

# Internet Of Things

## Lab - 5

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### **Aim :**

To experience the use of SVG Vector Graphics and build a floor-plan with the help of Node-RED, SVG Graphics Editor and concepts of IoT.

### **Software :**

Node-Red Software.

### **Methodology :**

This video instructions are followed : <https://www.youtube.com/watch?v=Q5o8noMcAE0>

### **Simulation And Output :**

1) To use SVG Graphics node to build Art —

## (1.1) Switch node

Edit switch node

Delete

Cancel

Done

⚙ Properties

⚙

📄

🔍

🔧 Group

[Hall] Light

▼

✎

📏 Size

auto

🏷 Label

base

🗉 Tooltip

optional tooltip

🖼 Icon

Default

▼

➔

Pass through **msg** if payload matches new state:

☒

☒

When clicked, send:

On Payload

▼

true

▼

Off Payload

▼

false

▼

Topic

🔖 Name

## (1.2) Function node

Edit function node

Delete

Cancel

Done

⚙ Properties

⚙

📄

🔍

🔖 Name

Switching Function

📄 ▼

Setup

Function

Close

1 // Code added here will be run once

2 // whenever the node is deployed.

3

## (1.3) SVG Graphics node

Edit SVG graphics node

Delete

Cancel

Done

Properties

Group

[Hall] Light

Size

auto

Name

Name

Editor

SVG source

Animations

Events

Input Bind

Settings

Open SVG Editor

Animation ( myarrow : 'arrow' : 'transform' )

