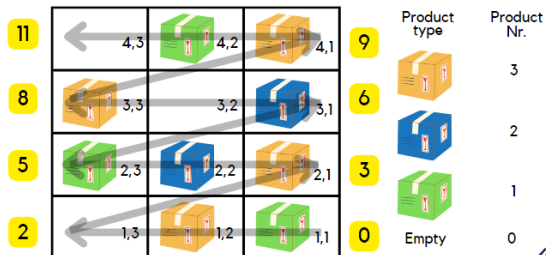


# Project 2 – Solution



## Project 2

- Call a function to initialize a single dimension array of 12 elements with a **random number** (0~3) using FOR loop such that every number represents the product type.
- Call a function to calculate total number of 'type' (argument) boxes or empty location.
- Call a function to store the box (argument) in the nearest empty location. Throw an error if there is no empty location
- Call a function to retrieve the box from location 'pos1' (argument) and store it into the empty location 'pos2' (argument). If location is not empty throw an error.



[www.codeandcompile.com](http://www.codeandcompile.com)

## Solution

```
[
  {
    "id": "6579a498a8897e87",
    "type": "tab",
    "label": "Flow 1",
    "disabled": false,
    "info": "",
    "env": []
  },
  {
```

```
"id": "fcf3a79299ac3545",
"type": "inject",
"z": "6579a498a8897e87",
"name": "",
"props": [
  {
    "p": "payload"
  },
  {
    "p": "topic",
    "vt": "str"
  }
],
"repeat": "",
"crontab": "",
"once": false,
"onceDelay": 0.1,
"topic": "",
"payload": "",
"payloadType": "date",
"x": 140,
"y": 60,
"wires": [
  [
    "a9ac3401bd1d9227"
```

```
    ]
  ]
},
{
  "id": "a9ac3401bd1d9227",
  "type": "function",
  "z": "6579a498a8897e87",
  "name": "function 1",
  "func": "var arr = [];\n\nfunction initializeRack()\n{\n  for (let index = 0;\nindex < 12; index++) {\n    arr.push(Math.floor(Math.random()*4)); \n  }\n}\ninitializeRack()\nmsg.payload = arr;\nflow.set('rack',arr);\nreturn msg;",
  "outputs": 1,
  "timeout": 0,
  "noerr": 0,
  "initialize": "",
  "finalize": "",
  "libs": [],
  "x": 340,
  "y": 60,
  "wires": [
    [
      "b4b0c73a6d188582",
      "1f0e06da7e0d2793"
    ]
  ]
},
```

```
{
  "id": "b4b0c73a6d188582",
  "type": "debug",
  "z": "6579a498a8897e87",
  "name": "debug 1",
  "active": true,
  "tosidebar": true,
  "console": false,
  "tostatus": false,
  "complete": "false",
  "statusVal": "",
  "statusType": "auto",
  "x": 540,
  "y": 60,
  "wires": []
},
{
  "id": "8a47da9e77734c6b",
  "type": "ui_button",
  "z": "6579a498a8897e87",
  "name": "",
  "group": "34f212e5ab150511",
  "order": 0,
  "width": 0,
  "height": 0,
```

```
"passthru": false,
"label": "Initialize",
"tooltip": "",
"color": "",
"bgcolor": "",
"className": "",
"icon": "",
"payload": "",
"payloadType": "str",
"topic": "topic",
"topicType": "msg",
"x": 140,
"y": 100,
"wires": [
  [
    "a9ac3401bd1d9227"
  ]
]
},
{
  "id": "1f0e06da7e0d2793",
  "type": "ui_template",
  "z": "6579a498a8897e87",
  "group": "34f212e5ab150511",
  "name": "",
```

```

"order": 1,

"width": "6",

"height": "5",

"format": "<style>\n  table {\n    width: 100%;\n    border-collapse: collapse;\n    margin-top: 20px;\n  }\n\n  th,\n  td {\n    padding: 10px;\n    text-align: center;\n    border: 1px solid #ddd;\n  }\n\n  th {\n    background-color: #f2f2f2;\n  }\n</style>\n<table>\n  <tr>\n    <th>Column 2</th>\n    <th>Column 1</th>\n    <th>Column 0</th>\n  </tr>\n  <tr>\n    <td></td>\n    <td></td>\n    <td></td>\n  </tr>\n  <tr>\n    <td></td>\n    <td></td>\n    <td></td>\n  </tr>\n  <tr>\n    <td></td>\n    <td></td>\n    <td></td>\n  </tr>\n  <tr>\n    <td></td>\n    <td></td>\n    <td></td>\n  </tr>\n</table>",

"storeOutMessages": true,

"fwdInMessages": true,

"resendOnRefresh": true,

"templateScope": "local",

"className": "",

"x": 540,

"y": 100,

"wires": [

  []

],

{

  "id": "98a8d67a9023b03d",

  "type": "ui_dropdown",

  "z": "6579a498a8897e87",

