

TALLINNA TEHNIKAÜLIKOOL
School of Information Technologies

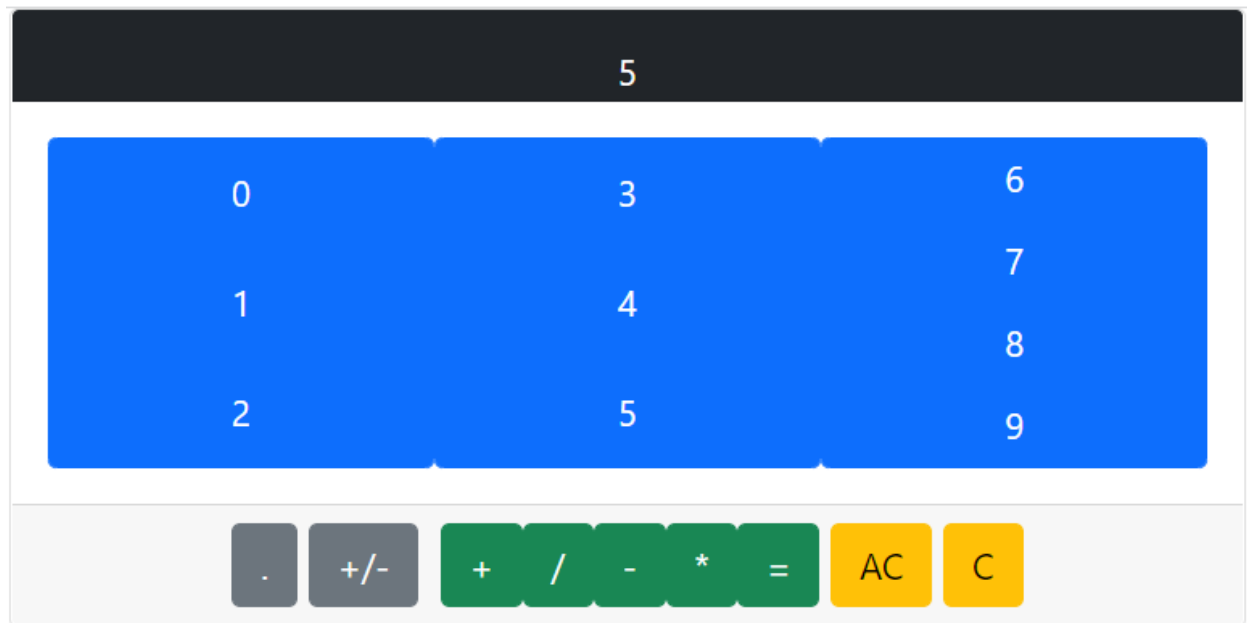
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HOMEWORK 2 – CALCULATOR ON JS