Animation Id

myarrow

Target Element Id

arrow

Class

class

Attribute name

transform

Rotate

From / To

5000

8000

Duration

20

seconds

Repeat count

15

## (1.4) SVG source code

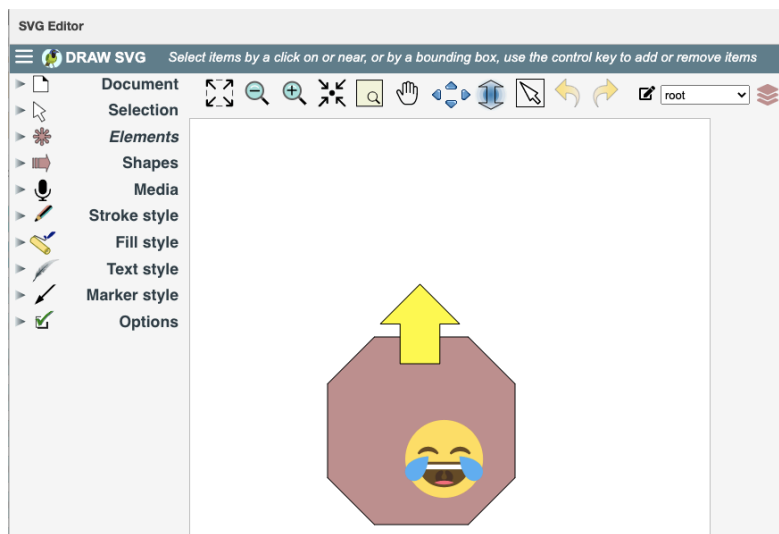
```
<svg xmlns="http://www.w3.org/2000/svg" xmlns:xlink="http://www.w3.org/1999/
xlink" x="0" y="0" height="100" viewBox="0 0 100 100" width="100"><rect
id="svgEditorBackground" x="0" y="0" width="100" height="100" style="fill:none;
stroke: none;"/><defs id="svgEditorDefs"><polygon id="svgEditorIconDefs"
style="fill:rosybrown;"/><polygon id="svgEditorShapeDefs"
style="fill:rosybrown;stroke:black;vector-effect:non-scaling-stroke;stroke-
width:1px;"/><symbol id="1f602" viewBox="0 0 64 64"
preserveAspectRatio="xMidYMid meet"><rect x="0" y="0" width="64" height="64"
style="stroke:none;fill:none;"/><g xmlns="http://www.w3.org/2000/svg"><circle
cx="32.06" cy="32" fill="#ffdd67" r="30"/><path d="m51.06 35.32c0 8.05-6.311
17.446-19 17.446-12.693 0-19-9.395-19-17.446 0 0 6.307 0 19 0 12.69 0 19 0"
fill="#664e27"/><path d="m34.16 40.805c-.662-.016-1.676.575-1.305 2.143.188.791
1.355 1.747 1.355 3.02 0 2.595-4.303 2.595-4.303 0 0-1.276 1.168-2.232
1.355-3.02.373-1.567-.645-2.158-1.303-2.143-1.791.045-4.729 1.9-4.729 5.04 0
3.528 3.057 6.389 6.828 6.389 3.77 0 6.826-2.86
6.826-6.389.003-3.139-2.937-4.994-4.724-5.04" fill="#4c3526"/><path d="m41.17
51.02c-2.408-1.408-5.432-2.298-9.105-2.298s-6.697.89-9.104 2.298c2.406 1.41
5.43 2.3 9.104 2.3s6.697-.89 9.105-2.3" fill="#ff717f"/><path d="m13.06
35h38v5h-38z" fill="#fff"/><path d="m32.06 53.765c-12.99
0-20-9.504-20-18.446v-1h40v1c0 8.942-7.01 18.446-20
18.446m-17.967-17.447c.504 7.665 6.764 15.446 17.967 15.446s17.465-7.781
17.967-15.446h-35.934" fill="#664e27"/><g fill="#65b1ef"><path d="m59.38
35.874c7.307 7.679-2.621 18.12-9.93
10.437-5.336-5.611-5.578-16.301-5.578-16.301s10.174.257 15.508 5.864"/><path
d="m14.422 46.31c-7.305 7.68-17.236-2.757-9.928-10.437 5.336-5.608
15.508-5.864 15.508-5.864s-.243 10.693-5.58 16.301"/></g><g
fill="#664e27"><path d="m27.652 27.24c-3.264-6.197-12.653-6.197-15.917
0-.195.378.32.921.95 1.352 4.135-3.27 9.879-3.271 14.01 0 .632-.431
1.148-.974.953-1.352"/><path d="m52.39
27.24c-3.264-6.197-12.652-6.197-15.916-.001-.195.379.32.922.95 1.353
```

```

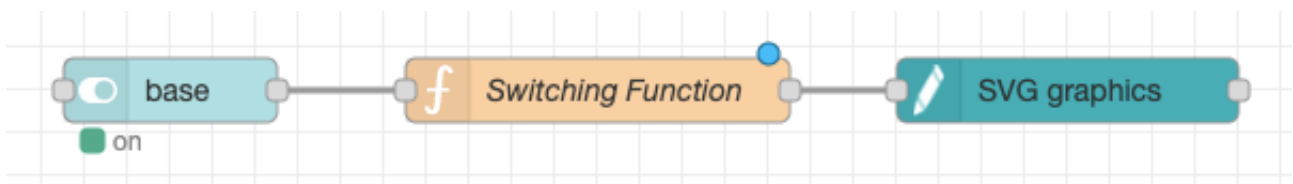
4.136-3.271 9.88-3.271 14.02-.001.63-.431 1.146-.973.951-1.351"/></g></g></
symbol></defs><path d="M-2,-4l-2,2v4l2,2h4l2,-2v-4l-2,-2Z" style="fill:rosybrown;
stroke:black; vector-effect:non-scaling-stroke;stroke-width:1px;" id="octagon"
transform="matrix(4.49486 0 0 4.49486 44.3493 59.7603)"/><use
xlink:href="#1f602" x="40.753" y="57.192" width="15.925" height="15.925"
id="emoji"/><text dy="-0.5em" style="fill:black;font-family:Arial;font-size:20px;"
id="e2_text">T</text><path d="M2,0h2l-4,-4l-4,4h2v4h4Z" style="fill:yellow;
stroke:black; vector-effect:non-scaling-stroke;stroke-width:1px;" id="arrow"
transform="matrix(1.90497 0 0 1.90497 44.0925 39.2979)"/></svg>