```

```
"name": "",
"label": "Type",
"tooltip": "",
"place": "Select option",
"group": "fdd1dab04b883123",
"order": 1,
"width": 0,
"height": 0,
"passthru": true,
"multiple": false,
"options": [
  {
    "label": "Empty (0)",
    "value": 0,
    "type": "num"
  },
  {
    "label": "Green (1)",
    "value": 1,
    "type": "num"
  },
  {
    "label": "Blue (2)",
    "value": 2,
    "type": "num"
  }
]
```

```
    },  
    {  
      "label": "Brown (3)",  
      "value": 3,  
      "type": "num"  
    }  
  ],  
  "payload": "",  
  "topic": "topic",  
  "topicType": "msg",  
  "className": "",  
  "x": 130,  
  "y": 240,  
  "wires": [  
    [  
      "6dac583bddf0361c"  
    ]  
  ]  
},  
{  
  "id": "15c2dfd3abbe45b2",  
  "type": "debug",  
  "z": "6579a498a8897e87",  
  "name": "debug 2",  
  "active": true,
```



```

    "tosidebar": true,
    "console": false,
    "tostatus": false,
    "complete": "false",
    "statusVal": "",
    "statusType": "auto",
    "x": 540,
    "y": 240,
    "wires": []
  },
  {
    "id": "6dac583bddf0361c",
    "type": "function",
    "z": "6579a498a8897e87",
    "name": "function 2",
    "func": "var rack = flow.get('rack') || [];\nvar boxType = msg.payload;\nvar result = 0;\n\nfunction totalCount(type)\n//calculate the type\n{\n  for (let index = 0; index < rack.length; index++) \n  {\n    if (rack[index] === type) \n    {\n      result = result + 1;\n    }\n  }\n}\n\ntotalCount(boxType)\nmsg.payload = result;\nreturn msg;",
    "outputs": 1,
    "timeout": 0,
    "noerr": 0,
    "initialize": "",
    "finalize": "",
    "libs": [],

