



Pd-L20rk

CS 4624: Multimedia, Hypertext and Information Access

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Outline

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- Implementation
 - Tooltips Implementation
 - Tooltips for Objects and Inlets/Outlets
 - Next Steps for Tooltips
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- References

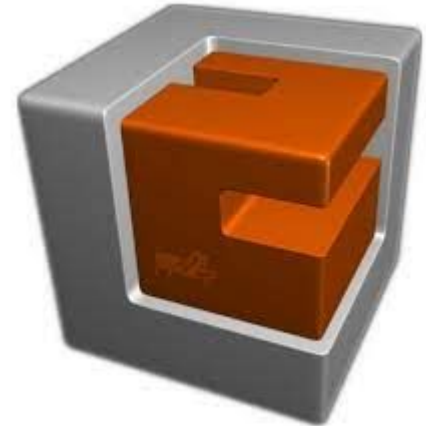
Recap

Dr. Ivica Ico Bukvic

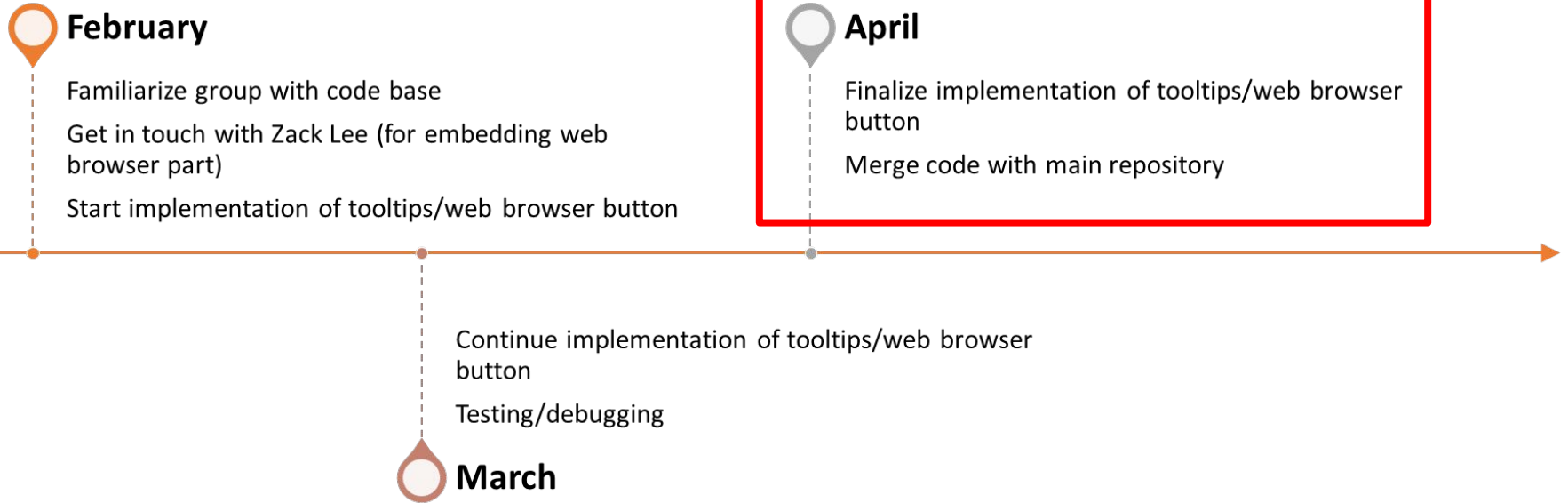
Founder and Director of the Digital Interactive Sound and Intermedia Studio (DISIS) and Linux Laptop Orchestra (L2Ork)

Tasks given:

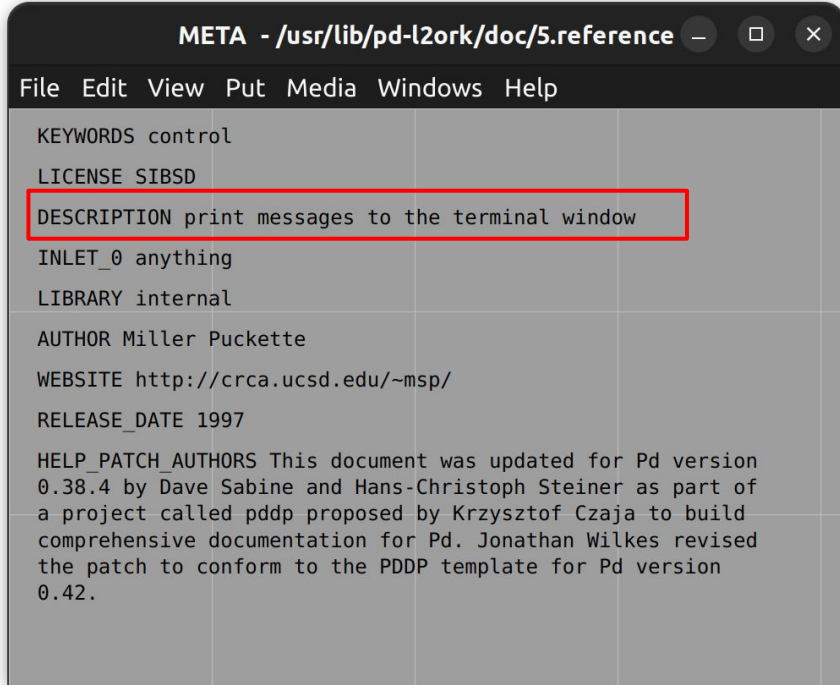
1. Tooltips
2. Single button automation



Timeline



Tooltips



A screenshot of a Pd help window titled "META - /usr/lib/pd-l2ork/doc/5.reference". The window has a menu bar with "File", "Edit", "View", "Put", "Media", "Windows", and "Help". The main content area displays the following text:

```
KEYWORDS control  
LICENSE SIBSD  
DESCRIPTION print messages to the terminal window  
INLET_0 anything  
LIBRARY internal  
AUTHOR Miller Puckette  
WEBSITE http://crca.ucsd.edu/~msp/  
RELEASE_DATE 1997  
HELP_PATCH_AUTHORS This document was updated for Pd version  
0.38.4 by Dave Sabine and Hans-Christoph Steiner as part of  
a project called pddp proposed by Krzysztof Czaja to build  
comprehensive documentation for Pd. Jonathan Wilkes revised  
the patch to conform to the PDDP template for Pd version  
0.42.
```

