Name: Nguyen Khanh Toan

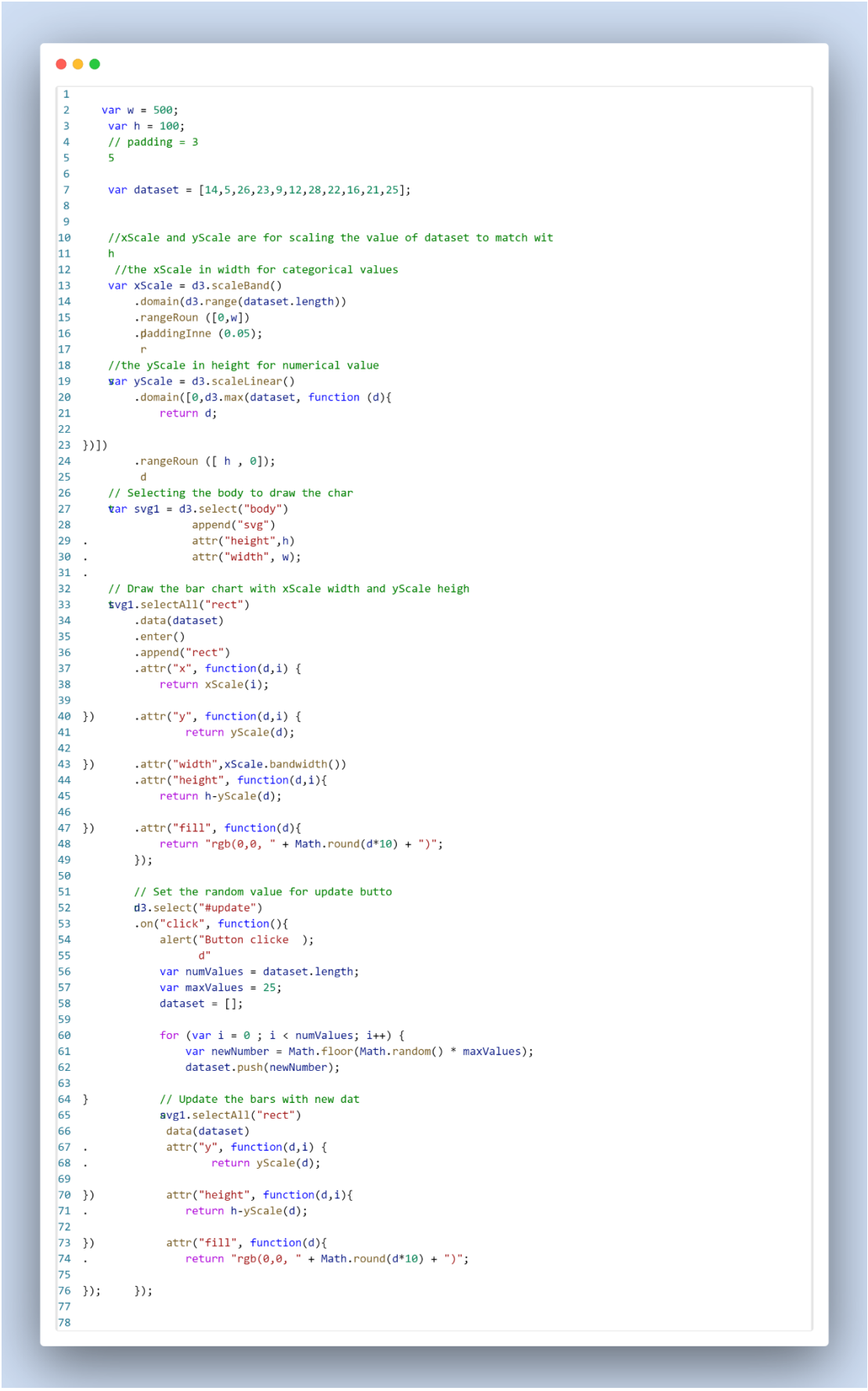
Student ID: 104180605

Lab 5.1-6.2

Lab 5.1:

```
<!DOCTYPE html>
<html lang = "en">
<head>
    <meta charset = "utf-8" />
    <meta name = "descriptio    content =
"Data Visualisatio" />
n"  <meta name = "keyword       content = "HTML,CSS,D   />
    <meta name = "author"       content = "Toan Nguye   />
                                          n"
    <title> Task 5.1 Drawing with dat </title>
           a
    <script src = "https://d3js.org/d3.v7.min.j   ></script
</head>           s"                                >

<body>
    <h1> The D3 Journey Start Here </h1>
    <button id="update">Update</button>
    <br>
    <script src="scripts.j  ></script
                  s"          >
    <br>
    <bf>
    <footer style = "color:grey">
     COS30045 Data Visualisatio <br>
n    Toan Nguye </footer>
</body>

</html>
```