```

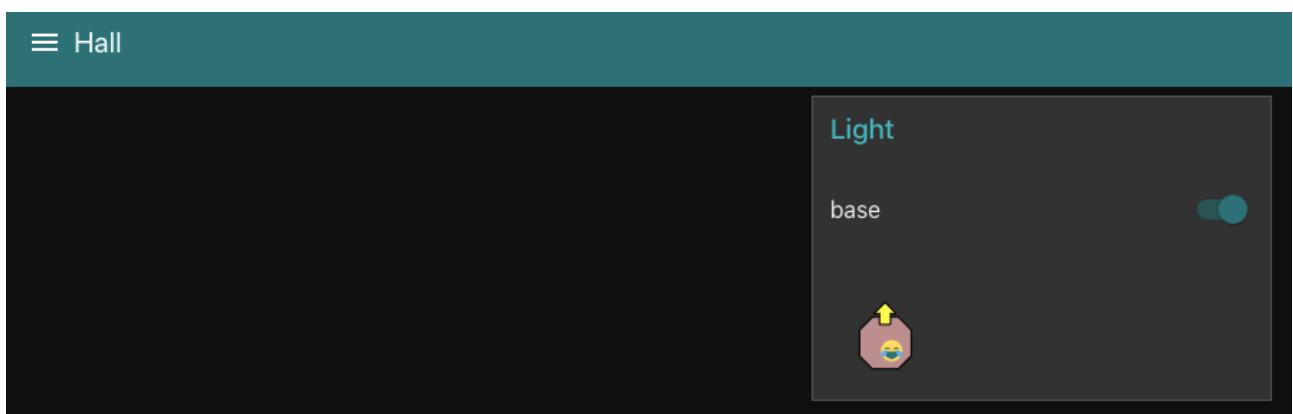
## (1.5) SVG Graphics design



## (1.6) Complete Circuit flow



## (1.7) Output



## (1.8) Complete Code of the flow

```
[{"id":"7895284d.2f4bd8","type":"tab","label":"SVG Graphics Lab 5","disabled":false,"info":""},
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69534","order":0,"width":0,"height":0,"svgString":"<svg xmlns=\"http://www.w3.org/2000/
svg\" xmlns:xlink=\"http://www.w3.org/1999/xlink\" x=\"0\" y=\"0\" height=\"100\"
viewBox=\"0 0 100 100\" width=\"100\"><rect id=\"svgEditorBackground\" x=\"0\" y=\"0\"
width=\"100\" height=\"100\" style=\"fill:none; stroke: none;\"/><defs
id=\"svgEditorDefs\"><polygon id=\"svgEditorIconDefs\" style=\"fill:rosybrown;\"/><polygon
id=\"svgEditorShapeDefs\" style=\"fill:rosybrown;stroke:black;vector-effect:non-scaling-
stroke;stroke-width:1px;\"/><symbol id=\"1f602\" viewBox=\"0 0 64 64\"
preserveAspectRatio=\"xMidYMid meet\"><rect x=\"0\" y=\"0\" width=\"64\" height=\"64\"
style=\"stroke:none;fill:none;\"/><g xmlns=\"http://www.w3.org/2000/svg\"><circle
cx=\"32.06\" cy=\"32\" fill=\"#ffdd67\" r=\"30\"/><path d=\"m51.06 35.32c0 8.05-6.311
17.446-19 17.446-12.693 0-19-9.395-19-17.446 0 0 6.307 0 19 0 12.69 0 19 0 19 0\"
fill=\"#664e27\"/><path d=\"m34.16 40.805c-.662-.016-1.676.575-1.305 2.143.188.791
1.355 1.747 1.355 3.02 0 2.595-4.303 2.595-4.303 0 0-1.276 1.168-2.232
1.355-3.02.373-1.567-.645-2.158-1.303-2.143-1.791.045-4.729 1.9-4.729 5.04 0 3.528
3.057 6.389 6.828 6.389 3.77 0 6.826-2.86
6.826-6.389.003-3.139-2.937-4.994-4.724-5.04\" fill=\"#4c3526\"/><path d=\"m41.17
51.02c-2.408-1.408-5.432-2.298-9.105-2.298s-6.697.89-9.104 2.298c2.406 1.41 5.43 2.3
9.104 2.3s6.697-.89 9.105-2.3\" fill=\"#ff717f\"/><path d=\"m13.06 35h38v5h-38z\"
fill=\"#fff\"/><path d=\"m32.06 53.765c-12.99 0-20-9.504-20-18.446v-1h40v1c0
8.942-7.01 18.446-20 18.446m-17.967-17.447c.504 7.665 6.764 15.446 17.967
15.446s17.465-7.781 17.967-15.446h-35.934\" fill=\"#664e27\"/><g fill=\"#65blef\"><path
d=\"m59.38 35.874c7.307 7.679-2.621 18.12-9.93
10.437-5.336-5.611-5.578-16.301-5.578-16.301s10.174.257 15.508 5.864\"/><path
d=\"m14.422 46.31c-7.305 7.68-17.236-2.757-9.928-10.437 5.336-5.608 15.508-5.864
15.508-5.864s-.243 10.693-5.58 16.301\"/></g><g fill=\"#664e27\"><path d=\"m27.652
27.24c-3.264-6.197-12.653-6.197-15.917 0-.195.378.32.921.95 1.352 4.135-3.27