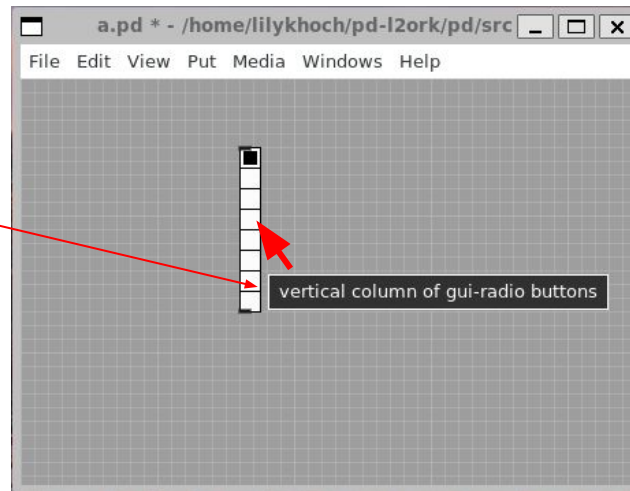
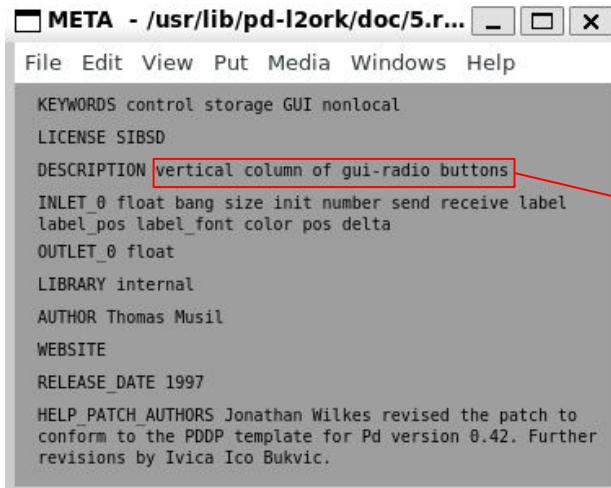
The "DESCRIPTION" line is highlighted with a red rectangular box.



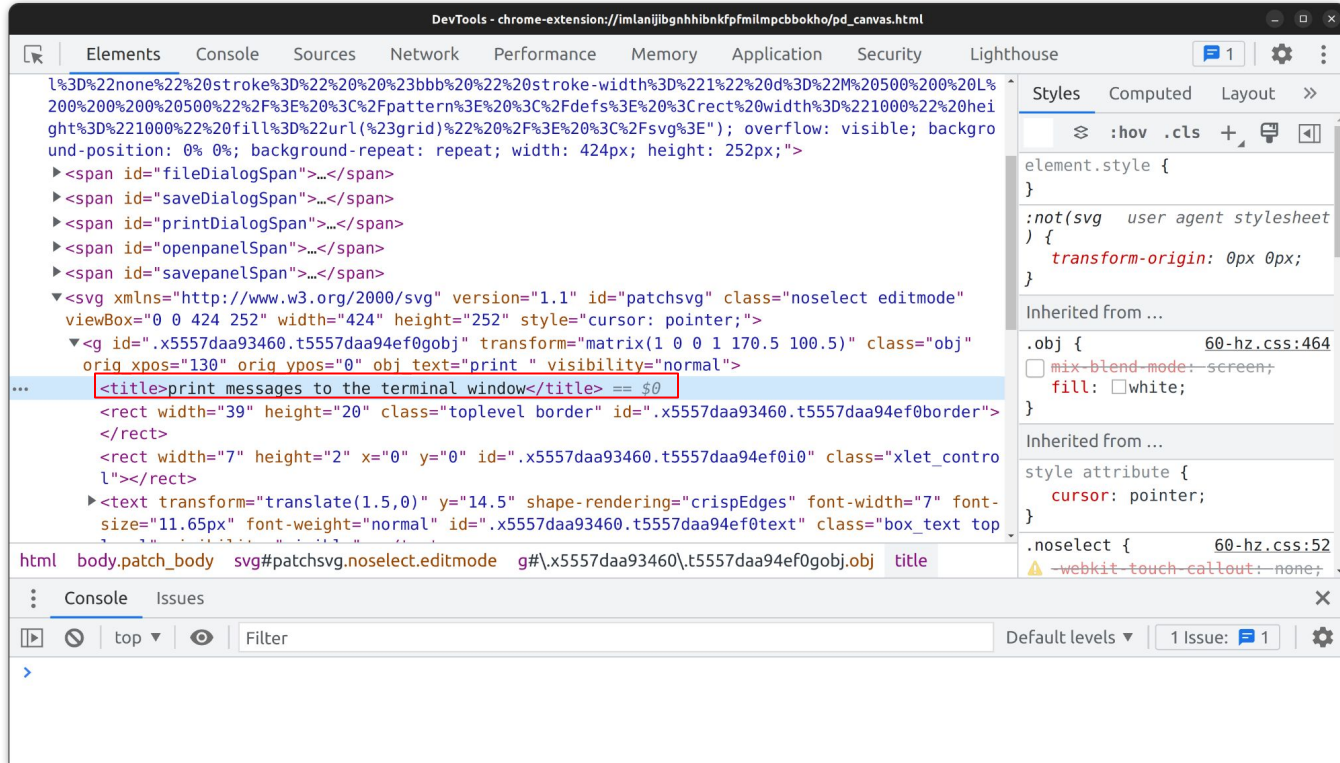
A screenshot of a Pd patch window titled "a.pd * - /home/lilykhoch/pd-l2ork/pd/src". The window has a menu bar with "File", "Edit", "View", "Put", "Media", "Windows", and "Help". The main content area shows a patch with a "print hello" object. A red arrow points from the "print" part of the object to a tooltip box that contains the text "print messages to the terminal window".

Adding title tag to each object

```
if (objname !=null) {  
  var x = document.createElementNS("http://www.w3.org/2000/svg", "title");  
  var t= index.search(objname,{fields: {title: {}}});  
  if (t.length > 0) {  
    var yyy = index.documentStore.getDoc(t[0].ref);  
    x.textContent=yyy.description;  
    g.appendChild(x);  
  }  
}
```



Tooltips Implementation



Object with Multiple inlet/outlets

`czero_rev~help.pd - /usr/lib/pd-l2ork/doc/5.reference`

File Edit View Put Media Windows Help

czero_rev~
complex one-zero (non-recursive) "reverse" filter, raw

[czero_rev~] filters a complex audio signal (first two inlets) via a one-zero filter, whose coefficients are controlled by creation arguments or by another complex audio signal (remaining two inlets). The impulse response is that of "rzero" reversed in time.