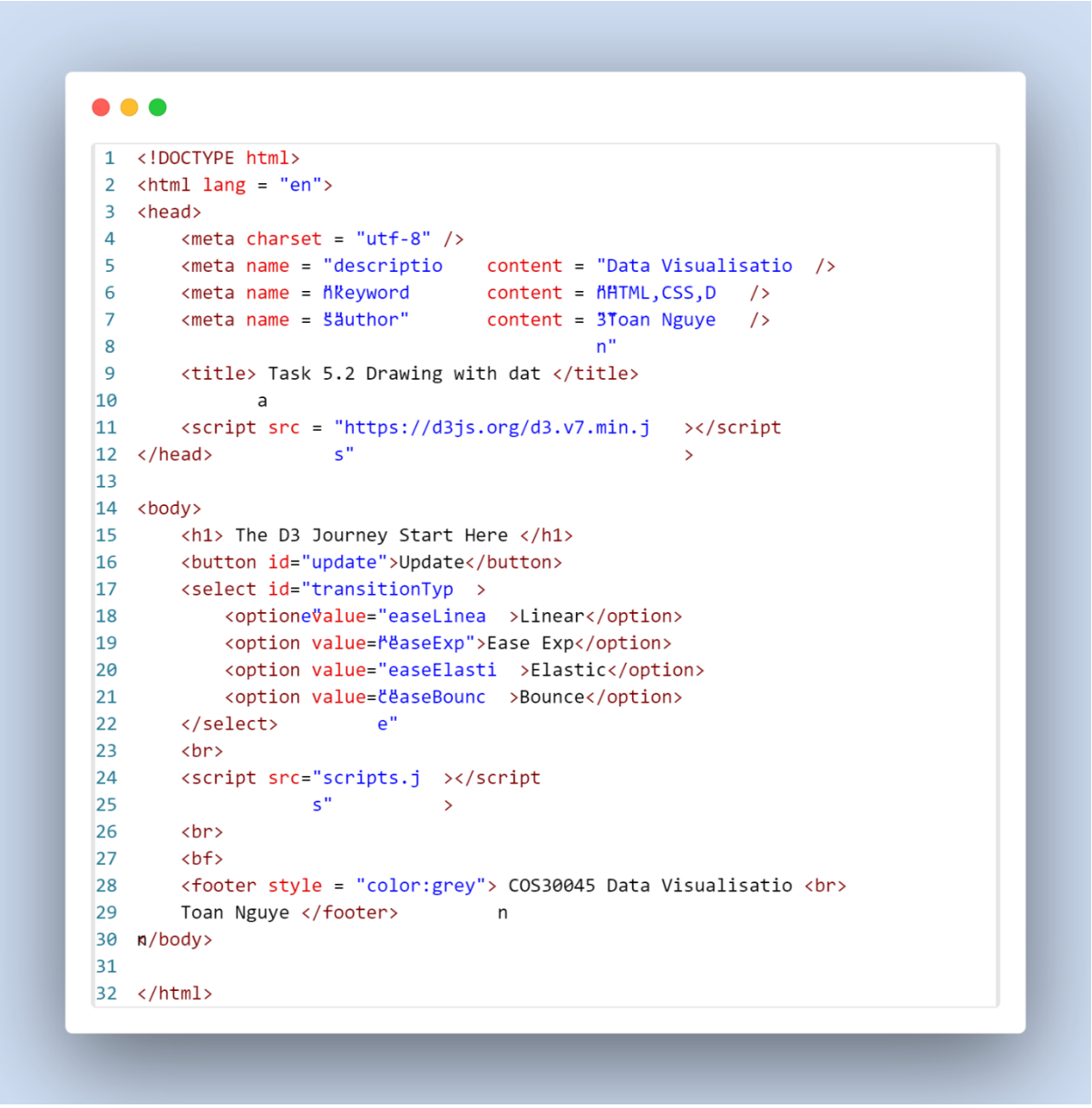
Fig 1: 5.1 HTML code



```
1
2     var w = 500;
3      var h = 100;
4      // padding = 3
5      5
6
7      var dataset = [14,5,26,23,9,12,28,22,16,21,25];
8
9
10     //xScale and yScale are for scaling the value of dataset to match wit
11     h
12      //the xScale in width for categorical values
13     var xScale = d3.scaleBand()
14         .domain(d3.range(dataset.length))
15         .rangeRoun ([0,w])
16         .paddingInne (0.05);
17          r
18     //the yScale in height for numerical value
19     var yScale = d3.scaleLinear()
20         .domain([0,d3.max(dataset, function (d){
21             return d;
22
23 })])
24         .rangeRoun ([ h , 0]);
25          d
26     // Selecting the body to draw the char
27     var svg1 = d3.select("body")
28                  append("svg")
29 .                attr("height",h)
30 .                attr("width", w);
31 .
32     // Draw the bar chart with xScale width and yScale heigh
33     svg1.selectAll("rect")
34         .data(dataset)
35         .enter()
36         .append("rect")
37         .attr("x", function(d,i) {
38             return xScale(i);
39
40 })      .attr("y", function(d,i) {
41                 return yScale(d);
42
43 })      .attr("width",xScale.bandwidth())
44         .attr("height", function(d,i){
45             return h-yScale(d);
46
47 })      .attr("fill", function(d){
48             return "rgb(0,0, " + Math.round(d*10) + ")";
49         });
50
51         // Set the random value for update butto
52         d3.select("#update")
53         .on("click", function(){
54             alert("Button clicke  );
55                   d"
56             var numValues = dataset.length;
57             var maxValues = 25;
58             dataset = [];
59
60             for (var i = 0 ; i < numValues; i++) {
61                 var newNumber = Math.floor(Math.random() * maxValues);
62                 dataset.push(newNumber);
63
64 }           // Update the bars with new dat
65             svg1.selectAll("rect")
66              data(dataset)
67 .           attr("y", function(d,i) {
68 .                  return yScale(d);
69
70 })           attr("height", function(d,i){
71 .               return h-yScale(d);
72
73 })           attr("fill", function(d){
74 .               return "rgb(0,0, " + Math.round(d*10) + ")";
75
76 });     });
77
78
```