```

```
"x": 340,
"y": 240,
"wires": [
  [
    "15c2dfd3abbe45b2",
    "891ddb09a4760d89"
  ]
],
},
{
  "id": "891ddb09a4760d89",
  "type": "ui_text",
  "z": "6579a498a8897e87",
  "group": "fdd1dab04b883123",
  "order": 2,
  "width": 0,
  "height": 0,
  "name": "",
  "label": "Count",
  "format": "",
  "layout": "row-spread",
  "className": "",
  "style": false,
  "font": "",
  "fontSize": 16,
```

```
"color": "#000000",
"x": 530,
"y": 280,
"wires": []
},
{
  "id": "9eb85cba76b8b4de",
  "type": "ui_dropdown",
  "z": "6579a498a8897e87",
  "name": "",
  "label": "Type",
  "tooltip": "",
  "place": "Select option",
  "group": "d5223892f4214c0a",
  "order": 1,
  "width": 0,
  "height": 0,
  "passthru": true,
  "multiple": false,
  "options": [
    {
      "label": "Green (1)",
      "value": 1,
      "type": "num"
    },
  ],
```

```
{
  "label": "Blue (2)",
  "value": 2,
  "type": "num"
},
{
  "label": "Brown (3)",
  "value": 3,
  "type": "num"
}
],
"payload": "",
"topic": "topic",
"topicType": "msg",
"className": "",
"x": 130,
"y": 380,
"wires": [
  [
    "a7b0a00777d061a4"
  ]
]
},
{
  "id": "d189e1e386fe0671",
```

```
"type": "ui_button",
"z": "6579a498a8897e87",
"name": "",
"group": "d5223892f4214c0a",
"order": 3,
"width": 0,
"height": 0,
"passthru": false,
"label": "Store",
"tooltip": "",
"color": "",
"bgcolor": "",
"className": "",
"icon": "",
"payload": "",
"payloadType": "str",
"topic": "topic",
"topicType": "msg",
"x": 130,
"y": 440,
"wires": [
  [
    "8406ac0f8a868fe8"
  ]
]
```

```

},
{
  "id": "8406ac0f8a868fe8",
  "type": "function",
  "z": "6579a498a8897e87",
  "name": "function 3",
  "func": "var msg1 = {};\nvar msg2 = {};\n\nvar rack =
flow.get('rack') || [];\nvar boctype = flow.get('boctype') || 0;\nvar result = 'No
empty location found!';\n\nfunction storeEmpty(type)\n//calculate the
type\n{\n  for (let index = 0; index < rack.length; index++) \n    {\n      if
(rack[index] === 0) \n        {\n          rack[index] = boctype;\n          result = 'Box
Stored!';\n          flow.set('rack',rack);\n          break;\n        }\n      \n
}\n}\n\nstoreEmpty(boctype)\nmsg1.payload = result;\nmsg2.payload =
rack;\n\nreturn [msg1,msg2];",
  "outputs": 2,
  "timeout": 0,
  "noerr": 0,
  "initialize": "",
  "finalize": "",
  "libs": [],
  "x": 360,
  "y": 440,
  "wires": [
    [
      "11ec0ab09251e17d",
      "105e2158023a24cf"
    ]
  ],

