## OPENJSCAD (a web based variant of openScad)

https://en.wikipedia.org/wiki/OpenSCAD

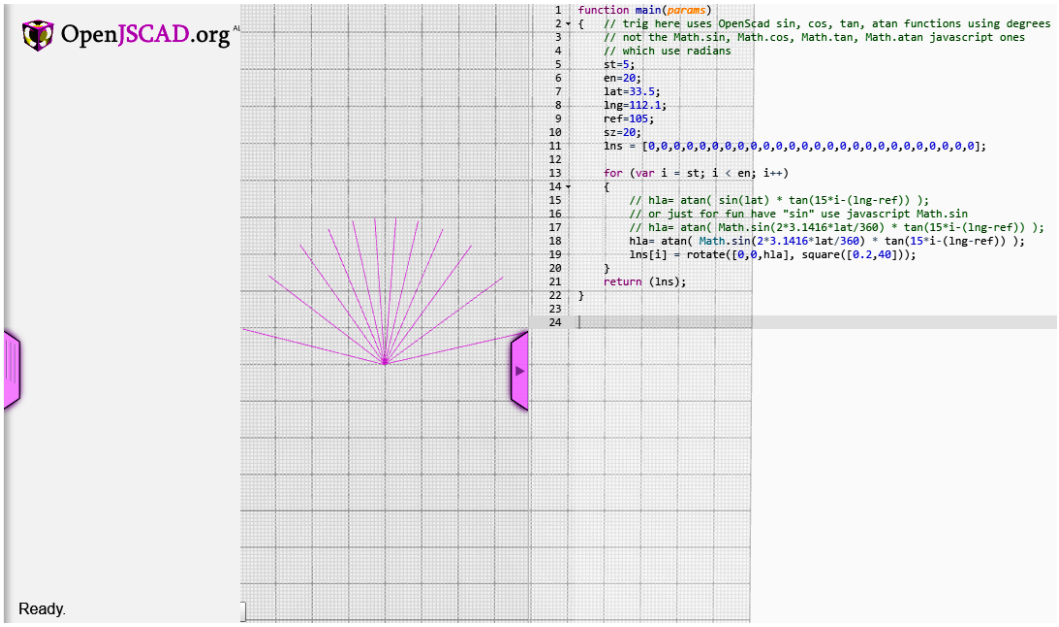
| | |
|---|---|
| http://openjscad.org/ | web jsCad |
| http://joostn.github.io/OpenJsCad/ | notes |
| https://en.wikibooks.org/wiki/OpenJSCAD_User_Guide | details |
| https://github.com/Spiritdude/OpenJSCAD.org | misc |

2D shapes ~ Two dimensional shapes can be defined through the CAG class. CAG stands for 'Constructive Area Geometry' which is the 2D variant of CSG.

shift+enter to redisplay

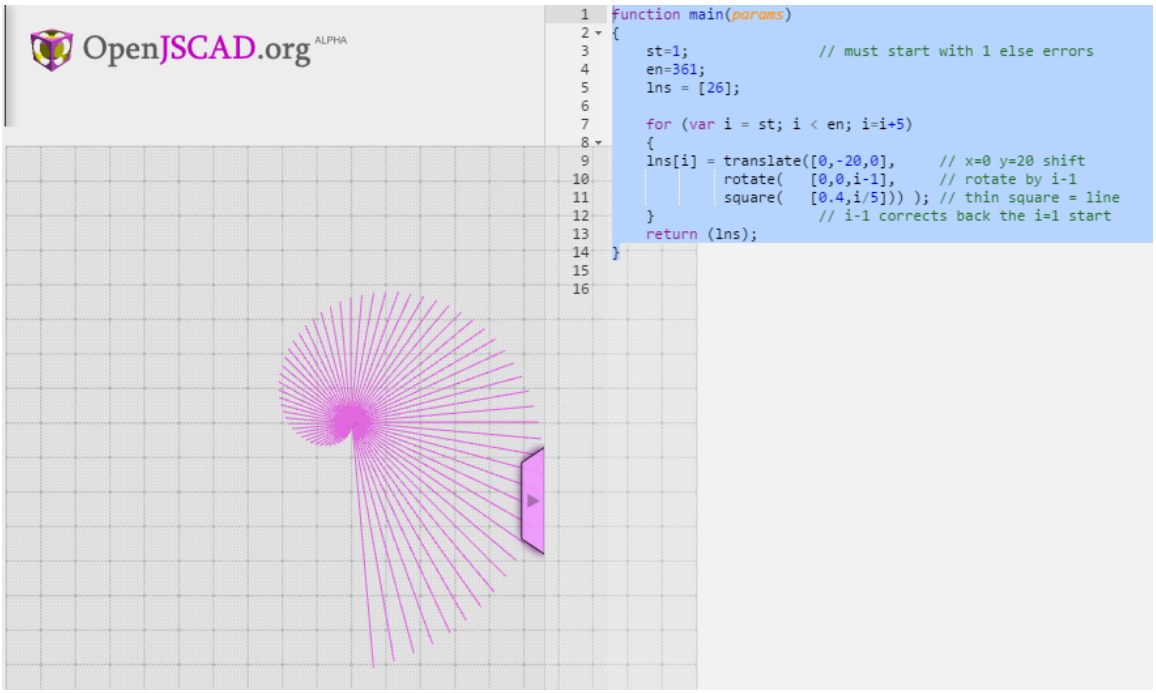
VERY BASIC H-DIAL (using: http://openjscad.org/)

```
function main(params)
{   // trig here uses OpenScad sin, cos, tan, atan functions using degrees
    // not the Math.sin, Math.cos, Math.tan, Math.atan javascript ones
    // which use radians
    st=5;
    en=20;
    lat=33.5;
    lng=112.1;
    ref=105;
    sz=20;
    lns = [0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0];

    for (var i = st; i < en; i++)
    {
        // hla= atan( sin(lat) * tan(15*i-(lng-ref)) );
        // or just for fun have "sin" use javascript Math.sin
        // hla= atan( Math.sin(2*3.1416*lat/360) * tan(15*i-(lng-ref)) );
        hla= atan( Math.sin(2*3.1416*lat/360) * tan(15*i-(lng-ref)) );
        lns[i] = rotate([0,0,hla], square([0.2,40]));
    }
    return (lns);
}
```