Fig 2: 5.2 JS code

Lab 5.2:



```
<!DOCTYPE html>
<html lang = "en">
<head>
    <meta charset = "utf-8" />
    <meta name = "descriptio    content = "Data Visualisatio  />
    <meta name = ĦKeyword       content = ĦĦTML,CSS,D   />
    <meta name = ŠauthorŠ       content = ƷToan Nguye   />
                                          n"
    <title> Task 5.2 Drawing with dat </title>
           a
    <script src = "https://d3js.org/d3.v7.min.j   ></script
</head>           s"                              >

<body>
    <h1> The D3 Journey Start Here </h1>
    <button id="update">Update</button>
    <select id="transitionTyp  >
        <optioneVvalue="easeLinea  >Linear</option>
        <option value=ĦĕaseExp">Ease Exp</option>
        <option value="easeElasti  >Elastic</option>
        <option value=ČĕaseBounc  >Bounce</option>
    </select>         e"
    <br>
    <script src="scripts.j  ></script
                s"          >
    <br>
    <bf>
    <footer style = "color:grey"> COS30045 Data Visualisatio <br>
    Toan Nguye </footer>         n
n/body>

</html>
```

Fig 3: 5.2 HTML code

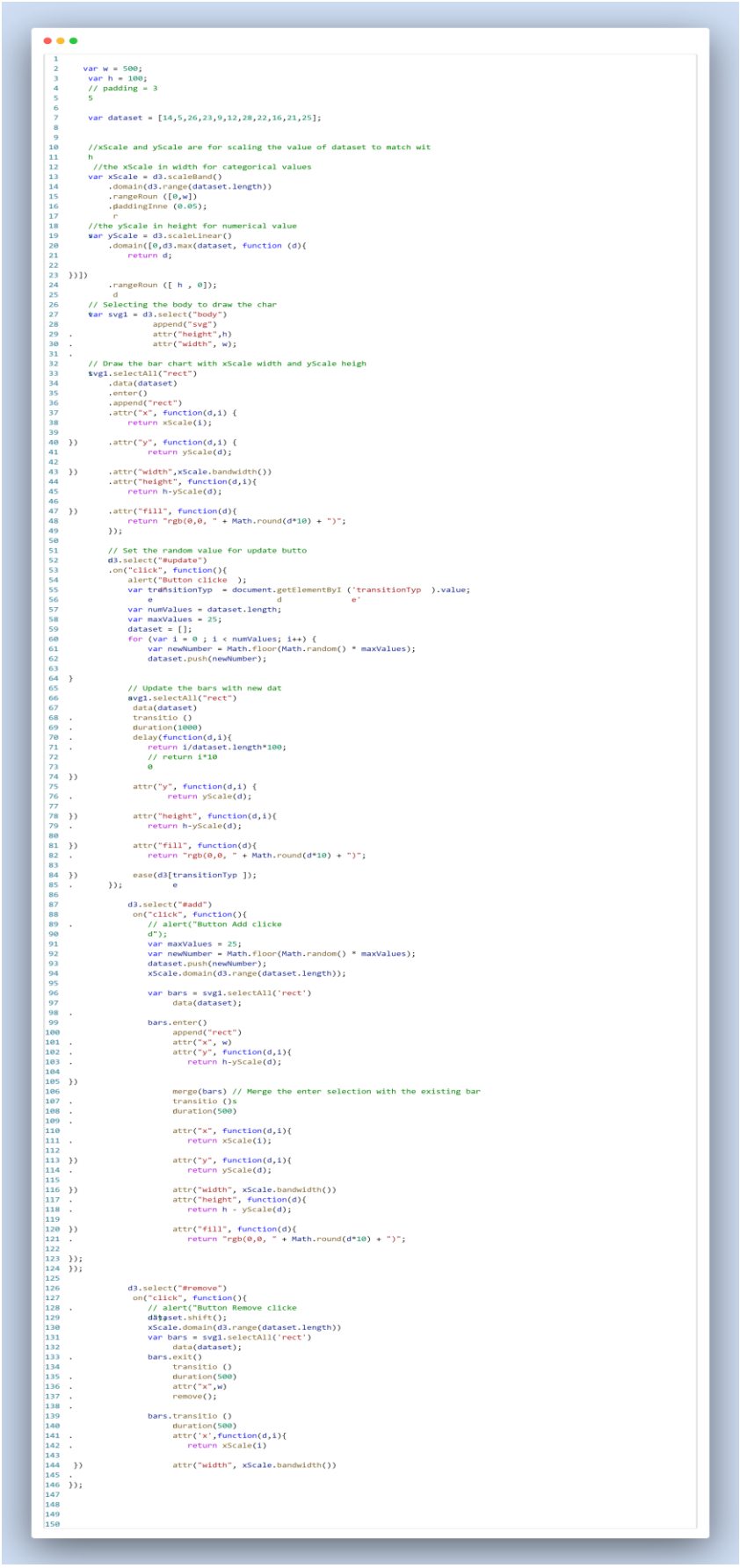
```
1
2     var w = 500;
3      var h = 100;
4      // padding = 3
5      5
6
7      var dataset = [14,5,26,23,9,12,28,22,16,21,25];
8
9
10     //xScale and yScale are for scaling the value of dataset to match wit
11     h
12      //the xScale in width for categorical values
13     var xScale = d3.scaleBand()
14         .domain(d3.range(dataset.length))
15         .rangeRoun ([0,w])
16         .paddingInne (0.05);
17          r
18     //the yScale in height for numerical value
19     var yScale = d3.scaleLinear()
20         .domain([0,d3.max(dataset, function (d){
21             return d;
22
23 })])
24         .rangeRoun ([ h , 0]);
25          d
26     // Selecting the body to draw the char
27     var svg1 = d3.select("body")
28                  append("svg")
29 .                attr("height",h)
30 .                attr("width", w);
31 .
32     // Draw the bar chart with xScale width and yScale heigh
