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Student ID: 104180605

Lab 5.1-6.2

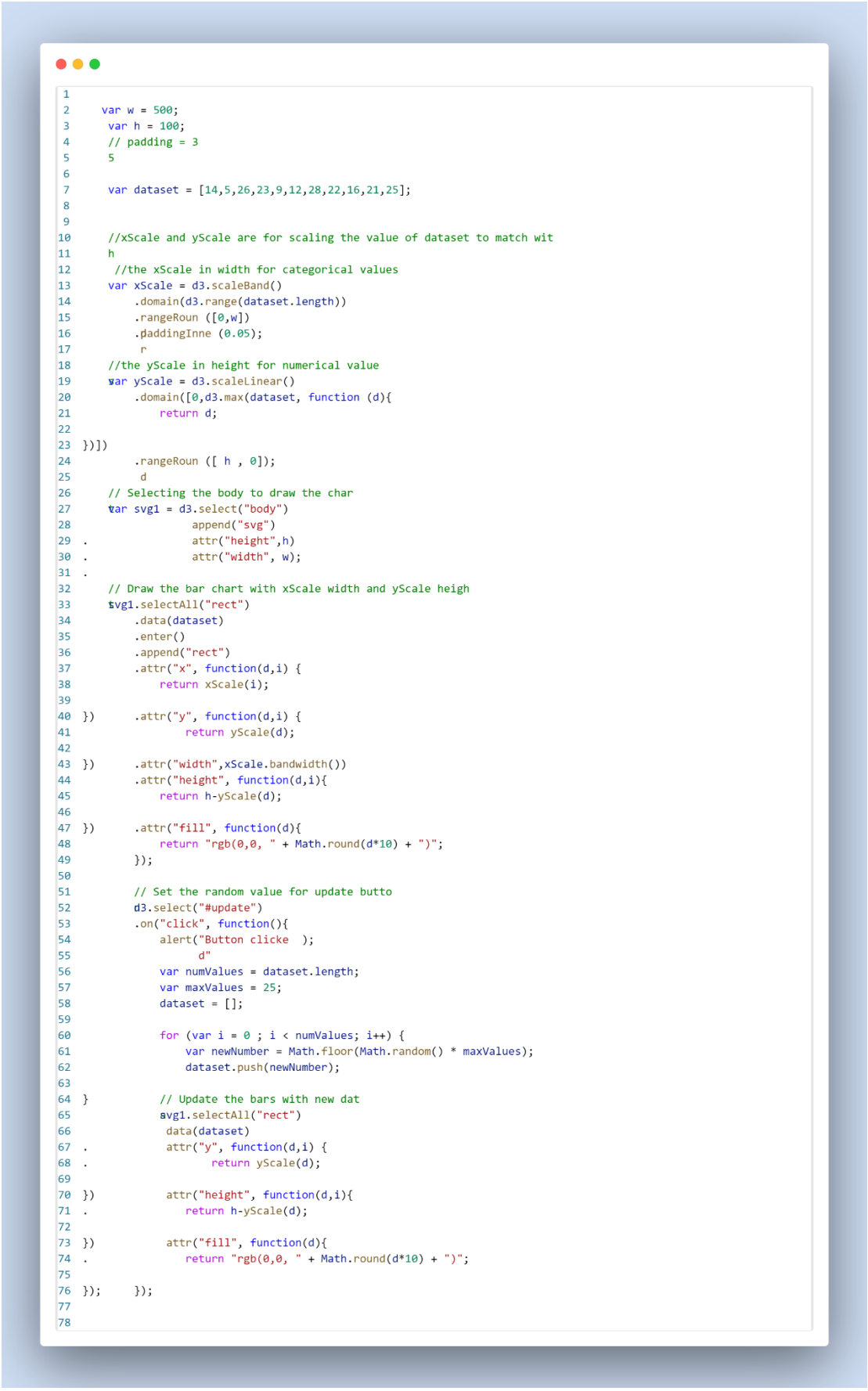
Lab 5.1:

```
<!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>
```