9.879-3.271 14.01 0 .632-.431 1.148-.974.953-1.352\"/><path d=\"m52.39
27.24c-3.264-6.197-12.652-6.197-15.916-.001-.195.379.32.922.95 1.353 4.136-3.271
9.88-3.271 14.02-.001.63-.431 1.146-.973.951-1.351\"/></g></symbol></defs><path
d=\"M-2,-4l-2,2v4l2,2h4l2,-2v-4l-2,-2Z\" style=\"fill:rosybrown; stroke:black; vector-
effect:non-scaling-stroke;stroke-width:1px;\" id=\"octagon\" transform=\"matrix(4.49486 0
0 4.49486 44.3493 59.7603)\"/><use xlink:href=\"#1f602\" x=\"40.753\" y=\"57.192\"
width=\"15.925\" height=\"15.925\" id=\"emoji\"/><text dy=\"-.05em\" style=\"fill:black;font-
family:Arial;font-size:20px;\" id=\"e2_text\">T</text><path
d=\"M2,0h2l-4,-4l-4,4h2v4h4Z\" style=\"fill:yellow; stroke:black; vector-effect:non-scaling-
stroke;stroke-width:1px;\" id=\"arrow\" transform=\"matrix(1.90497 0 0 1.90497 44.0925
39.2979)\"/></svg>","clickableShapes":[],"smilAnimations":
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ype":"rotate","fromValue":"5000","toValue":"8000","trigger":"msg","duration":"20","durationU
nit":"s","repeatCount":"15","end":"freeze","delay":"1","delayUnit":"s","custom":""}],
"bindings":
[,"showCoordinates":false,"autoFormatAfterEdit":false,"showBrowserErrors":false,"outputF
ield":"payload","editorUrl":"//drawsvg.org/
drawsvg.html","directory":"","panning":"disabled","zooming":"disabled","panOnlyWhenZoomed":false,"doubleClickZoomEnabled":false,"mouseWheelZoomEnabled":false,"name":"","x":580,"
y":60,"wires":[[]]},
{"id":"2cae48a3.906768","type":"function","z":"7895284d.2f4bd8","name":"Switching
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msg;","outputs":1,"noerr":0,"initialize":"","finalize":"","x":360,"y":60,"wires":
[["b0c8915c.1f336"]]},
{"id":"7d9836d2.10acc8","type":"ui_switch","z":"7895284d.2f4bd8","name":"","label":"base","to
```

```

oltip":"","group":"4b6c8cc5.969534","order":1,"width":0,"height":0,"passthru":true,"decouple":
:"false","topic":"","style":"","onvalue":"true","onvalueType":"bool","onicon":"","oncolor":"","offvalu
e":"false","offvalueType":"bool","officon":"","offcolor":"","x":160,"y":60,"wires":
[["2cae48a3.906768"]]],
{"id":"4b6c8cc5.969534","type":"ui_group","z":"","name":"Light","tab":"28929888.287be8","or
der":1,"disp":true,"width":"6","collapse":false},
{"id":"28929888.287be8","type":"ui_tab","z":"","name":"Hall","icon":"dashboard","disabled":fals
e,"hidden":false}]