33     svg1.selectAll("rect")
34         .data(dataset)
35         .enter()
36         .append("rect")
37         .attr("x", function(d,i) {
38             return xScale(i);
39
40 })      .attr("y", function(d,i) {
41                 return yScale(d);
42
43 })      .attr("width",xScale.bandwidth())
44         .attr("height", function(d,i){
45             return h-yScale(d);
46
47 })      .attr("fill", function(d){
48             return "rgb(0,0, " + Math.round(d*10) + ")";
49         });
50
51         // Set the random value for update butto
52         d3.select("#update")
53         .on("click", function(){
54             alert("Button clicke  );
55                   d"
56             var transitionTyp  = document.getElementByI ('transitionTyp  ).value;
57             var numValues = dataset.lengthd              e'
58             var maxValues = 25;
59
60             dataset = [];
61
62             for (var i = 0 ; i < numValues; i++) {
63                 var newNumber = Math.floor(Math.random() * maxValues);
64                 dataset.push(newNumber);
65
66 }
67             // Update the bars with new dat
68             svg1.selectAll("rect")
69              data(dataset)
70 .            transitio ()
71 .            duration(1000)
72 .            delay(function(d,i){
73 .               return i/dataset.length*100;
74                  // return i*10
75                  0
76 })
77             // .ease(d3.easeCubicInOu
78             t) .ease(d3.EaseCircleI
79             n) .ease(d3.easeCircleOu
80             t) .ease(d3.easeElasticOu
81             t) .ease(d3.easeBounc
82             e) .ease(d3.easeLinea
83             r)
84              attr("y", function(d,i) {
85 .                   return yScale(d);
86
87 })           attr("height", function(d,i){
88 .               return h-yScale(d);
89
90 })           attr("fill", function(d){
91 .               return "rgb(0,0, " + Math.round(d*10) + ")";
92
93 })           ease(d3[transitionTyp ]);
94 .       });          e
95
96
```