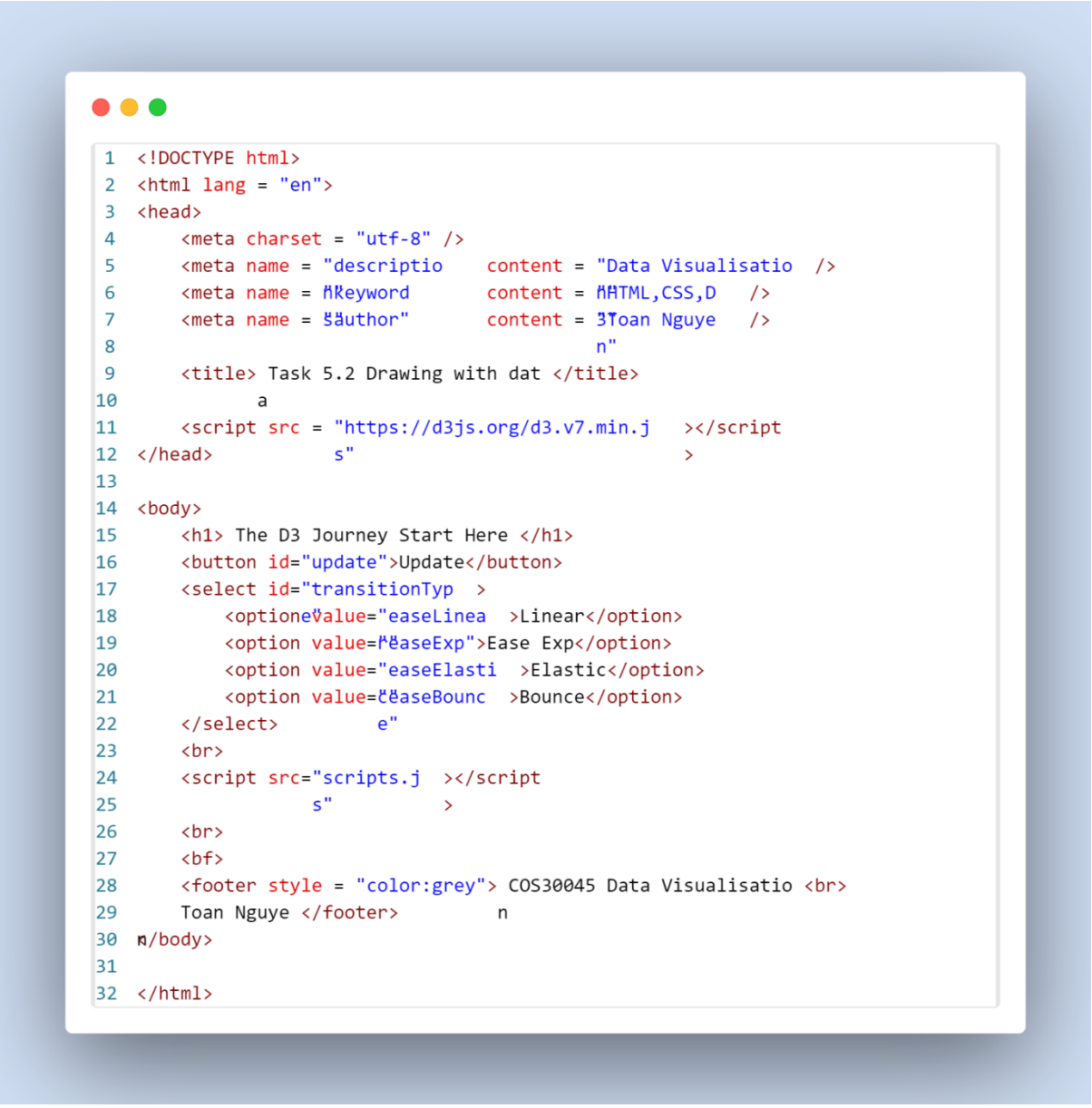
Fig 1: 5.1 HTML code



```
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:

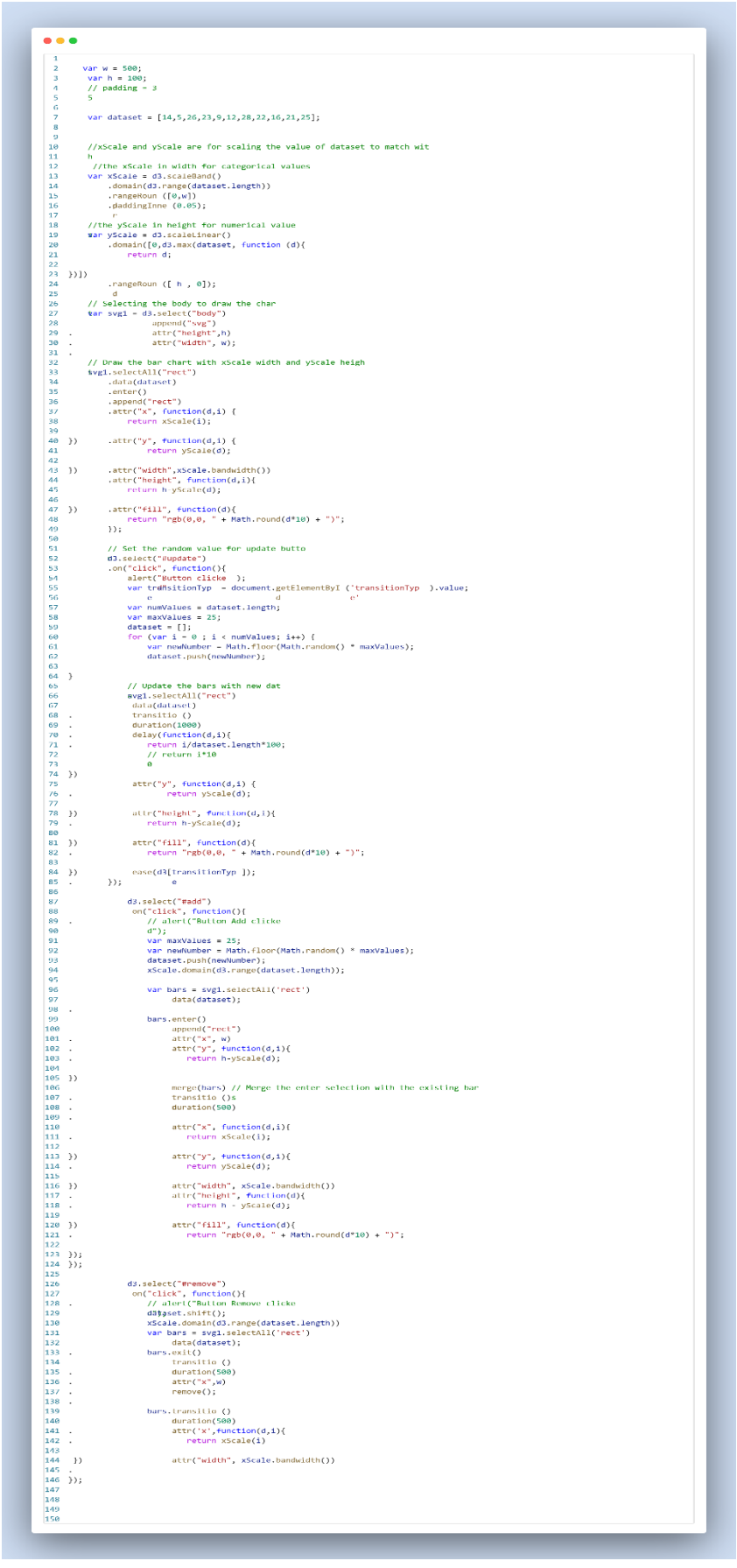
```
<!DOCTYPE html>
<html lang = "en">
<head>
    <meta charset = "utf-8" />
    <meta name = "descriptio    content = "Data Visualisatio  />
    <meta name = ṀKeyword       content = ṀṀTML,CSS,D   />
    <meta name = ṩ̈author"       content = ȝ̈oan Nguye   />
                                          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  >
        <optioneV̈alue="easeLinea  >Linear</option>
        <option value=ṀëaseExp">Ease Exp</option>
        <option value="easeElasti  >Elastic</option>
        <option value=ëëaseBounc  >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
             d3$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 = "Keyword       content = "HTML,CSS,D   />
    <meta name = "author"       content = "Toan 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  >
        <optione value="easeLinea  >Linear</option>
        <option value="easeExp">Ease Exp</option>
        <option value="easeElasti  >Elastic</option>
        <option value="easeBounc  >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