The action of [czero_rev~] is:

$$y[n] = - a[n] * x[n] + x[n-1]$$

where $y[n]$ is the output, $x[n]$ the input, and $a[n]$ the filter coefficient (all complex numbers). The filter is always stable.

The transfer function is $H(Z) = -a + Z^{-1}$.

inlets

0	signal	- signal to filter (real part).
	clear	- clear internal state to zero.
	set	- set internal state (real & imaginary parts).
1	signal	- signal to filter (imaginary part).
2	signal	- filter coefficient (real part).
3	signal	- filter coefficient (imaginary part).

outlets

0	signal
1	signal

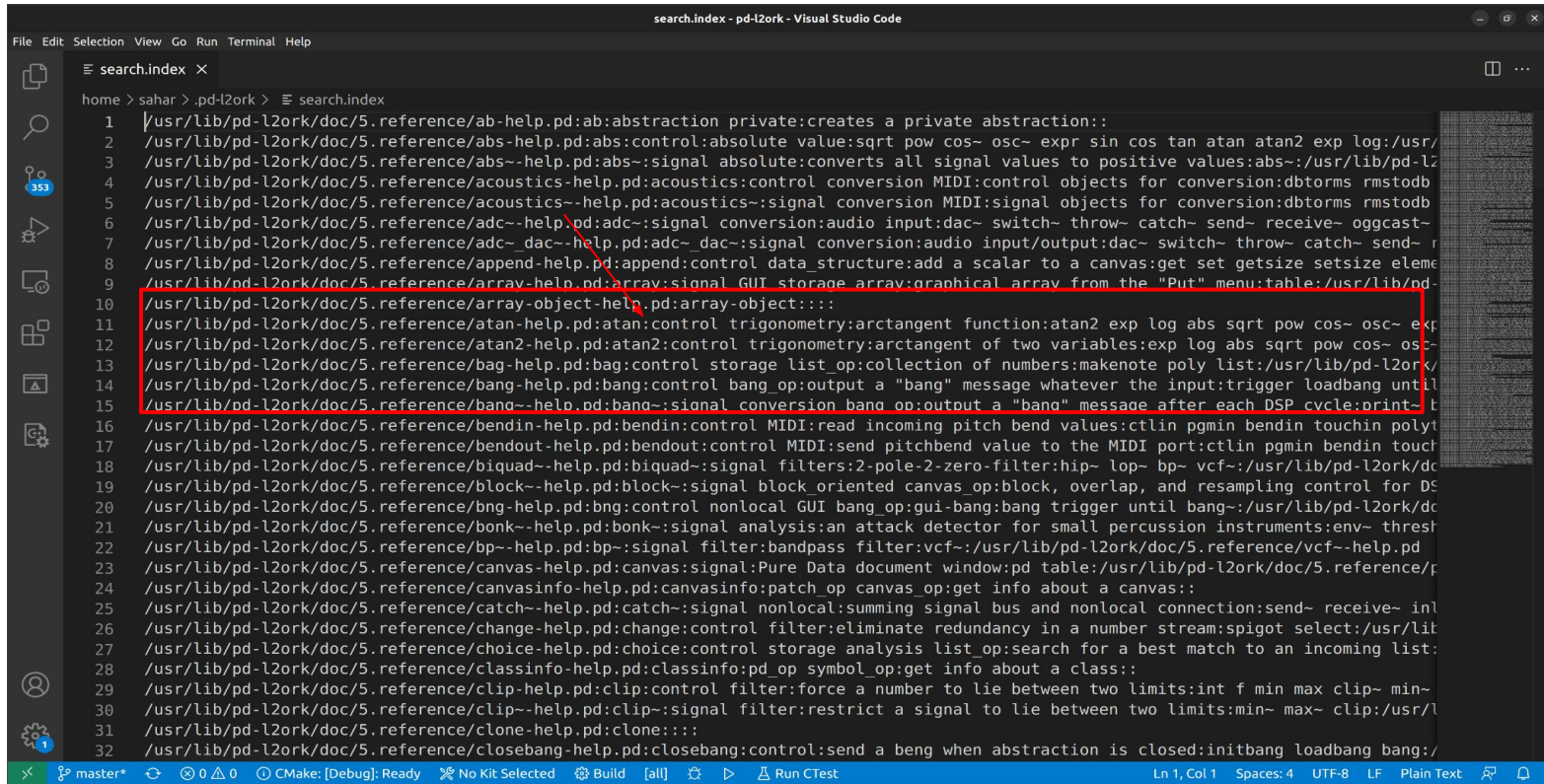
arguments

- float - (optional) filter coefficient (real part).
- float - (optional) filter coefficient (imaginary part).