Fig 4: 5.2 JS code

Lab 5.3:

```
<!DOCTYPE html>
<html lang = "en">
<head>
    <meta charset = "utf-8" />
    <meta name = "descriptio    content = "Data Visualisatio  />
    <meta name = ṀKeyword       content = ṀṀTML,CSS,D   />
    <meta name = ṩ̈author"       content = ȝ̈oan Nguye   />
                                          n"
    <title> Task 5.3 Drawing with dat </title>
          a
    <script src = "https://d3js.org/d3.v7.min.j   ></script
</head>           s"                              >

<body>
    <h1> The D3 Journey Start Here </h1>
    <button id="update">Update</button>
    <select id="transitionTyp  >
        <optione̊value="easeLinea  >Linear</option>
        <option value=ṀëaseExp">Ease Exp</option>
        <option value="easeElasti  >Elastic</option>
        <option value=čëaseBounc  >Bounce</option>
    </select>         e"
    <button id="add">Add</button>
    <button id="remove">Remove</button>
    <br>
    <script src="scripts.j  ></script
                s"          >

    <br>
    <bf>
    <footer style = "color:grey"> COS30045 Data Visualisatio <br>
    Toan Nguye </footer>         n
ṇ/body>

</html>
```

Fig 5: 5.3 HTML code



```
var w = 500;
 var h = 100;
 // padding = 3
 5

 var dataset = [14,5,26,23,9,12,28,22,16,21,25];


 //xScale and yScale are for scaling the value of dataset to match wit
 h
  //the xScale in width for categorical values
 var xScale = d3.scaleBand()
     .domain(d3.range(dataset.length))
     .rangeRoun ([0,w])
     .paddingInne (0.05);
      r
 //the yScale in height for numerical value
 var yScale = d3.scaleLinear()
     .domain([0,d3.max(dataset, function (d){
         return d;

}))
     .rangeRoun ([ h , 0]);
      d
 // Selecting the body to draw the char
 var svg1 = d3.select("body")
             .append("svg")
             attr("height",h)
             attr("width", w);


 // Draw the bar chart with xScale width and yScale heigh
 svg1.selectAll("rect")
     .data(dataset)
     .enter()
     .append("rect")
     .attr("x", function(d,i) {
         return xScale(i);

})   .attr("y", function(d,i) {
             return yScale(d);

})   .attr("width",xScale.bandwidth())
     .attr("height", function(d,i){
         return h-yScale(d);

})   .attr("fill", function(d){
         return "rgb(0,0, " + Math.round(d*10) + ")";
     });

     // Set the random value for update butto
     d3.select("#update")
     .on("click", function(){
         alert("Button clicke  );
         var trdnsitionTyp  = document.getElementByI ('transitionTyp  ).value;
             e                                d              e'
         var numValues = dataset.length;
         var maxValues = 25;
         dataset = [];
         for (var i = 0 ; i < numValues; i++) {
             var newNumber = Math.floor(Math.random() * maxValues);
             dataset.push(newNumber);

}
         // Update the bars with new dat
         svg1.selectAll("rect")
          data(dataset)
          transitio ()
          duration(1000)
          delay(function(d,i){
             return i/dataset.length*100;
             // return i*10
             0
})
          attr("y", function(d,i) {
                 return yScale(d);

})        attr("height", function(d,i){
             return h-yScale(d);

})        attr("fill", function(d){
             return "rgb(0,0, " + Math.round(d*10) + ")";

})        ease(d3[transitionTyp ]);
     });          e

         d3.select("#add")
          on("click", function(){
             // alert("Button Add clicke
             d");
             var maxValues = 25;
             var newNumber = Math.floor(Math.random() * maxValues);
             dataset.push(newNumber);
             xScale.domain(d3.range(dataset.length));

             var bars = svg1.selectAll('rect')
                  data(dataset);

             bars.enter()
                  append("rect")
                  attr("x", w)
                  attr("y", function(d,i){
                     return h-yScale(d);

})

                  merge(bars) // Merge the enter selection with the existing bar
                  transitio ()s
                  duration(500)

                  attr("x", function(d,i){
                     return xScale(i);

})                attr("y", function(d,i){
                     return yScale(d);

})                attr("width", xScale.bandwidth())
                  attr("height", function(d){
                     return h - yScale(d);

})                attr("fill", function(d){
                     return "rgb(0,0, " + Math.round(d*10) + ")";

});
});


         d3.select("#remove")
          on("click", function(){
             // alert("Button Remove clicke
             dA%aset.shift();
             xScale.domain(d3.range(dataset.length))
             var bars = svg1.selectAll('rect')
                  data(dataset);
             bars.exit()
                  transitio ()
                  duration(500)
                  attr("x",w)
                  remove();

             bars.transitio ()
                  duration(500)
                  attr('x',function(d,i){
                     return xScale(i)

 })                attr("width", xScale.bandwidth())

});
```