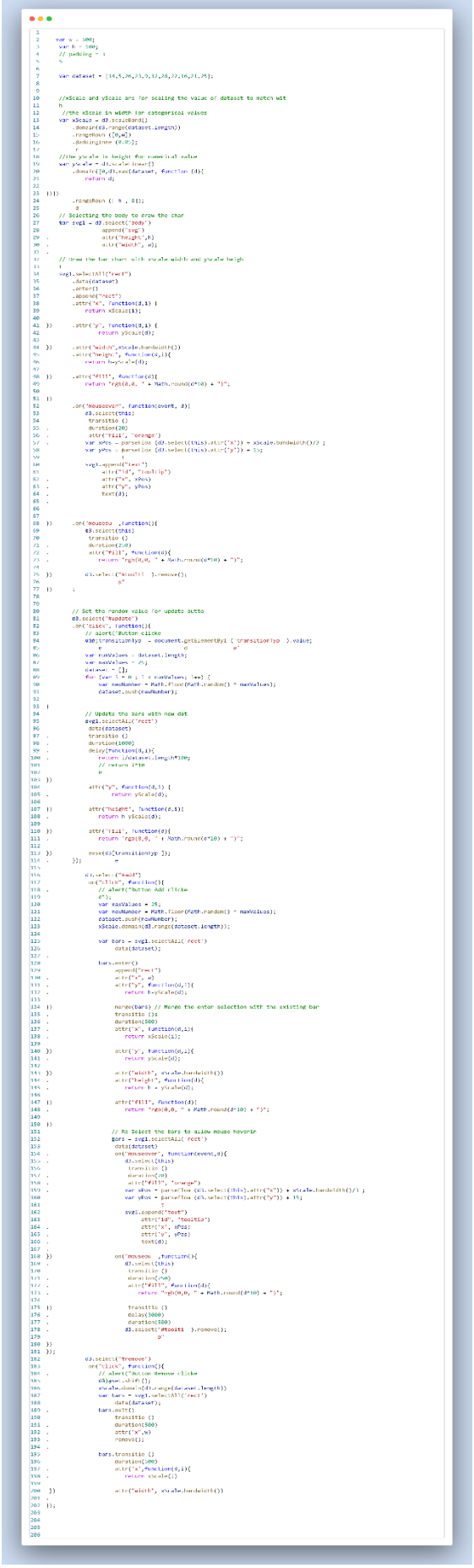