more_info `pd test`



Change the search.index file



```
search.index - pd-l2ork - Visual Studio Code
File Edit Selection View Go Run Terminal Help
search.index x
home > sahar > pd-l2ork > search.index
1 /usr/lib/pd-l2ork/doc/5.reference/ab-help.pd:ab:abstraction private:creates a private abstraction::
2 /usr/lib/pd-l2ork/doc/5.reference/abs-help.pd:abs:control:absolute value:sqrt pow cos~ osc~ expr sin cos tan atan atan2 exp log:/usr/
3 /usr/lib/pd-l2ork/doc/5.reference/abs--help.pd:abs~:signal absolute:converts all signal values to positive values:abs~/usr/lib/pd-l2
4 /usr/lib/pd-l2ork/doc/5.reference/acoustics-help.pd:acoustics:control conversion MIDI:control objects for conversion:dbtorms rmstodb
5 /usr/lib/pd-l2ork/doc/5.reference/acoustics--help.pd:acoustics~:signal conversion MIDI:signal objects for conversion:dbtorms rmstodb
6 /usr/lib/pd-l2ork/doc/5.reference/adc--help.pd:adc~:signal conversion:audio input:dac~ switch~ throw~ catch~ send~ receive~ oggcast~
7 /usr/lib/pd-l2ork/doc/5.reference/adc~ dac~ help.pd:adc~ dac~:signal conversion:audio input/output:dac~ switch~ throw~ catch~ send~ r
8 /usr/lib/pd-l2ork/doc/5.reference/append-help.pd:append:control data_structure:add a scalar to a canvas:get set getsizeset size element
9 /usr/lib/pd-l2ork/doc/5.reference/array-help.pd:array:signal GUI storage array:graphical array from the "Put" menu:table:usr/lib/pd-
10 /usr/lib/pd-l2ork/doc/5.reference/array-object-help.pd:array-object:::
11 /usr/lib/pd-l2ork/doc/5.reference/atan-help.pd:atan:control trigonometry:arctangent function:atan2 exp log abs sqrt pow cos~ osc~ exp
12 /usr/lib/pd-l2ork/doc/5.reference/atan2-help.pd:atan2:control trigonometry:arctangent of two variables:exp log abs sqrt pow cos~ osc~
13 /usr/lib/pd-l2ork/doc/5.reference/bag-help.pd:bag:control storage list op:collection of numbers:makenote poly list:/usr/lib/pd-l2ork/
14 /usr/lib/pd-l2ork/doc/5.reference/bang-help.pd:bang:control bang op:output a "bang" message whatever the input:trigger loadbang until
15 /usr/lib/pd-l2ork/doc/5.reference/bang--help.pd:bang~:signal conversion bang op:output a "bang" message after each DSP cycle:print~ t
16 /usr/lib/pd-l2ork/doc/5.reference/bendin-help.pd:bendin:control MIDI:read incoming pitch bend values:ctlin pgmin bendin touchin polyt
17 /usr/lib/pd-l2ork/doc/5.reference/bendout-help.pd:bendout:control MIDI:send pitchbend value to the MIDI port:ctlin pgmin bendin touch
18 /usr/lib/pd-l2ork/doc/5.reference/biquad--help.pd:biquad~:signal filters:2-pole-2-zero-filter:hip~ lop~ bp~ vcf~/usr/lib/pd-l2ork/doc/
19 /usr/lib/pd-l2ork/doc/5.reference/block--help.pd:block~:signal block_oriented canvas_op:block, overlap, and resampling control for DS
20 /usr/lib/pd-l2ork/doc/5.reference/bng-help.pd:bng:control nonlocal GUI bang op:gui-bang:bang trigger until bang~/usr/lib/pd-l2ork/doc/
21 /usr/lib/pd-l2ork/doc/5.reference/bonk--help.pd:bonk~:signal analysis:an attack detector for small percussion instruments:env~ threst
22 /usr/lib/pd-l2ork/doc/5.reference/bp--help.pd:bp~:signal filter:bandpass filter:vcf~/usr/lib/pd-l2ork/doc/5.reference/vcf--help.pd
23 /usr/lib/pd-l2ork/doc/5.reference/canvas-help.pd:canvas:signal:Pure Data document window:pd table:usr/lib/pd-l2ork/doc/5.reference/p
24 /usr/lib/pd-l2ork/doc/5.reference/canvasinfo-help.pd:canvasinfo:patch op canvas op:get info about a canvas::
25 /usr/lib/pd-l2ork/doc/5.reference/catch--help.pd:catch~:signal nonlocal:summing signal bus and nonlocal connection:send~ receive~ inl
26 /usr/lib/pd-l2ork/doc/5.reference/change-help.pd:change:control filter:eliminate redundancy in a number stream:spigot select:/usr/lib/
27 /usr/lib/pd-l2ork/doc/5.reference/choice-help.pd:choice:control storage analysis list op:search for a best match to an incoming list:
28 /usr/lib/pd-l2ork/doc/5.reference/classinfo-help.pd:classinfo:pd op symbol op:get info about a class::
29 /usr/lib/pd-l2ork/doc/5.reference/clip-help.pd:clip:control filter:force a number to lie between two limits:int f min max clip~ min~
30 /usr/lib/pd-l2ork/doc/5.reference/clip--help.pd:clip~:signal filter:restrict a signal to lie between two limits:min~ max~ clip:/usr/l
31 /usr/lib/pd-l2ork/doc/5.reference/clone-help.pd:clone:::
32 /usr/lib/pd-l2ork/doc/5.reference/closebang-help.pd:closebang:control:send a beng when abstraction is closed:initbang loadbang bang/
```

Parsing the Help files

```
var inlet = big_line
    .match(/#X text \-?[0-9]+ \-?[0-9]+ INLET_ ([\s\S]*?)/gi);

var outlet = big_line
    .match(/#X text \-?[0-9]+ \-?[0-9]+ OUTLET_ ([\s\S]*?)/gi);
```

```
function init_elasticlunr()
{
    index = elasticlunr();
    index.addField("title");
    index.addField("keywords");
    index.addField("description");
    index.addField("related_objects");
    index.addField("ref_related_objects");
    index.addField("inlets_outlets");
    index.setRef("id");
    return index;
}
```

```
let res = '';
if(inlet){
    if(inlet.length !=0){
        res+="|";
    }
    for (let i = 0; i < inlet.length; i++) {
        const match = inlet[i].match(/INLET_+([\s\S]*?)/i);
        // console.log(match);

        if (match){
            res += "I"+ match[1].trim()+ '|';
        }
    }
}
if(outlet){
    if(outlet.length !=0 && !inlet){
        res+="|";
    }
    for (let i = 0; i < outlet.length; i++) {
        const match2 = outlet[i].match(/OUTLET_+([\s\S]*?)/i);

        if (match2){
            res += "O"+ match2[1].trim()+ '|';
        }
    }
}
```

```
JS pdgui.js M pipe-help.pd vradio-help.pd numbox2-help.pd X legacy
doc > 5.reference > numbox2-help.pd

1 #N canvas 274 80 553 930 10;
2 #X obj 0 970 cnv 15 552 21 empty \${0}-pddp.cnv.footer empty 20 12 0
3 14 #dcdcdc #404040 0;
4 #X obj 0 0 cnv 15 552 40 empty \${0}-pddp.cnv.header nbx 3 12 0 18 #c4dcdc
5 #000000 0;
6 #X obj 0 323 cnv 3 550 3 empty \${0}-pddp.cnv.inlets inlets 8 12 0 13
7 #dcdcdc #000000 0;
8 #N canvas 490 290 388 290 META 0;
9 #X text 12 155 LIBRARY internal;
10 #X text 12 65 LICENSE SIBSD;
11 #X text 12 195 WEBSITE;
12 #X text 12 45 KEYWORDS control storage GUI nonlocal;
13 #X text 12 85 DESCRIPTION gui-number box;
14 #X text 12 5 NAME nbx;
15 #X text 12 25 ALIAS my_numbox;
16 #X text 12 135 OUTLET_0 float;
17 #X text 12 105 INLET_0 float bang set size range log init log_height
18 send receive label label_pos label_font color pos delta;
19 #X text 12 175 AUTHOR Thomas Musil and Ivica Ico Bukvic;
20 #X text 12 235 HELP_PATCH_AUTHORS Jonathan Wilkes revised the patch
21 to conform to the PDDP template for Pd version 0.42. Cleaned up and
22 updated by Ivica Ico Bukvic.;
23 #X text 12 215 RELEASE_DATE 2002/2021;
24 #X restore 505 972 pd META;
25 #X obj 0 793 cnv 3 550 3 empty \${0}-pddp.cnv.outlets outlets 8 12 0
```