Fig 6: 5.3 JS code

Lab 6.1:

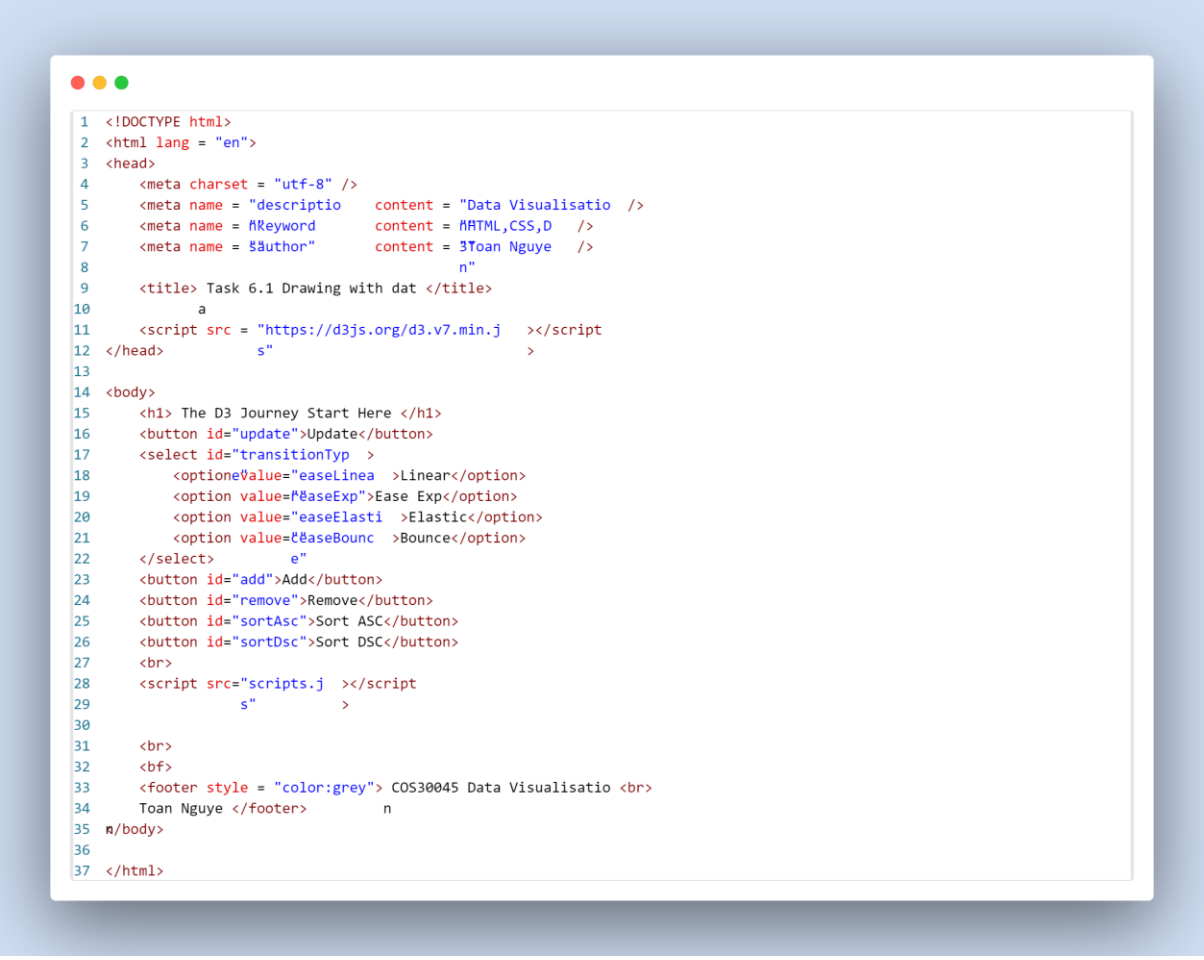
```
<!DOCTYPE html>
<html lang = "en">
<head>
    <meta charset = "utf-8" />
    <meta name = "descriptio    content = "Data Visualisatio  />
    <meta name = ЋKeyword       content = ЋHTML,CSS,D   />
    <meta name = ЅЎauthor"       content = ЗЋoan Nguye   />
                                          n"
    <title> Task 6.1 Drawing with dat </title>
           a
    <script src = "https://d3js.org/d3.v7.min.j   ></script
</head>           s"                            >

<body>
    <h1> The D3 Journey Start Here </h1>
    <button id="update">Update</button>
    <select id="transitionTyp  >
        <optioneўvalue="easeLinea  >Linear</option>
        <option value=ЋЂaseExp">Ease Exp</option>
        <option value="easeElasti  >Elastic</option>
        <option value=ЂЂaseBounc  >Bounce</option>
    </select>         e"
    <button id="add">Add</button>
    <button id="remove">Remove</button>
    <br>
    <script src="scripts.j  ></script
                s"          >

    <br>
    <bf>
    <footer style = "color:grey"> COS30045 Data Visualisatio <br>
    Toan Nguye </footer>         n
n/body>

</html>
```