JavaScript

TALLINN 2022

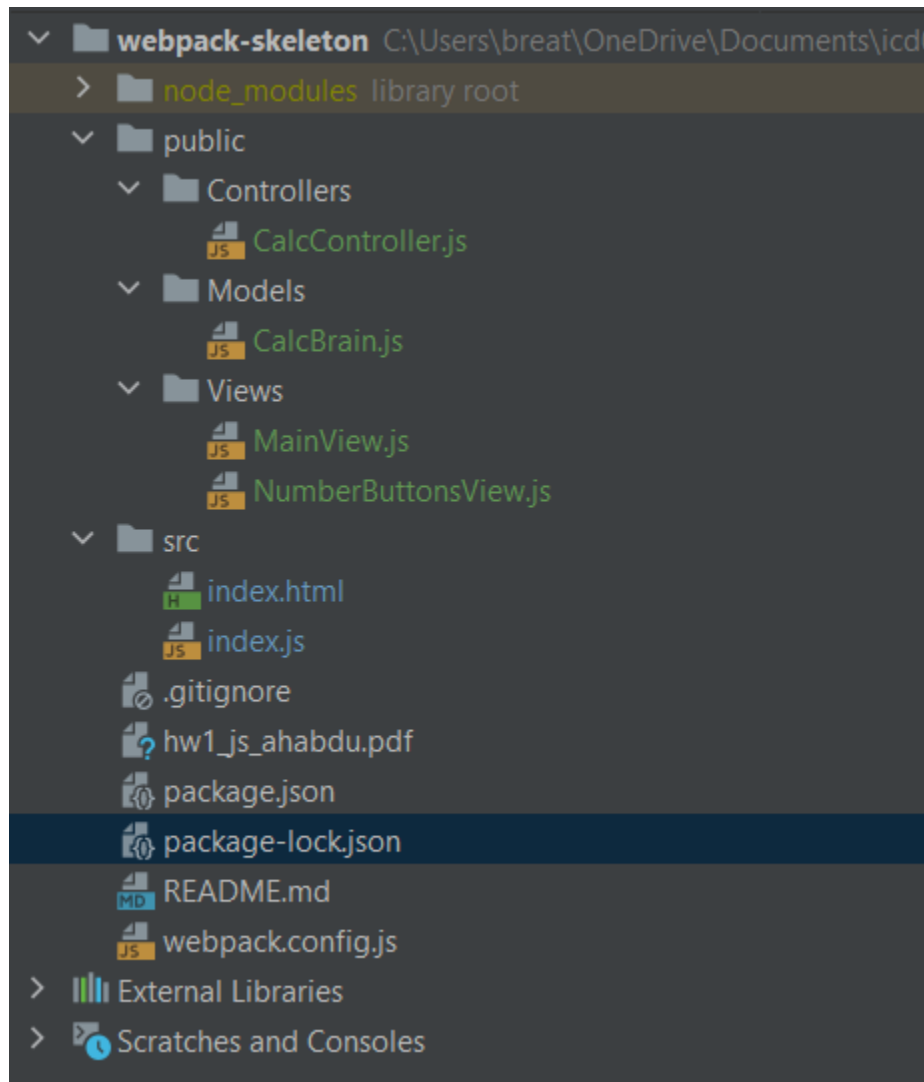
SCREENSHOTS



You can check my code below or in my school repository:

<https://gitlab.cs.ttu.ee/ahabdu/icd0006-21-22-s>

PROJECT STRUCTURE



HTML CODE

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <link
href="https://cdn.jsdelivr.net/npm/bootstrap@5.1.3/dist/css/bootstrap.min.css
" rel="stylesheet" integrity="sha384-
1BmE4kWBq78iYhFldvKuhfTAU6auU8tT94WrHftjDbrCEXSU1oBoqyl2QvZ6jIW3"
crossorigin="anonymous">
    <title>Calc</title>
</head>
<body>

<div class="container" >
</div>

</body>
<script
src="https://cdn.jsdelivr.net/npm/bootstrap@5.1.3/dist/js/bootstrap.bundle.mi
n.js" integrity="sha384-
ka7Sk0Gln4gmtz2MlQnikT1wXgYsOg+OMhuP+IlRH9sENBO0LRn5q+8nbTov4+1p"
crossorigin="anonymous"></script>
</html>
```

JAVASCRIPT CODE:

Index.js

```
import CalcBrain from "../public/Models/CalcBrain";
import MainView from "../public/Views/MainView";
import NumberButtonsView from "../public/Views/NumberButtonsView";
import CalcController from "../public/Controllers/CalcController";

let btnsView = NumberButtonsView();
let viewer = MainView(btnsView);

let my_calc = new CalcBrain();
let my_controller = new CalcController(my_calc);
document.querySelector('.container').appendChild(viewer)

document.querySelector('#quickmath').addEventListener("click", (e) => {
  my_controller.setValues(e, false, false)
})
document.querySelector('#dot').addEventListener("click", (e) => {
  my_controller.setValues(null, true, false)
})
document.querySelector('#toplusorminus').onclick= function () {
  my_controller.setValues(null, false, true)
}
document.querySelector('#clearnum').onclick= function () {
  my_controller.setValues(null, false, false, true)
}