Extracting inlet/outlet info for each object and adding to search.index file

```
|IO bang rewind clear add add2 set read write print|00 list|01 bang|
|IO set signal|I1 float|00 bang|01 bang|
|IO signal|
|IO bang|I1 bang|00 float|
|IO float bang size nonzero init send receive label
L_pos label_font color pos delta|00 float|
|IO float|I1 float| | | |
|IO float list|I1 float|
|IO anything|0N anything|
|IO anything|0N float list symbol pointer bang|
|IO anything|01 anything|00 symbol|
|IO float bang|I1 bang|00 bang|
|IO float bang|00 float|
|IO signal|I2 float|I1 signal|00 signal|01 signal|

|IO signal|00 signal|
|IO float bang size init number send receive label
L_pos label_font color pos delta|00 float|
|IO float list stop|I1 float|I2 float|00 signal|
|IO signal bang|00 float|
|IO float list bang size scale receive label label_pos
L_font color pos delta|I1 float|01 float|01 float|
|IO float bang size range log init steady receive
label label_pos label_font color pos delta|00 float|
|IO signal|00 signal|
|IO signal open start stop print|IN signal|
|IO signal|00 signal|
```

```
search.index X  unpack-help.pd  pack-help.pd  js  elasticity.js  c_all_guis.c.M  c_g_numbox.c.M  c_g_rtext.c  c_g_text.c.M  c_g_toggle.c  js  pd_carr
e/ab-help.pd:ab:abstraction private:creates a private abstraction:::
e/abs-help.pd:abs:control:absolut value:sqrt pow cos~ osc~ expr sin cos tan atan atan2 exp log:/usr/lib/pd-12ork/doc/5.reference/sqrt-help.pd,/usr/lib/pd-12ork/doc
e/abs~help.pd:abs~:signal absolute:converts all signal values to positive values:abs~/usr/lib/pd-12ork/doc/5.reference/abs~help.pd,|l0 signal|00 signal|
e/acoustics-help.pd:acoustics:control conversion MIDI:control objects for conversion:dbtorms rmstodb dbtopow powtodb mtof~ ftof~ dbtorms~ rmstodb~ dbtopow~ powtodb
e/acoustics~help.pd:acoustics~:signal conversion MIDI:signal objects for conversion:dbtorms rmstodb dbtopow powtodb mtof~ ftof~ dbtorms~ rmstodb~ dbtopow~ powtodb
e/adc~help.pd:adc~:signal conversion:audio input:dac~ switch~ throw~ catch~ send~ receive~ oggcast~ mp3cast~ block~/usr/lib/pd-12ork/doc/5.reference/dac~help.pd
e/adc~dac~help.pd:adc~dac~:signal conversion:audio input/output:dac~ switch~ throw~ catch~ send~ receive~ oggcast~ mp3cast~ block~/usr/lib/pd-12ork/doc/5.reference
e/append-help.pd:append:control data structure:add a scalar to a canvas:get set getsizesize element sublist pointer struct:/usr/lib/pd-12ork/doc/5.reference/ge
e/array-help.pd:array:signal GUI storage array:graphical array from the "Put" menu:table:/usr/lib/pd-12ork/doc/5.reference/table-help.pd:
e/array-object-help.pd:array-object:::
e/atan-help.pd:atan:control trigonometry:arctangent function:atan2 exp log abs sqrt pow cos~ osc~ expr sin cos tan:/usr/lib/pd-12ork/doc/5.reference/atan2-help.pd,
e/atan2-help.pd:atan2:control trigonometry:arctangent of two variables:exp log abs sqrt pow cos~ osc~ expr sin cos tan atan:/usr/lib/pd-12ork/doc/5.reference/exp-h
e/bag-help.pd:bag:control storage list_op:collection of numbers:makenote poly list:/usr/lib/pd-12ork/doc/5.reference/makenote-help.pd,/usr/lib/pd-12ork/doc/5.refer
e/bang-help.pd:bang:control bang_op:output a "bang" message whatever the input:trigger loadbang until bang metro:/usr/lib/pd-12ork/doc/5.reference/trigger-help.pd,
e/bang~help.pd:bang~:signal conversion bang_op:output a "bang" message after each DSP cycle:print~ bang:/usr/lib/pd-12ork/doc/5.reference/print-help.pd,/usr/lib/p
e/bendout-help.pd:bendout:control MIDI:read incoming pitch bend values:ctlin pgmin bendin touchin polytouchin midiin sysexin noteout ctout bendout touchout polytouch
e/bendout~help.pd:bendout~:signal filters:2-pole-2-zero-filter:hip~ lop~ bp~ vcf~/usr/lib/pd-12ork/doc/5.reference/hip~help.pd,/usr/lib/pd-12ork/doc/5.reference/l
e/block~help.pd:block~:signal block_oriented canvas_op:block, overlap, and resampling control for DSP:fft~ switch~/usr/lib/pd-12ork/doc/5.reference/fft~help.pd,
e/bng-help.pd:bng:control nonlocal GUI bang_op:gui-bang:bang trigger until bang~/usr/lib/pd-12ork/doc/5.reference/bang-help.pd,/usr/lib/pd-12ork/doc/5.reference/t
e/bonk~help.pd:bonk~:signal analysis:an attack detector for small percussion instruments:env~ threshold~ fiddle~ sigmund~/usr/lib/pd-12ork/doc/5.reference/env~h
e/bp~help.pd:bp~:signal filter:bandpass filter:vcf~/usr/lib/pd-12ork/doc/5.reference/vcf~help.pd:|I0 signal|I1 float|I2 float|00 signal|
e/canvas-help.pd:canvas:signal:Pure Data canvas window:pd table:/usr/lib/pd-12ork/doc/5.reference/pd-help.pd,/usr/lib/pd-12ork/doc/5.reference/table-help.pd:
e/canvasinfo-help.pd:canvasinfo:patch_op canvas_op:get info about a canvas::|I1 float|I0 args boxtext coords dir dirty dollarzero editmode filename hitbox name po
e/catch~help.pd:catch~:signal nonlocal:summing signal bus and nonlocal connection:send~ receive~ inlet~ outlet~ throw~/usr/lib/pd-12ork/doc/5.reference/send-help
e/change-help.pd:change:control filter:eliminate redundancy in a number stream:spigot select:/usr/lib/pd-12ork/doc/5.reference/spigot-help.pd,/usr/lib/pd-12ork/doc
e/choice-help.pd:choice:control storage analysis list_op:search for a best match to an incoming list:list:/usr/lib/pd-12ork/doc/5.reference/list-help.pd:|I0 list a
e/classinfo-help.pd:classinfo:pd_op symbol_op:get info about a class::|I0 float args externdir methods print size|I1 symbol|00 list|01 bang|
e/clip-help.pd:clip:control filter:force a number to lie between two limits:int f min max clip~ min~ max~/usr/lib/pd-12ork/doc/5.reference/int-help.pd,/usr/lib/p
e/clip~help.pd:clip~:signal filter:restrict a signal to lie between two limits:min~ max~ clip:/usr/lib/pd-12ork/doc/5.reference/min-help.pd,/usr/lib/pd-12ork/doc/
e/clone-help.pd:clone:::
e/closebang-help.pd:closebang:control:send a bang when abstraction is closed:inibang loadbang bang:/usr/lib/pd-12ork/doc/5.reference/inibang-help.pd,/usr/lib/pd-
e/cos-help.pd:cos:control trigonometry:cosine function:tan atan atan2 exp log abs sqrt pow cos~ osc~ expr sin:/usr/lib/pd-12ork/doc/5.reference/tan-help.pd,/usr/li
e/cos~help.pd:cos~:signal trigonometry:cosine waveshaper:osc~ tabread4~ phasor~/usr/lib/pd-12ork/doc/5.reference/osc~help.pd,/usr/lib/pd-12ork/doc/5.reference/t
e/cpole~help.pd:cpole~:signal filter:complex one-pole (recursive) filter, raw:rzero~ cpole~ rpole~ rzero_rev~ czero~ czero_rev~ lop~ hip~ bp~ vcf~ biquad~/usr/li
e/cptime-help.pd:cptime:control time:measure CPU time:metro realtime timer delay t3 timer:/usr/lib/pd-12ork/doc/5.reference/metro-help.pd,/usr/lib/pd-12ork/doc/5
```