Fig 7: 6.1 HTML code

```

    var w = 500;
     var h = 100;
     // padding = 3
     %

     var dataset = [16,5,26,23,9,12,28,22,16,21,25];


     //xScale and yScale are for scaling the value of dataset to match wit
     h
      //the xScale in width for categorical values
     var xScale = d3.scaleBand()
         .domain(d3.range(dataset.length))
         .rangeRoun ([0,w])
         .paddingInne (0.05);
          ;
     //the yScale in height for numerical value
     var yScale = d3.scaleLinear()
         .domain([0,d3.max(dataset, function (d){
             return d;

}))
         .rangeRoun ([ h , 0]);
             d
     // Selecting the body to draw the char
     %var svg1 = d3.select("body")
                 .append("svg")
                 attr("height",h)
                 attr("width", w);
     .

     // Draw the bar chart with xScale width and yScale heigh
     t
     svg1.selectAll("rect")
         .data(dataset)
         .enter()
         .append("rect")
         .attr("x", function(d,i) {
             return xScale(i);

})      .attr("y", function(d,i) {
                 return yScale(d);

})      .attr("width",xScale.bandwidth())
         .attr("height", function(d,i){
             return h-yScale(d);

})      .attr("fill", function(d){
             return "rgb(0,0, " + Math.round(d*10) + ")";

})
         .on("mouseover", function(event, d){
             d3.select(this)
              transitio ()
              duration(20)
              attr("fill", "orange")
             var xPos = parseFloa (d3.select(this).attr("x")) + xScale.bandwidth()/3 ;
             var yPos = parseFloa (d3.select(this).attr("y")) + 15;
                         t
             svg1.append("text")
                 attr("id", "tooltip")
                 attr("x", xPos)
                 attr("y", yPos)
                 text(d);


})      .on('mouseou   ,function(){
             d3.select(this)
              transitio ()
              duration(250)
              attr("fill", function(d){
                 return "rgb(0,0, " + Math.round(d*10) + ")";

})           d3.select("#toolti  ).remove();
                     p"
})      ;


         // Set the random value for update butto
         d3.select("#update")
         .on("click", function(){
             // alert("Button clicke
             d3$;transitionTyp  = document.getElementBy1 ('transitionTyp  ).value;
                 e                          d                    e'
             var numValues = dataset.length;
             var maxValues = 25;
             dataset = [];
             for (var i = 0 ; i < numValues; i++) {
                 var newNumber = Math.floor(Math.random() * maxValues);
                 dataset.push(newNumber);

}
             // Update the bars with new dat
             #vg1.selectAll("rect")
              data(dataset)
              transitio ()
              duration(1000)
              delay(function(d,i){
                 return i/dataset.length*100;
                 // return i*10
                 e
})
              attr("y", function(d,i) {
                     return yScale(d);

})           attr("height", function(d,i){
                 return h-yScale(d);

})           attr("fill", function(d){
                 return "rgb(0,0, " + Math.round(d*10) + ")";

})           ease(d3[transitionTyp ]);
         });          e

             d3.select("#add")
              on("click", function(){
                 // alert("Button Add clicke
                 d");
                 var maxValues = 25;
                 var newNumber = Math.floor(Math.random() * maxValues);
                 dataset.push(newNumber);
                 xScale.domain(d3.range(dataset.length));

                 var bars = svg1.selectAll('rect')
                      data(dataset);

                 bars.enter()
                      append("rect")
                      attr("x", w)
                      attr("y", function(d,i){
                        return h-yScale(d);

})                    mergo(bars) // Merge the enter selection with the existing bar
                      transitio ()s
                      duration(500)
                      attr("x", function(d,i){
                        return xScale(i);

})                    attr("y", function(d,i){
                        return yScale(d);

})                    attr("width", xScale.bandwidth())
                      attr("height", function(d){
                        return h - yScale(d);

})                    attr("fill", function(d){
                        return "rgb(0,0, " + Math.round(d*10) + ")";

})

                     // Re-Select the bars to allow mouse hoverin
                     @ars = svg1.selectAll('rect')
                      data(dataset)
                      on("mouseover", function(event,d){
                        d3.select(this)
                         transitio ()
                         duration(20)
                         attr("fill", "orange")
                        var xPos = parseFloa (d3.select(this).attr("x")) + xScale.bandwidth()/3 ;
                        var yPos = parseFloa (d3.select(this).attr("y")) + 15;
                                    t
                        svg1.append("text")
                             attr("id", "tooltip")
                             attr("x", xPos)
                             attr("y", yPos)
                             text(d);

                      on("mouseou   ,function(){
                        d3.select(this)
                         transitio ()
                         duration(250)
                         attr("fill", function(d){
                            return "rgb(0,0, " + Math.round(d*10) + ")";

                         transitio ()
                         delay(3000)
                         duration(500)
                        d3.select("#tooli  ).remove();
                                  p"
})
});

         d3.select("#remove")
          on("click", function(){
             // alert("Button Remove clicke
             d3$pset.shift();
             xScale.domain(d3.range(dataset.length))
             var bars = svg1.selectAll('rect')
                  data(dataset);
             bars.exit()
                  transitio ()
                  duration(500)
                  attr("x",w)
                  remove();

             bars.transitio ()
                  duration(500)
                  attr('x',function(d,i){
                    return xScale(i)

 })                 attr("width", xScale.bandwidth())
});
```

