
834             else:
835                 #Release action goes here
836                 message = '0 128;'
837                 send2Pd(message)
838
839         #for block 67
840         if B3_state != previous_B3_state:
841             previous_B3_state = B3_state
842             if B3_state == GPIO.LOW:
843                 #Click action goes here
844                 message = '0 129;'
845                 send2Pd(message)
846             else:
847                 #Release action goes here
848                 message = '0 130;'
849                 send2Pd(message)
850
851         #for block 68
852         if B4_state != previous_B4_state:
853             previous_B4_state = B4_state
854             if B4_state == GPIO.LOW:
855                 #Click action goes here
856                 message = '0 131;'
857                 send2Pd(message)
858             else:
859                 #Release action goes here
860                 message = '0 132;'
861                 send2Pd(message)
862
863         #for block 69
864         if VolUp_state != previous_VolUp_state:
865             previous_VolUp_state = VolUp_state
866             if VolUp_state == GPIO.LOW:
867                 #Click action goes here
868                 message = '0 133;'
869                 send2Pd(message)
870             else:
871                 #Release action goes here
872                 message = '0 134;'
873                 send2Pd(message)
874
875         #for block 70
876         if VolDown_state != previous_VolDown_state:
877             previous_VolDown_state = VolDown_state
878             if VolDown_state == GPIO.LOW:
879                 #Click action goes here
880                 message = '0 135;'
881                 send2Pd(message)
882             else:
883                 #Release action goes here
884                 message = '0 136;'
885                 send2Pd(message)
886
887         #for block 71
888         if FreqUp_state != previous_FreqUp_state:
889             previous_FreqUp_state = FreqUp_state
890             if FreqUp_state == GPIO.LOW:
891                 #Click action goes here
892                 message = '0 137;'
893                 send2Pd(message)
894             else:
895                 #Release action goes here
896                 message = '0 138;'
897                 send2Pd(message)
898
899         #for block 72
900         if FreqDown_state != previous_FreqDown_state:
901             previous_FreqDown_state = FreqDown_state
902             if FreqDown_state == GPIO.LOW:
903                 #Click action goes here
904                 message = '0 139;'
905                 send2Pd(message)
906             else:
907                 #Release action goes here
908                 message = '0 140;'
909                 send2Pd(message)
910
911         #for block 73
912         if B1_state != previous_B1_state:
913             previous_B1_state = B1_state
914             if B1_state == GPIO.LOW:
915                 #Click action goes here
916                 message = '0 141;'
917                 send2Pd(message)
918             else:
919                 #Release action goes here
920                 message = '0 142;'
921                 send2Pd(message)
922
923         #for block 74
924         if B2_state != previous_B2_state:
925             previous_B2_state = B2_state
926             if B2_state == GPIO.LOW:
927                 #Click action goes here
928                 message = '0 143;'
929                 send2Pd(message)
930             else:
931                 #Release action goes here
932                 message = '0 144;'
933                 send2Pd(message)
934
935         #for block 75
936         if B3_state != previous_B3_state:
937             previous_B3_state = B3_state
938             if B3_state == GPIO.LOW:
939                 #Click action goes here
940                 message = '0 145;'
941                 send2Pd(message)
942             else:
943                 #Release action goes here
944                 message = '0 146;'
945                 send2Pd(message)
946
947         #for block 76
948         if B4_state != previous_B4_state:
949             previous_B4_state = B4_state
950             if B4_state == GPIO.LOW:
951                 #Click action goes here
952                 message = '0 147;'
953                 send2Pd(message)
954             else:
955                 #Release action goes here
956                 message = '0 148;'
957                 send2Pd(message)
958
959         #for block 77
960         if VolUp_state != previous_VolUp_state:
961             previous_VolUp_state = VolUp_state
962             if VolUp_state == GPIO.LOW:
963                 #Click action goes here
964                 message = '0 149;'
965                 send2Pd(message)
966             else:
967                 #Release action goes here
968                 message = '0 150;'
969                 send2Pd(message)
970
971         #for block 78
972         if VolDown_state != previous_VolDown_state:
973             previous_VolDown_state = VolDown_state
974             if VolDown_state == GPIO.LOW:
975                 #Click action goes here
976                 message = '0 151;'
977                 send2Pd(message)
978             else:
979                 #Release action goes here
980                 message = '0 152;'
981                 send2Pd(message)
982
983         #for block 79
984         if FreqUp_state != previous_FreqUp_state:
985             previous_FreqUp_state = FreqUp_state
986             if FreqUp_state == GPIO.LOW:
987                 #Click action goes here
988                 message = '0 153;'
989                 send2Pd(message)
990             else:
991                 #Release action goes here
992                 message = '0 154;'
993                 send2Pd(message)
994
995         #for block 80
996         if FreqDown_state != previous_FreqDown_state:
997             previous_FreqDown_state = FreqDown_state
998             if FreqDown_state == GPIO.LOW:
999                 #Click action goes here
1000                 message = '0 155;'
1001                 send2Pd(message)
1002             else:
1003                 #Release action goes here
1004                 message = '0 156;'
1005                 send2Pd(message)
1006
1007         #for block 81
1008         if B1_state != previous_B1_state:
1009             previous_B1_state = B1_state
1010             if B1_state == GPIO.LOW:
1011                 #Click action goes here
1012                 message = '0 157;'
1013                 send2Pd(message)
1014             else:
1015                 #Release action goes here
1016                 message = '0 158;'
1017                 send2Pd(message)
1018
1019         #for block 82
1020         if B2_state != previous_B2_state:
1021             previous_B2_state = B2_state
1022             if B2_state == GPIO.LOW:
1023                 #Click action goes here
1024                 message = '0 159;'
1025                 send2Pd(message)
1026             else:
1027                 #Release action goes here
1028                 message = '0 160;'
1029                 send2Pd(message)
1030
1031         #for block 83
1032         if B3_state != previous_B3_state:
1033             previous_B3_state = B3_state
1034             if B3_state == GPIO.LOW:
1035                 #Click action goes here
1036                 message = '0 161;'
1037                 send2Pd(message)
1038             else:
1039                 #Release action goes here
1040                 message = '0 162;'
1041                 send2Pd(message)
1042
1043         #for block 84
1044         if B4_state != previous_B4_state:
1045             previous_B4_state = B4_state
1046             if B4_state == GPIO.LOW:
1047                 #Click action goes here
1048                 message = '0 163;'
1049                 send2Pd(message)
1050             else:
1051                 #Release action goes here
1052                 message = '0 164;'
1053                 send2Pd(message)
1054
1055         #for block 85
1056         if VolUp_state != previous_VolUp_state:
1057             previous_VolUp_state = VolUp_state
1058             if VolUp_state == GPIO.LOW:
1059                 #Click action goes here
1060                 message = '0 165;'
1061                 send2Pd(message)
1062             else:
1063                 #Release action goes here
1064                 message = '0 166;'
1065                 send2Pd(message)
1066
1067         #for block 86
1068         if VolDown_state != previous_VolDown_state:
1069             previous_VolDown_state = VolDown_state
1070             if VolDown_state == GPIO.LOW:
1071                 #Click action goes here
1072                 message = '0 167;'
1073                 send2Pd(message)
1074             else:
1075                 #Release action goes here
1076                 message = '0 168;'
1077                 send2Pd(message)
1078
1079         #for block 87
1080         if FreqUp_state != previous_FreqUp_state:
1081             previous_FreqUp_state = FreqUp_state
1082             if FreqUp_state == GPIO.LOW:
1083                 #Click action goes here
1084                 message = '0 169;'
1085                 send2Pd(message)
1086             else:
1087                 #Release action goes here
1088                 message = '0 170;'
1089                 send2Pd(message)
1090
1091         #for block 88
1092         if FreqDown_state != previous_FreqDown_state:
1093             previous_FreqDown_state = FreqDown_state
1094             if FreqDown_state == GPIO.LOW:
1095                 #Click action goes here
1096                 message = '0 171;'
1097                 send2Pd(message)
1098             else:
1099                 #Release action goes here
1100                 message = '0 172;'
1101                 send2Pd(message)
1102
1103         #for block 89
1104         if B1_state != previous_B1_state:
1105             previous_B1_state = B1_state
1106             if B1_state == GPIO.LOW:
1107                 #Click action goes here
1108                 message = '0 173;'
1109                 send2Pd(message)
1110             else:
1111                 #Release action goes here
1112                 message = '0 174;'
1113                 send2Pd(message)
1114
1115         #for block 90
1116         if B2_state != previous_B2_state:
1117             previous_B2_state = B2_state
1118             if B2_state == GPIO.LOW:
1119                 #Click action goes here
1120                 message = '0 175;'
1121                 send2Pd(message)
1122             else:
1123                 #Release action goes here
1124                 message = '0 176;'
1125                 send2Pd(message)
1126
1127         #for block 91
1128         if B3_state != previous_B3_state:
1129             previous_B3_state = B3_state
1130             if B3_state == GPIO.LOW:
1131                 #Click action goes here
1132                 message = '0 177;'
1133                 send2Pd(message)
1134             else:
1135                 #Release action goes here
1136                 message = '0 178;'
1137                 send2Pd(message)
1138
1139         #for block 92
1140         if B4_state != previous_B4_state:
1141             previous_B4_state = B4
```







# **Jill Schmid**

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