Regex for the extracted Inlet/Outlet Strings

```
REGULAR EXPRESSION 2 matches (49 steps, 0.0ms) v1
| / (?<=I.\s)[^\|]+ / g
TEST STRING
|I0.float.bang.symbol.list|IN.float.symbol|ON.float|
```

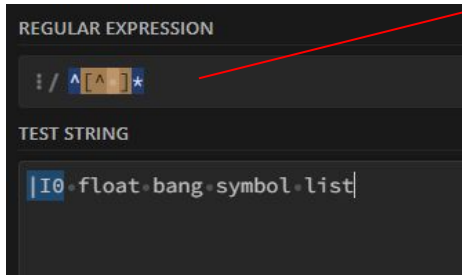
```
REGULAR EXPRESSION 1 match (100 steps, 0.1ms) v1
| / (?<=O.\s)[^\|]+ / g
TEST STRING
|I0.float.bang.symbol.list|IN.float.symbol|ON.float|
```

```
REGULAR EXPRESSION 3 matches (37 steps, 0.2ms) v1
| / (?<=\|)[^\|]*(?=\|) / g
TEST STRING
|I0.float.bang.symbol.list|IN.float.symbol|ON.float|
```

```
gui(cid).get_gobj(parenttag, function(e) { //lilykhoch
// post(e.getAttribute('obj_text'));
var x = document.createElementNS("http://www.w3.org/2000/svg", "title");
var parent = e.getAttribute('obj_text');
if(parent==null){
parent="fixme";
}
var parentname = parent.replace(/ .*/,'');
if (parentname.length > 0) {
var t = index.search(parentname,{fields: {title: {}}});
// post("t=<" + t + ">");
if (t.length > 0) {
var yyy = index.documentStore.getDoc(t[0].ref);
// post("search result: title=" + yyy.title + " inletsoutles=" + yyy.inlet
var inlet = yyy.inlets_outlets
.match(/(?<=I.\s)[^\|]+/g);
var outlet = yyy.inlets_outlets
.match(/(?<=O.\s)[^\|]+/g);
var inlet_outlet = yyy.inlets_outlets
.match(/(?<=\|)[^\|]*(?=\|)/g);
var rectId= rect.getAttribute('id').slice(-2); //id of rectangle nlet
for (var i=0;i<inlet_outlet.length;i++){ //Case 1: I0,I2,O1,O2,...
var nlet_id=inlet_outlet[i].match(/^[^ ]*/); //id of the nlet in tooltip
if(nlet_id==rectId.toUpperCase()){
x.textContent=inlet_outlet[i].match(/(?<= )(.*)/)[0];
// post("nlet_id:"+nlet_id + " rectId:"+ rectId+" tooltip:"+x.textContent);
break;
}
}
}
```