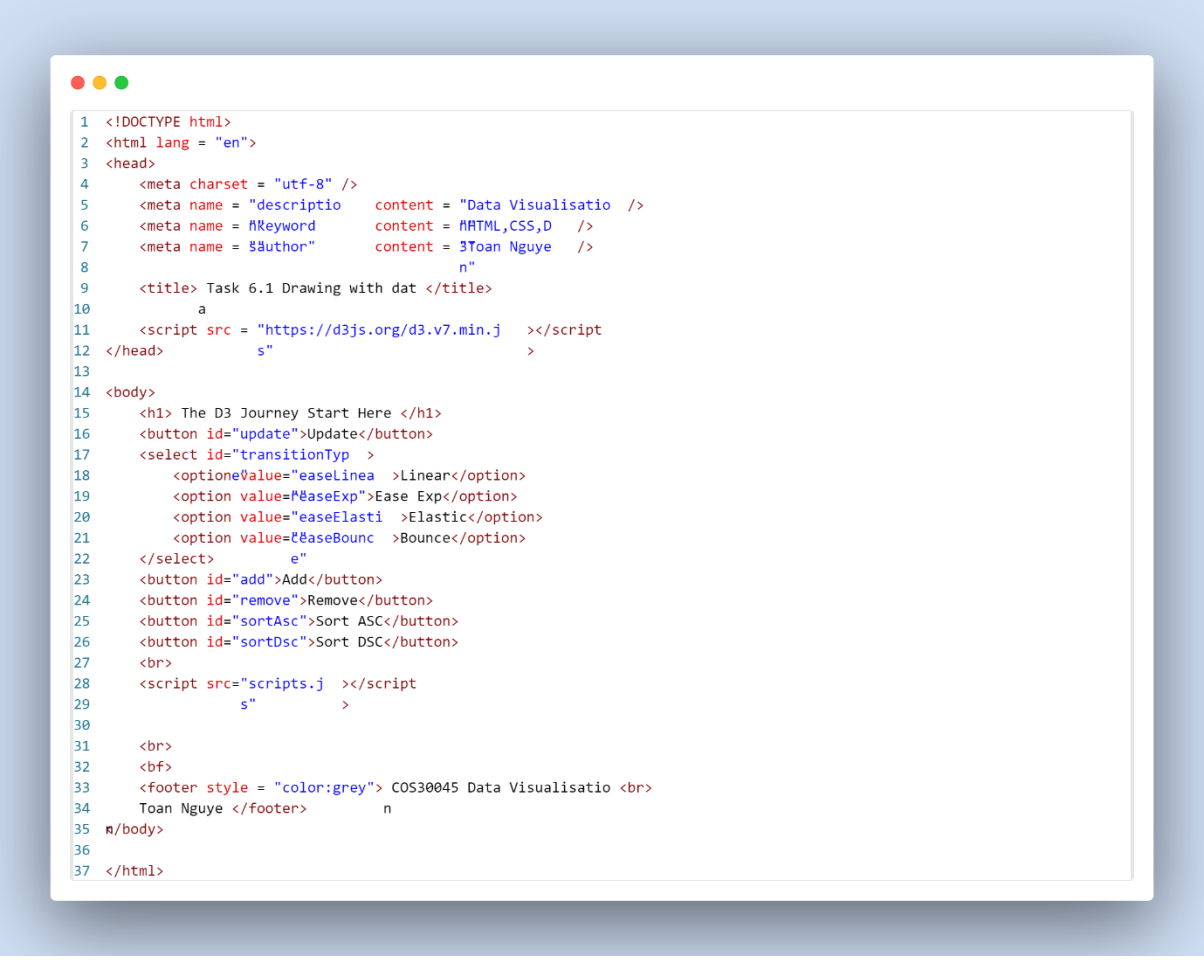