```

```
[
  "1f0e06da7e0d2793"
]
]
},
{
  "id": "a7b0a00777d061a4",
  "type": "function",
  "z": "6579a498a8897e87",
  "name": "function 4",
  "func": "flow.set('boxtype',msg.payload);",
  "outputs": 1,
  "timeout": 0,
  "noerr": 0,
  "initialize": "",
  "finalize": "",
  "libs": [],
  "x": 360,
  "y": 380,
  "wires": [
    []
  ]
},
{
  "id": "11ec0ab09251e17d",
```

```
"type": "ui_text",
"z": "6579a498a8897e87",
"group": "d5223892f4214c0a",
"order": 2,
"width": 0,
"height": 0,
"name": "",
"label": "Result",
"format": "",
"layout": "row-spread",
"className": "",
"style": false,
"font": "",
"fontSize": 16,
"color": "#000000",
"x": 870,
"y": 440,
"wires": []
},
{
  "id": "105e2158023a24cf",
  "type": "delay",
  "z": "6579a498a8897e87",
  "name": "",
  "pauseType": "delay",
```



```
"timeout": "3",
"timeoutUnits": "seconds",
"rate": "1",
"nbRateUnits": "1",
"rateUnits": "second",
"randomFirst": "1",
"randomLast": "5",
"randomUnits": "seconds",
"drop": false,
"allowrate": false,
"outputs": 1,
"x": 540,
"y": 500,
"wires": [
  [
    "9df88064b6bc4914"
  ]
],
},
{
  "id": "9df88064b6bc4914",
  "type": "function",
  "z": "6579a498a8897e87",
  "name": "function 5",
  "func": "msg.payload = \";\nreturn msg;\",
```

```
"outputs": 1,
"timeout": 0,
"noerr": 0,
"initialize": "",
"finalize": "",
"libs": [],
"x": 720,
"y": 500,
"wires": [
  [
    "11ec0ab09251e17d"
  ]
],
},
{
  "id": "8495bffb42b4d8fe",
  "type": "ui_dropdown",
  "z": "6579a498a8897e87",
  "name": "",
  "label": "Retreive",
  "tooltip": "",
  "place": "Select option",
  "group": "1245a90dec86d3f3",
  "order": 2,
  "width": 0,
```

```
"height": 0,  
"passthru": true,  
"multiple": false,  
"options": [  
  {  
    "label": "0",  
    "value": 0,  
    "type": "num"  
  },  
  {  
    "label": "1",  
    "value": 1,  
    "type": "num"  
  },  
  {  
    "label": "2",  
    "value": 2,  
    "type": "num"  
  },  
  {  
    "label": "3",  
    "value": 3,  
    "type": "num"  
  },  
  {
```

```
    "label": "4",  
    "value": 4,  
    "type": "num"  
  },  
  {  
    "label": "5",  
    "value": 5,  
    "type": "num"  
  },  
  {  
    "label": "6",  
    "value": 6,  
    "type": "num"  
  },  
  {  
    "label": "7",  
    "value": 7,  
    "type": "num"  
  },  
  {  
    "label": "8",  
    "value": 8,  
    "type": "num"  
  },  
  {
```

```
    "label": "9",
    "value": 9,
    "type": "num"
  },
  {
    "label": "10",
    "value": 10,
    "type": "num"
  },
  {
    "label": "11",
    "value": 11,
    "type": "num"
  }
],
"payload": "",
"topic": "topic",
"topicType": "msg",
"className": "",
"x": 140,
"y": 620,
"wires": [
  [
    "b42258aa5f2dd988"
  ]
]
```

```
]
},
{
  "id": "71a497a50aa13ba7",
  "type": "ui_dropdown",
  "z": "6579a498a8897e87",
  "name": "",
  "label": "Store",
  "tooltip": "",
  "place": "Select option",
  "group": "1245a90dec86d3f3",
  "order": 2,
  "width": 0,
  "height": 0,
  "passthru": true,
  "multiple": false,
  "options": [
    {
      "label": "0",
      "value": 0,
      "type": "num"
    },
    {
      "label": "1",
      "value": 1,
```

```
    "type": "num"  
  },  
  {  
    "label": "2",  
    "value": 2,  
    "type": "num"  
  },  
  {  
    "label": "3",  
    "value": 3,  
    "type": "num"  
  },  
  {  
    "label": "4",  
    "value": 4,  
    "type": "num"  
  },  
  {  
    "label": "5",  
    "value": 5,  
    "type": "num"  
  },  
  {  
    "label": "6",  
    "value": 6,
```

```
    "type": "num"
  },
  {
    "label": "7",
    "value": 7,
    "type": "num"
  },
  {
    "label": "8",
    "value": 8,
    "type": "num"
  },
  {
    "label": "9",
    "value": 9,
    "type": "num"
  },
  {
    "label": "10",
    "value": 10,
    "type": "num"
  },
  {
    "label": "11",
    "value": 11,
```



```
        "type": "num"
      }
    ],
    "payload": "",
    "topic": "topic",
    "topicType": "msg",
    "className": "",
    "x": 130,
    "y": 680,
    "wires": [
      [
        "799ddd4a74a9169e"
      ]
    ]
  },
  {
    "id": "215cf6a224231897",
    "type": "ui_button",
    "z": "6579a498a8897e87",
    "name": "",
    "group": "1245a90dec86d3f3",
    "order": 3,
    "width": 0,
    "height": 0,
    "passthru": false,
```

```
"label": "Update",
"tooltip": "",
"color": "",
"bgcolor": "",
"className": "",
"icon": "",
"payload": "",
"payloadType": "str",
"topic": "topic",
"topicType": "msg",
"x": 140,
"y": 760,
"wires": [
  [
    "1656b4409c2dec6c"
  ]
]
},
{
  "id": "b42258aa5f2dd988",
  "type": "function",
  "z": "6579a498a8897e87",
  "name": "function 6",
  "func": "flow.set('retrieveLocation',msg.payload);",
  "outputs": 1,
```

```
"timeout": 0,
"noerr": 0,
"initialize": "",
"finalize": "",
"libs": [],
"x": 360,
"y": 620,
"wires": [
  []
],
{
  "id": "799ddd4a74a9169e",
  "type": "function",
  "z": "6579a498a8897e87",
  "name": "function 7",
  "func": "flow.set('storeLocation',msg.payload);",
  "outputs": 1,
  "timeout": 0,
  "noerr": 0,
  "initialize": "",
  "finalize": "",
  "libs": [],
  "x": 360,
  "y": 680,
```

```

"wires": [
  []
],
{
  "id": "1656b4409c2dec6c",
  "type": "function",
  "z": "6579a498a8897e87",
  "name": "function 8",
  "func": "var msg1 = {};\nvar msg2 = {};\n\nvar rack =
flow.get('rack') || [];\nvar retrieveLocation = flow.get('retrieveLocation') ||
0;\nvar storeLocation = flow.get('storeLocation') || 0;\nvar result =
'';\n\nfunction retrieveStore(retrieveLocation, storeLocation)\n//Retrieve and
store the box\n{\n  if (rack[retrieveLocation] !== 0 && rack[storeLocation] ===
0 ) \n    {\n      rack[storeLocation] = rack[retrieveLocation];\n
rack[retrieveLocation] = 0;\n      result = 'Box Stored!';\n
flow.set('rack',rack);\n    }\n  else\n    {\n      result = 'Locations are not
valid!';\n    }\n  }\n  \n}\n\nretrieveStore(retrieveLocation,
storeLocation)\nmsg1.payload = result;\nmsg2.payload = rack;\n\nreturn
[msg1,msg2];",
  "outputs": 2,
  "timeout": 0,
  "noerr": 0,
  "initialize": "",
  "finalize": "",
  "libs": [],
  "x": 360,
  "y": 760,