Matching the IDs with the inlet/outlet IDs of the object

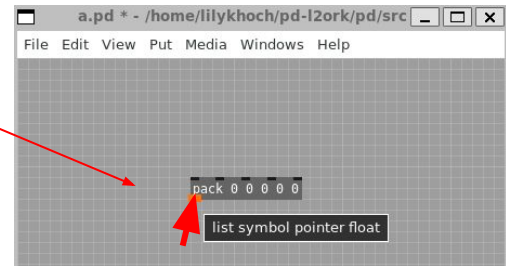
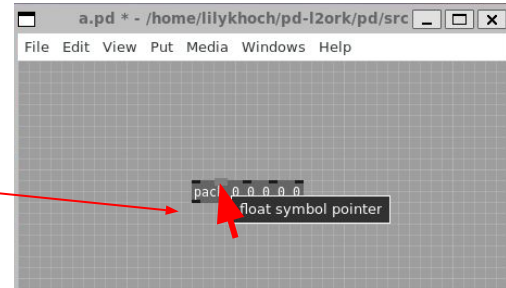
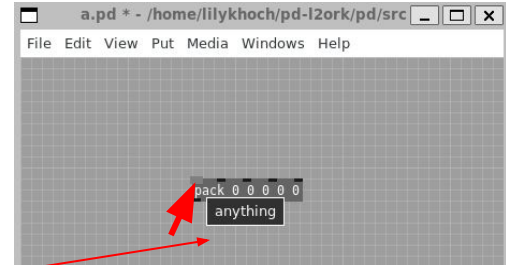
```
▶ <rect width="7" height="2" x="0" y="0" id=".x5635ed7fccc0.t5635ed7f04a0i0" class="xlet_control undefined" stroke-width="1">...</rect>
▶ <rect width="7" height="2" x="23" y="0" id=".x5635ed7fccc0.t5635ed7f04a0i1" class="xlet_control undefined" stroke-width="1">...</rect>
▶ <rect width="7" height="2" x="47" y="0" id=".x5635ed7fccc0.t5635ed7f04a0i2" class="xlet_control undefined" stroke-width="1">...</rect>
```



```
for (var i=0;i<inlet_outlet.length;i++){ //Case 1: I0,I2,O1,O2,...
  var nlet_id=inlet_outlet[i].match(/^[^ ]*/); //id of the nlet in tooltip array
  if(nlet_id=rectId.toUpperCase()){
    x.textContent=inlet_outlet[i].match(/(?<= )(.*)/)[0];
    // post("nlet_id:"+nlet_id + " rectId:"+ rectId+" tooltip:"+x.textContent);
    break;
  }
}
if(x.textContent==""){//Case 2: IN,ON
  for (var i=0;i<inlet_outlet.length;i++){
    var nlet_id=inlet_outlet[i].match(/^[^ ]*/); //id of the nlet in tooltip array
    // post("nletid"+rectId.charAt(0));
    if( nlet_id== "IN" && rectId.charAt(0).toUpperCase()=="I" ){
      post("hererwdcnfvnv");
      x.textContent=inlet[inlet.length-1];
      break;
    }
    else if( nlet_id=="ON" && rectId.charAt(0).toUpperCase()=="O"){
      post("outletN");
      x.textContent=outlet[outlet.length-1];
      break;
    }
  }
}
if(x.textContent==""){ //Case 3: no tooltip
  x.textContent="no tooltip available";
}
rect.appendChild(x);
```

Inlets/Outlets Tooltips

```
META - /usr/lib/pd-l2ork/doc/5.reference
File Edit View Put Media Windows Help
KEYWORDS control needs_work list_op
LICENSE SIBSD
DESCRIPTION combine several atoms into one message
INLET_0 anything
INLET_N float symbol pointer
OUTLET_0 list symbol pointer float
LIBRARY internal
AUTHOR Miller Puckette
WEBSITE http://crca.ucsd.edu/~msp/
RELEASE_DATE 1997
HELP_PATCH AUTHORS This help patch was updated for Pd
version 0.35 test 26 by Dave Sabine as part of a project
called pddp proposed by Krzysztof Czaja to build
comprehensive documentation for Pd. Jonathan Wilkes revised
the patch to conform to the PDDP template for Pd version
0.42.
```







Next Step for Tooltips

- Inconsistencies of the naming of objects
 - Example: "toggle" being named as "tgl".
- Address other outlying cases

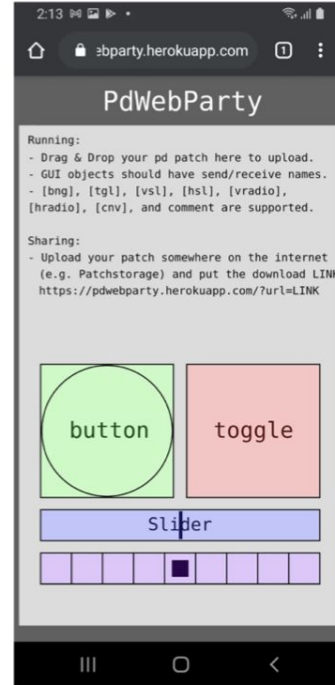
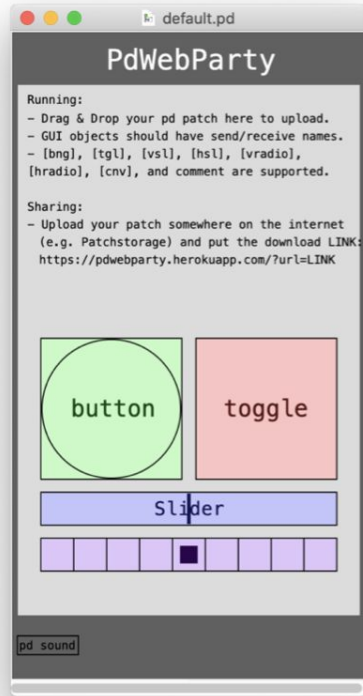
Browser Patch Implementation

Steps we wanted to complete:

1. Compile Pd-L2Ork (C) to WebAssembly using *Emscripten* 
2. Correct some C code to make it emscripten compatible (in progress) 
3. Include the generated main.js file in index.html 
4. Link the front-end (GUI) inside the browser and the backend 

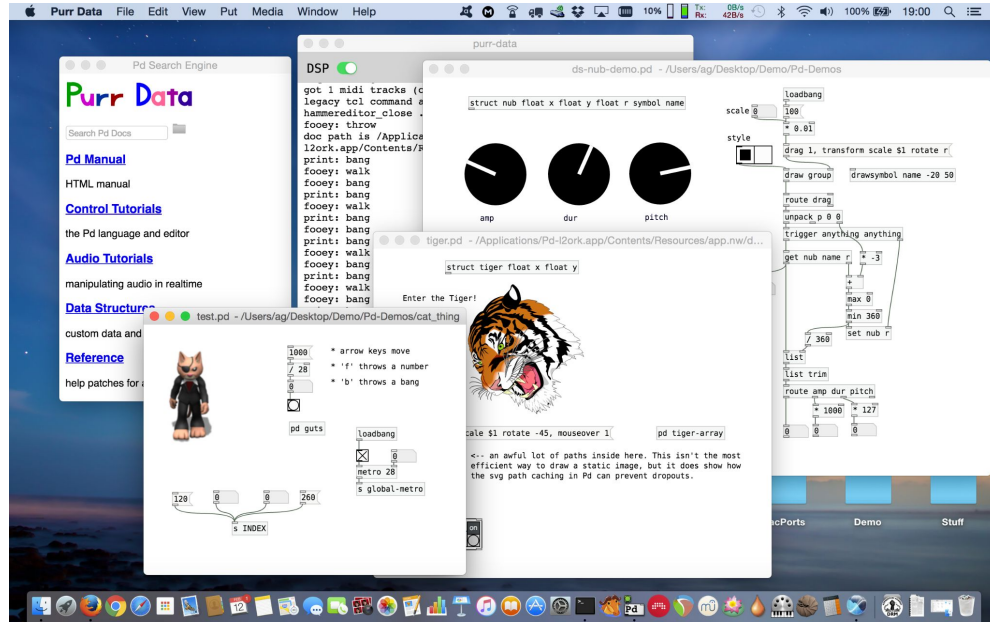
```
var AudioContext = self.AudioContext || self.webkitAudioContext || false;
if (AudioContext) {
  self.AudioContext = new Proxy(AudioContext, {
    construct(target, args) {
      const result = new target(...args);
      audioContextList.push(result);
      return result;
    }
  });
}
```