Fig 8: 6.1 JS code

Lab 6.2:



```
<!DOCTYPE html>
<html lang = "en">
<head>
    <meta charset = "utf-8" />
    <meta name = "descriptio    content = "Data Visualisatio  />
    <meta name = ЍKeyword       content = ЍHTML,CSS,D   />
    <meta name = ЅЭauthor"       content = ЗЎoan 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  >
        <optioneЎalue="easeLinea  >Linear</option>
        <option value=ЍёaseExp">Ease Exp</option>
        <option value="easeElasti  >Elastic</option>
        <option value=ЂёaseBounc  >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
n/body>

</html>
```

Fig 9: 6.2 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     t
34     svg1.selectAll("rect")
35         .data(dataset)
36         .enter()
37         .append("rect")
38         .attr("x", function(d,i) {
39             return xScale(i);
40
41 })      .attr("y", function(d,i) {
42                 return yScale(d);
43
44 })      .attr("width",xScale.bandwidth())
45         .attr("height", function(d,i){
46             return h-yScale(d);
47
48 })      .attr("fill", function(d){
49             return "rgb(0,0, " + Math.round(d*10) + ")";
50
51 })
52         .on("mouseover", function(event, d){
53             d3.select(this)
54              transitio ()
55 .           duration(20)
56 .           attr("fill", "orange")
57 .           var xPos = parseFloa (d3.select(this).attr("x")) + xScale.bandwidth()/3 ;
58             var yPos = parseFloa (d3.select(this).attr("y")) + 15;
59                      t
60             svg1.append("text")
61                  attr("id", "tooltip")
62 .                attr("x", xPos)
63 .                attr("y", yPos)
64 .                text(d);
65 .
66
67
68 })      .on("mouseou   ,function(){
69             d3.select(this)
70              transitio ()
71 .           duration(250)
72 .           attr("fill", function(d){
73 .              return "rgb(0,0, " + Math.round(d*10) + ")";
74
75 })          d3.select("#toolti  ).remove();
76                      p"
77 })      ;
78
79
80         // Set the random value for update butto
81         d3.select("#update")
82         .on("click", function(){
83             // alert("Button clicke
84             d3();transitionTyp  = document.getElementByI ('transitionTyp  ).value;
85                 e                          d                e'
86             var numValues = dataset.length;
87             var maxValues = 25;
88             dataset = [];
89             for (var i = 0 ; i < numValues; i++) {
90                 var newNumber = Math.floor(Math.random() * maxValues);
91                 dataset.push(newNumber);
92
93 }
94             // Update the bars with new dat
95             svg1.selectAll("rect")
96              data(dataset)
97 .           transitio ()
98 .           duration(400)
99 .           delay(function(d,i){
100 .             return i/dataset.length*100;
101               // return i*10
102               0
103 })
104            attr("y", function(d,i) {
105 .                 return yScale(d);
106
107 })          attr("height", function(d,i){
108 .              return h-yScale(d);
109
110 })          attr("fill", function(d){
111 .              return "rgb(0,0, " + Math.round(d*10) + ")";
112
113 })          ease(d3[transitionTyp ]);
114 .       });          e
115
```

Fig 10: 6.2 JS code part 1

```
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)           //Start of transitio
        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) + ")";


       // Re-Select the bars to allow mouse hoverin
       bars = 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("#toolti  ).remove();
                    p"
})
});       console.log(dataset);
          d3.select("#remove")
           on("click", function(){
              // alert("Button Remove clicke
              d3.dataset.shift();
              xScale.domain(d3.range(dataset.length))
              var bars = svg1.selectAll('rect')
                  data(dataset);
              console.log(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());

});
          d3.select('#sortAs  )
           on("click", function(){

              var sortBars = function(){
                  svg1.selectAll('rect')
                   sort(function(a,b){
                      return d3.ascending(a,b);

                   transitio ()
                   duration(500)
                   attr("x", function(d,i){
                      return xScale(i);


              sortBars();


});
          d3.select('#sortDs  )
           on("click", function(){
              var sortBars = function(){
                  svg1.selectAll('rect')
                   sort(function(a,b){
                      return d3.descendin (a,b);
                                g
                   transitio ()
                   duration(500)
                   attr("x", function(d,i){
                      return xScale(i);


              sortBars();

});
```

Fig 11: 6.2 JS code part 2