document.querySelector('#plusik').onclick = function () {
  my_controller.doCalculations('plus')
}
document.querySelector('#minusik').onclick = function () {
  my_controller.doCalculations('minus')
}
document.querySelector('#multiply').onclick = function () {
  my_controller.doCalculations('multiply')
}
document.querySelector('#divide').onclick = function () {
  my_controller.doCalculations('divide')
}
document.querySelector('#todefualt').onclick = function () {
  my_controller.toDefaultValues()
}

document.querySelector('#equals').onclick = function () {
  my_controller.doCalculations(my_calc.getLastOperation());
}
```

Calcbrain.js

```
export default class CalcBrain {

  constructor() {
    //Numbers
    this.numberOne = null;
    this.numberTwo = null;
    this.result = null;
    this.additionalNumber = null;

    //Operations
    this.plus = false
    this.minus = false
    this.divide = false
    this.multiply = false

    this.lastOperation = '';
  }

  getNumberOne() {
    return this.numberOne;
  }

  setNumberOne(num) {
    this.numberOne = num;
  }

  getNumberTwo() {
    return this.numberTwo;
  }

  setNumberTwo(num) {
    this.numberTwo = num;
  }

  getResult() {
    return this.result;
  }

  getAdditionalNumber() {
    return this.additionalNumber;
  }

  setAdditionalNumber(num) {
    this.additionalNumber = num;
  }

  setDefault() {
    this.numberOne = null;
    this.numberTwo = null;
    this.result = null;
    this.additionalNumber = null;
    this.plus = false
    this.minus = false
    this.divide = false
    this.multiply = false
  }
}
```

```

        this.lastOperation = '';
    }
    changeNumberNegativeOrPositive(number) {
        if (number == "first" && this.numberOne != null) {
            if (this.numberOne.indexOf("-") >= 0) {
                this.numberOne = this.numberOne.substring(1)
            } else {
                this.numberOne = "-" + this.numberOne
            }
            return this.numberOne
        }
        if (number == "second" && this.numberTwo != null) {
            if (this.numberTwo.indexOf("-") >= 0) {
                this.numberTwo = this.numberTwo.substring(1)
            } else {
                this.numberTwo = "-" + this.numberTwo
            }
            return this.numberTwo
        }
        if (number == "additional" && this.additionalNumber != null) {
            if (this.additionalNumber.indexOf("-") >= 0) {
                this.additionalNumber = this.additionalNumber.substring(1)
            } else {
                this.additionalNumber = "-" + this.additionalNumber
            }
            return this.additionalNumber
        }
        return "";
    }
    clearNumber(number) {
        if (number == "first" && this.numberOne != null) {
            if (this.numberOne.replace(/\D/g, '').length > 1) {
                this.numberOne = this.numberOne.substring(0,
this.numberOne.length - 1)
            } else {
                this.numberOne = "0";
            }
            return this.numberOne
        }
        if (number == "second" && this.numberTwo != null) {
            if (this.numberTwo.replace(/\D/g, '').length > 1) {
                this.numberTwo = this.numberTwo.substring(0,
this.numberTwo.length - 1)
            } else {
                this.numberTwo = "0";
            }
            return this.numberTwo
        }
        if (number == "additional" && this.additionalNumber != null) {
            if (this.additionalNumber.replace(/\D/g, '').length > 1) {
                this.additionalNumber = this.additionalNumber.substring(0,
this.additionalNumber.length - 1)
            } else {
                this.additionalNumber = "0";
            }
            return this.additionalNumber
        }
    }
}

```