Browser Patch Implementation



Compiling with Emscripten

- Referencing Purr-Data
- Addressed errors as they arose
 - Fundamental differences between Pd-L2Ork and Purr-Data
 - Did not want to fully merge because Purr-Data:
 - Has new functions/variables that Pd-L2Ork doesn't define
 - Creates editor and graphics differently



Compiling with Emscripten: Examples

Special Flags:

```
106 - CFLAGS += $(FAT_FLAGS) -fPIC
107 - LDFLAGS += $(FAT_FLAGS) -bundle -undefined dynamic_lookup
106 + CFLAGS += $(FAT_FLAGS) -fPIC -I/sw/include
107 + LDFLAGS += $(FAT_FLAGS) -bundle -undefined dynamic_lookup -L/sw/lib
```

```
62 - static int libdir_loader_legacy(t_canvas *canvas, char *classname)
62 + static int libdir_loader_legacy(t_canvas *canvas, const char *classname, const char *path)
```

Compiling with Emscripten: Function Pointer Example

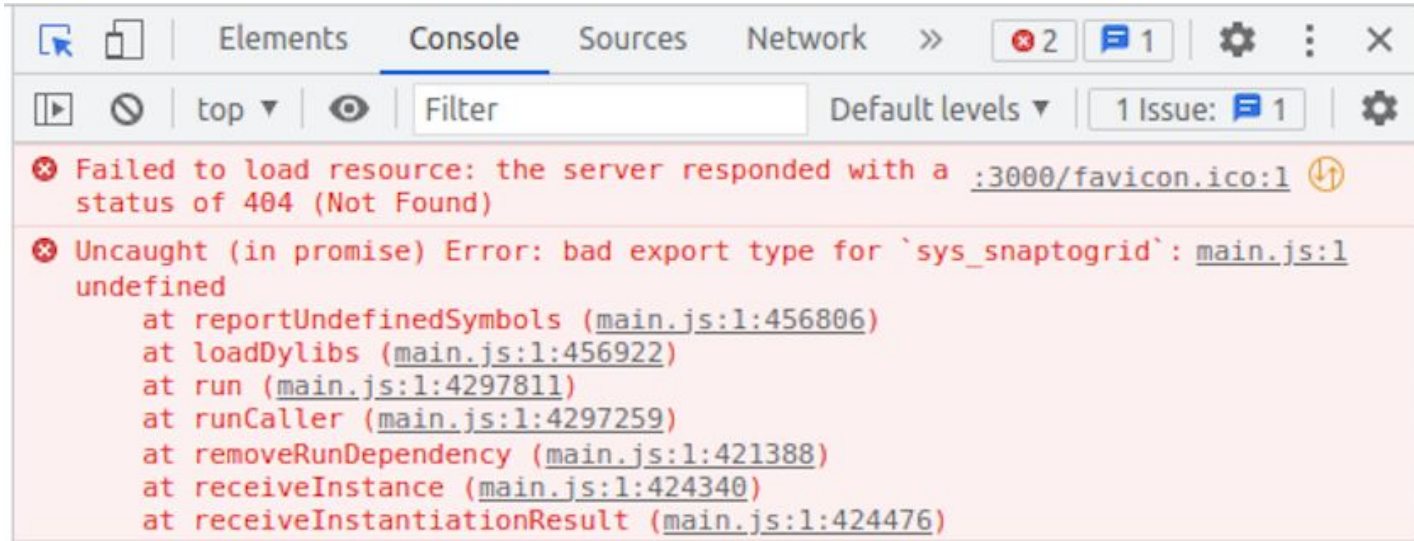
```
/home/l2orkist/Pd-L2ork-Emscripten/pd/src/g_numbox.c:697:59: error: incompatible function pointer types  
ybmol *, int, struct _atom *)' to parameter of type 't_glistkeynameafn' (aka 'void (*)(void *, struct _  
(t_glistmotionfn)my_numbox_motion, 0, my_numbox_list,  
^
```



```
- (t_glistmotionfn)my_numbox_motion, 0, my_numbox_list,  
+ (t_glistmotionfn)my_numbox_motion, 0, (t_glistkeynameafn)my_numbox_list,
```

Running in PdWebParty

- New features break PdWebParty



Fixes

```
- int sys_defeatrt, sys_autopatch_yoffset, sys_snaptogrid = 1, sys_gridsize = 10,  
- sys_zoom, sys_autocomplete = 1, sys_autocomplete_prefix,  
- sys_autocomplete_relevance = 1, sys_browser_doc = 1,  
- sys_browser_path, sys_browser_init, sys_curved_cords = 1;  
+ int sys_defeatrt, sys_autopatch_yoffset,  
+ sys_zoom, sys_browser_doc = 1, sys_browser_path, sys_browser_init;  
+  
+ /* ico@vt.edu 2023-04-17: moved sys_curved_cords, sys_snaptogrid, sys_gridsize, sys_autocomplete_relevance, sys_autocomplete_prefix  
+ to m_glob.c to allow for  
+ emscripten to compile since emscripten currently does not compile s_file.c */  
+ extern int sys_curved_cords;  
+ extern int sys_snaptogrid;  
+ extern int sys_gridsize;  
+ extern int sys_autocomplete_relevance;  
+ extern int sys_autocomplete_prefix;  
+ extern int sys_autocomplete;
```

```
+ #ifndef __EMSCRIPTEN__  
// located in s_file.c  
extern int reinit_user_settings(void *dummy);  
+ #endif
```


Future Work

- Fix remaining bugs keeping frontend from running
- Modify build script
- Testing and integration

Acknowledgements

- Dr. Ivica Ico Bukvic
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- Zack Lee
- Previous Pd-L2Ork teams



References

https://sopa.vt.edu/faculty_staff/music-faculty/comp-and-creative-tech-faculty/ivica-ico-bukvic.html

<https://l2ork.music.vt.edu/main/make-your-own-l2ork/software/>

<https://github.com/pd-l2ork/pd-l2ork/>

<https://github.com/cuinjune/PdWebParty>

<https://git.purrrdata.net/jwilkes/purr-data/-/tree/emscripten>