```

```
"wires": [  
  [  
    "27d74a24b189d899",  
    "a35f7ca70240993a"  
  ],  
  [  
    "1f0e06da7e0d2793"  
  ]  
]  
,  
{  
  "id": "a35f7ca70240993a",  
  "type": "ui_text",  
  "z": "6579a498a8897e87",  
  "group": "1245a90dec86d3f3",  
  "order": 2,  
  "width": 0,  
  "height": 0,  
  "name": "",  
  "label": "Result",  
  "format": "",  
  "layout": "row-spread",  
  "className": "",  
  "style": false,  
  "font": "",
```

```
"fontSize": 16,  
"color": "#000000",  
"x": 850,  
"y": 760,  
"wires": []  
},  
{  
  "id": "27d74a24b189d899",  
  "type": "delay",  
  "z": "6579a498a8897e87",  
  "name": "",  
  "pauseType": "delay",  
  "timeout": "3",  
  "timeoutUnits": "seconds",  
  "rate": "1",  
  "nbRateUnits": "1",  
  "rateUnits": "second",  
  "randomFirst": "1",  
  "randomLast": "5",  
  "randomUnits": "seconds",  
  "drop": false,  
  "allowrate": false,  
  "outputs": 1,  
  "x": 520,  
  "y": 800,
```

```
"wires": [  
  [  
    "5f10c8ba02280eee"  
  ]  
]  
,  
{  
  "id": "5f10c8ba02280eee",  
  "type": "function",  
  "z": "6579a498a8897e87",  
  "name": "function 9",  
  "func": "msg.payload = \";\nreturn msg;\",  
  "outputs": 1,  
  "timeout": 0,  
  "noerr": 0,  
  "initialize": "",  
  "finalize": "",  
  "libs": [],  
  "x": 700,  
  "y": 800,  
  "wires": [  
    [  
      "a35f7ca70240993a"  
    ]  
  ]  
}
```

```
},  
{  
  "id": "34f212e5ab150511",  
  "type": "ui_group",  
  "name": "Initialize Rack",  
  "tab": "2f857395f891e828",  
  "order": 1,  
  "disp": true,  
  "width": "6",  
  "collapse": false,  
  "className": ""  
},  
{  
  "id": "fdd1dab04b883123",  
  "type": "ui_group",  
  "name": "Total Count",  
  "tab": "2f857395f891e828",  
  "order": 2,  
  "disp": true,  
  "width": "6",  
  "collapse": false,  
  "className": ""  
},  
{  
  "id": "d5223892f4214c0a",
```



```
"type": "ui_group",
"name": "Store",
"tab": "2f857395f891e828",
"order": 3,
"disp": true,
"width": "6",
"collapse": false,
"className": ""
},
{
  "id": "1245a90dec86d3f3",
  "type": "ui_group",
  "name": "Retrieve and Store",
  "tab": "2f857395f891e828",
  "order": 4,
  "disp": true,
  "width": "6",
  "collapse": false,
  "className": ""
},
{
  "id": "2f857395f891e828",
  "type": "ui_tab",
  "name": "ASRS Project",
  "icon": "dashboard",
```

```
    "disabled": false,  
    "hidden": false  
  }  
]
```