```

        return "";
    }
    doMath(operation) {
        if (operation == 'minus') {
            this.setMinusTrueOthersFalse()
            if (this.minus == true && this.numberOne != null &&
this.numberTwo != null && this.result == null) {
                this.result = parseFloat(this.numberOne) -
parseFloat(this.numberTwo);
                return this.result;
            } else if (this.minus == true && this.numberOne != null &&
this.numberTwo != null && this.result != null
&& this.additionalNumber != null) {
                this.result = parseFloat(this.result) -
parseFloat(this.additionalNumber);
                this.additionalNumber = null;
                return this.result;
            }
        } else if (operation == 'plus') {
            console.log("ples")
            this.setPlusTrueOthersFalse()
            if (this.plus == true && this.numberOne != null && this.numberTwo
!= null && this.result == null) {
                this.result = parseFloat(this.numberOne) +
parseFloat(this.numberTwo);
                return this.result;
            } else if (this.plus == true && this.numberOne != null &&
this.numberTwo != null && this.result != null
&& this.additionalNumber != null) {
                this.result = parseFloat(this.result) +
parseFloat(this.additionalNumber);
                this.additionalNumber = null;
                return this.result;
            }
        } else if (operation == 'divide') {
            this.setDivideTrueOthersFalse()
            if (this.divide == true && this.numberOne != null &&
this.numberTwo != null && this.result == null) {
                this.result = parseFloat(this.numberOne) /
parseFloat(this.numberTwo);
                return this.result;
            } else if (this.divide == true && this.numberOne != null &&
this.numberTwo != null && this.result != null
&& this.additionalNumber != null) {
                this.result = parseFloat(this.result) /
parseFloat(this.additionalNumber);
                this.additionalNumber = null;
                return this.result;
            }
        } else if (operation == 'multiply') {
            this.setMultiplyTrueOthersFalse()
            if (this.multiply == true && this.numberOne != null &&
this.numberTwo != null && this.result == null) {
                this.result = parseFloat(this.numberOne) *
parseFloat(this.numberTwo);

```



```

        return this.result;
    } else if (this.multiply == true && this.numberOne != null &&
this.numberTwo != null && this.result != null
        && this.additionalNumber != null) {
        this.result = parseFloat(this.result) *
parseFloat(this.additionalNumber);
        this.additionalNumber = null;
        return this.result;
    }
    }
    return this.result;
}

getPlus() {
    return this.plus;
}

getMinus() {
    return this.minus;
}

getMultiply() {
    return this.multiply;
}

getDivide() {
    return this.divide;
}

getLastOperation() {
    return this.lastOperation;
}

setPlusTrueOthersFalse() {
    this.plus = true;
    this.lastOperation = 'plus'

    this.minus = false;
    this.multiply = false;
    this.divide = false;
}

setMinusTrueOthersFalse() {
    this.minus = true;
    this.lastOperation = 'minus'

    this.plus = false;
    this.multiply = false;
    this.divide = false;
}

setMultiplyTrueOthersFalse() {
    this.multiply = true;
    this.lastOperation = 'multiply'

    this.plus = false;
    this.minus = false;

```

```
        this.divide = false;
    }

    setDivideTrueOthersFalse() {
        this.divide = true;
        this.lastOperation = 'divide'

        this.plus = false;
        this.minus = false;
        this.multiply = false;
    }
}
```

MainView.js

```
export default function MainView(btns) {
  let content = document.createElement('div');
  content.classList = "card text-center w-50";
  content.style.margin = "auto";
  let spanDiv = document.createElement('div');
  spanDiv.classList = "card-header bg-dark w-100 h-100";
  content.append(spanDiv)
  let span = document.createElement('span');
  span.classList = "d-block p-2 bg-dark text-white";
  span.style.height = "24px";
  spanDiv.append(span)

  let body = document.createElement('div');
  body.classList = "card-body";
  content.append(body)

  let btnGroup = document.createElement('div');
  btnGroup.classList = "btn-group w-100 justify-content-center";
  btnGroup.id = "quickmath";

  btnGroup.innerHTML = btns;
  body.append(btnGroup);

  let footer = document.createElement('div');
  footer.classList = "card-footer";