```

## 2) To use SVG Graphics node to build a Floor-plan —

### (2.1) SVG Graphics Node

Edit SVG graphics node

Delete
Cancel
Done

Properties

Group
[SVG] Floorplan test

Size
14 x 10

Name
Name

Editor
SVG source
Animations
Events
Input Bind
Settings

Output to
msg. payload

Selector	Action	msg.	msg.topic
#camera_livir	Click	camera_living	camera_living

### (2.2) Debug Node

Edit debug node

Delete
Cancel
Done

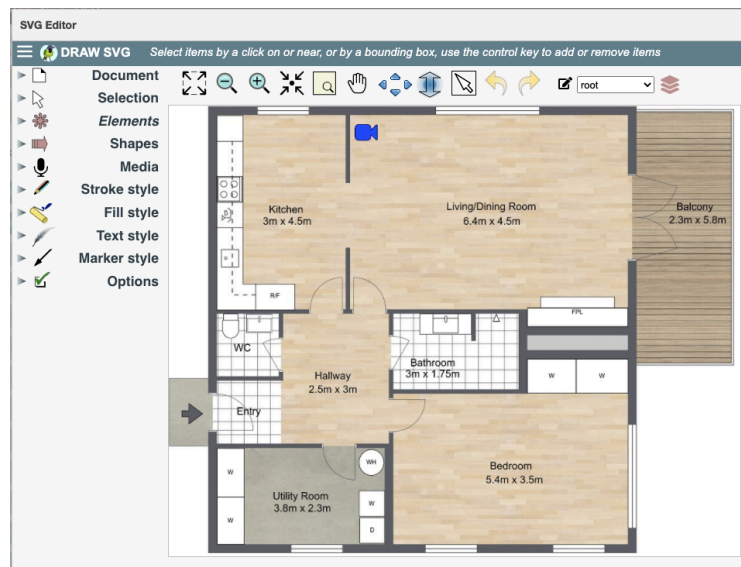
Properties

Output
complete msg object

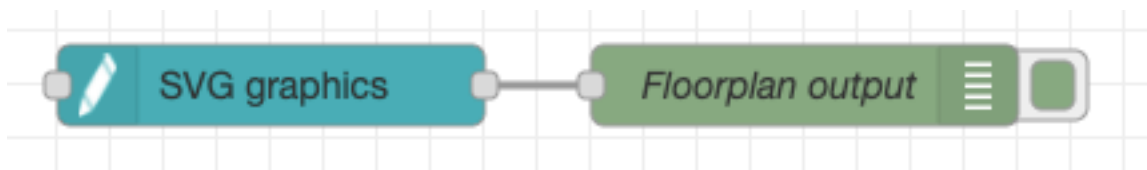
To
☒ debug window
☐ system console
☐ node status (32 characters)