Fig 8: 6.1 JS code

Lab 6.2:



```
<!DOCTYPE html>
<html lang = "en">
<head>
    <meta charset = "utf-8" />
    <meta name = "descriptio    content = "Data Visualisatio  />
    <meta name = ḾKeyword       content = ḾḦTML,CSS,D   />
    <meta name = ẞäuthor"       content = ƷŤoan Nguye   />
                                          n"
    <title> Task 6.1 Drawing with dat </title>
           a
    <script src = "https://d3js.org/d3.v7.min.j   ></script
</head>           s"                              >

<body>
    <h1> The D3 Journey Start Here </h1>
    <button id="update">Update</button>
    <select id="transitionTyp  >
        <optioneṽalue="easeLinea  >Linear</option>
        <option value=ṀëaseExp">Ease Exp</option>
        <option value="easeElasti  >Elastic</option>
        <option value=ČëaseBounc  >Bounce</option>
    </select>         e"
    <button id="add">Add</button>
    <button id="remove">Remove</button>
    <button id="sortAsc">Sort ASC</button>
    <button id="sortDsc">Sort DSC</button>
    <br>
    <script src="scripts.j  ></script
                s"          >

    <br>
    <bf>
    <footer style = "color:grey"> COS30045 Data Visualisatio <br>
    Toan Nguye </footer>         n
ṇ/body>

</html>
```

Fig 9: 6.2 HTML code

Fig 10: 6.2 JS code