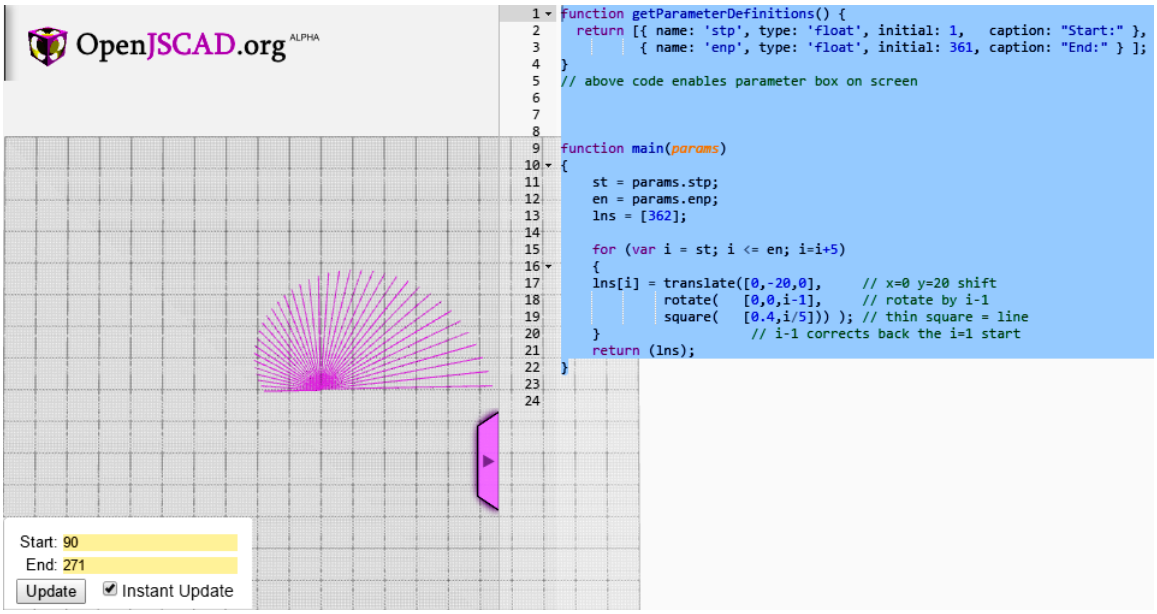
A NAUTILAS (using: http://openjscad.org/)

```
function main(params)
{
    st=1;                          // must start with 1 else errors
    en=361;
    lns = [0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0];

    for (var i = st; i < en; i=i+5)
    {
    lns[i] = translate([0,-20,0],      // x=0 y=20 shift
             rotate(   [0,0,i-1],      // rotate by i-1
             square(   [0.4,i/5])) ); // thin square = line
    }                                  // i-1 corrects back the i=1 start
    return (lns);
}
```



A NAUTILAS AND PARAMETERS (using: http://openjscad.org/)

```
function getParameterDefinitions() {
  return [{ name: 'stp', type: 'float', initial: 1,   caption: "Start:" },
          { name: 'enp', type: 'float', initial: 361, caption: "End:" } ];
}
// above code enables parameter box on screen



function main(params)
{
    st = params.stp;
    en = params.enp;
    lns = [];     // no elements predefined, so array could have voids in it

    for (var i = st; i <= en; i=i+5)
    {
    lns[i] = translate([0,-20,0],     // x=0 y=20 shift
             rotate(   [0,0,i-1],     // rotate by i-1
             square(   [0.4,i/5])) ); // thin square = line
    }                                 // i-1 corrects back the i=1 start
    return (lns);
}
```



SLIGHTLY BETTER H-DIAL (using: http://openjscad.org/)

```
function getParameterDefinitions() {
  return [{name:'lat', type:'float', initial: 33.5,  caption: "Latitude:" },
          {name:'lng', type:'float', initial: 108.1, caption: "Longitude:"},
          {name:'ref', type:'float', initial: 105,   caption: "Ref.Long:" },
          {name:'st',  type:'float', initial: 6,     caption: "Start HR:" },
          {name:'en',  type:'float', initial: 18,    caption: "End HR:" }
          ];
}
// above code enables parameter box on screen

function main(params)
{   // trig here uses OpenScad sin, cos, tan, atan functions using degrees
    // not the Math.sin, Math.cos, Math.tan, Math.atan javascript ones
    // which use radians
    st  = params.st;
    en  = params.en;
    lat = params.lat;
    lng = params.lng;
    ref = params.ref;
    sz=20;
    lns = [0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0];
    //    for the array of lines to be returned for display

    for (var i = st; i <= en; i++)
    {
        // hla= atan( sin(lat) * tan(15*i-(lng-ref)) );
        // or just for fun have "sin" use javascript Math.sin
        // hla= atan( Math.sin(2*3.1416*lat/360) * tan(15*i-(lng-ref)) );
        // sin(degrees) and Math.sin(radians)
        hla= atan( Math.sin(2*3.1416*lat/360) * tan(15*i-(lng-ref)) );

        // put this line into the array
        lns[i] = rotate([0,0,hla], square([0.2,40]));
    }
    return (lns);
}
```