Name
Floorplan output

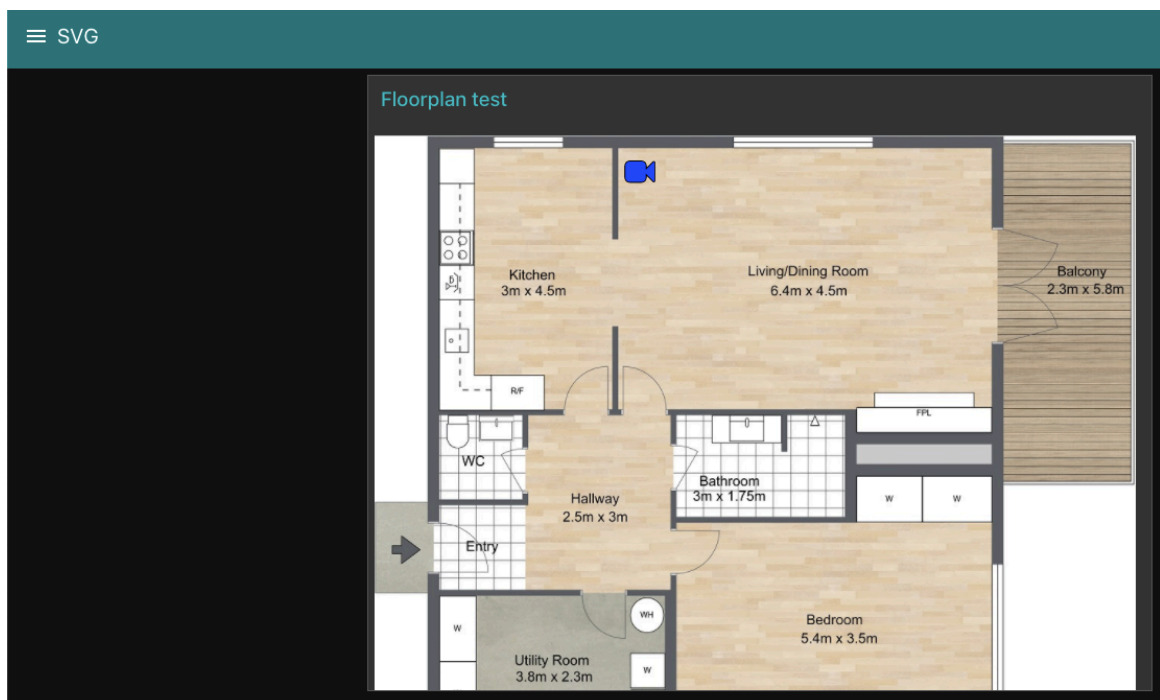
## (2.3) SVG Graphics Editor



## (2.4) Complete Circuit Flow



## (2.5) Output





## (2.6) Code for this node-red flow

```
[{"id":"bc86bee7.50062","type":"tab","label":"SVG FloorPlan Lab 5","disabled":false,"info":""},
{"id":"3e4997bb.e0e468","type":"debug","z":"bc86bee7.50062","name":"Floorplan output","active":true,"tosidebar":true,"console":false,"tostatus":false,"complete":true,"targetType":"full","statusVal":"","statusType":"auto","x":400,"y":200,"wires":[]},
{"id":"26lad2a2.e3620e","type":"ui_svg_graphics","z":"bc86bee7.50062","group":"93c97f47.fbc2","order":1,"width":14,"height":10,"svgString":<svg preserveAspectRatio=\\"none\\" x=\\"0\\" y=\\"0\\" viewBox=\\"0 0 900 710\\" xmlns=\\"http://www.w3.org/2000/svg\\" xmlns:svg=\\"http://www.w3.org/2000/svg\\" xmlns:xlink=\\"http://www.w3.org/1999/xlink\\">\n <image width=\\"889\\" height=\\"703\\" id=\\"background\\" xlink:href=\\"https://www.roomsketcher.com/wp-content/uploads/2016/10/1-Bedroom-Floor-Plans.jpg\\"/>\n <circle id=\\"pir_living\\" cx=\\"310\\" cy=\\"45\\" r=\\"5\\" stroke-width=\\"0\\" fill=\\"#FF0000\\"/>\n <text id=\\"camera_living\\" x=\\"310\\" y=\\"45\\" font-family=\\"FontAwesome\\" fill=\\"blue\\" stroke=\\"black\\" font-size=\\"35\\" text-anchor=\\"middle\\" alignment-baseline=\\"middle\\" stroke-width=\\"1\\">📷</text>\n</svg>,"clickableShapes": [{"targetId":"#camera_living","action":"click","payload":"camera_living","payloadType":"str","topic":"camera_living"}],"smilAnimations":[],"bindings": [],"showCoordinates":false,"autoFormatAfterEdit":false,"showBrowserErrors":false,"outputField":"","editorUrl":"http://drawsvg.org/drawsvg.html","directory":"","panning":"disabled","zooming":"disabled","panOnlyWhenZoomed":false,"doubleClickZoomEnabled":false,"mouseWheelZoomEnabled":false,"name":"","x":200,"y":200,"wires":[["3e4997bb.e0e468"]]},
{"id":"93c97f47.fbc2","type":"ui_group","z":"","name":"Floorplan test","tab":"aa5afd0a.7ffb5","order":1,"disp":true,"width":14,"collapse":false},
{"id":"aa5afd0a.7ffb5","type":"ui_tab","z":"","name":"SVG","icon":"dashboard","disabled":false,"hidden":false}]
```

## Result :

Thus, with the help of Node-RED and the SVG Graphics Editor, we have designed an SVG art, and also implemented a floor-plan using the SVG Editor and displayed it using the Node Red Dashboard and putting it to practical use.