  let plus = document.createElement('button');
  plus.classList = "btn btn-success";
  plus.id = "plusik";
  plus.innerText = "+";

  let minus = document.createElement('button');
  minus.classList = "btn btn-success";
  minus.id = "minusik";
  minus.innerText = "-";

  let equals = document.createElement('button');
  equals.classList = "btn btn-success";
  equals.id = "equals";
  equals.innerText = "=";

  let multiply = document.createElement('button');
  multiply.classList = "btn btn-success";
  multiply.id = "multiply";
  multiply.innerText = "*";

  let divide = document.createElement('button');
  divide.classList = "btn btn-success";
  divide.id = "divide";
  divide.innerText = "/";

  let todefault = document.createElement('button');
  todefault.classList = "btn btn-warning";
  todefault.style.marginLeft = "5px";
```

```

todefault.id = "todefault";
todefault.innerText = "AC";

let dot = document.createElement('button');
dot.classList = "btn btn-secondary";
dot.style.marginRight = "5px";
dot.id = "dot";
dot.innerText = ".";

let toplusorminus = document.createElement('button');
toplusorminus.classList = "btn btn-secondary";
toplusorminus.style.marginRight = "10px";
toplusorminus.id = "toplusorminus";
toplusorminus.innerText = "+/-";

let clearnum = document.createElement('button');
clearnum.classList = "btn btn-warning";
clearnum.style.marginLeft = "5px";
clearnum.id = "clearnum";
clearnum.innerText = "C";

footer.append(dot)
footer.append(toplusorminus)
footer.append(plus)
footer.append(divide)
footer.append(minus)
footer.append(multiply)
footer.append(equals)
footer.append(todefault)
footer.append(clearnum)

content.append(footer)

return content;
}

```

NumberButtonsView.js

```
export default function NumberButtonsView() {
  let numberButtons = "";
  let iter = 0;
  for (let i = 0; i < 3; i++) {
    numberButtons = numberButtons + '<div class="btn-group-vertical w-100">';
    for (let j = 0; j < 3; j++) {
      numberButtons = numberButtons +
        `<button class="btn btn-primary num" value="${iter}"
number="${iter}">${iter}</button>`
      iter++;
      if (iter == 8) {
        numberButtons = numberButtons +
          `<button class="btn btn-primary num" value="${iter}"
number="${iter}">${iter}</button>`
        iter++;
      }
    }
    numberButtons = numberButtons + '</div>';
  }

  return numberButtons;
}
```

CalcController.js

```
export default class CalcController {
  constructor(calcBrain) {
    this.calc = calcBrain
  }

  showNum(num = "") {
    if (num !== null) {
      document.querySelector("span").innerText = "";
      let nums = num + "";
      if (nums.indexOf(".") >= 0) {
        document.querySelector("span").innerText = nums;
      } else { // to not return number starting with 0
        document.querySelector("span").innerText = parseFloat(nums) +
"";
      }
    } else {
      document.querySelector("span").innerText = "";
    }
  }

  setValues(event = null, dot = false, toplusorminus = false, clearnum =
false) {
    let number = 0;
    if (event !== null) {
      number =
parseFloat(event.target.closest('.num').getAttribute('number'));
    }
    if (this.calc.getNumberOne() === null && toplusorminus === false &&
clearnum === false) { // we are in first number scope and setting first number
for it
      this.calc.setNumberOne(number + "");
      this.showNum(number)
    } else if (this.calc.getPlus() === false && this.calc.getMinus() ===
false && this.calc.getDivide() === false
      && this.calc.getMultiply() === false && this.calc.getNumberOne()
!= null
      && this.calc.getResult() === null) { // we are in first number
scope and adding next numbers for it
      if (dot === true && this.calc.getNumberOne().indexOf(".") <= -1 &&
toplusorminus === false) {
        let numStr = this.calc.getNumberOne() + "."; // adding one
dot
        this.calc.setNumberOne(numStr)
        this.showNum(numStr)
      } else if (dot === false && toplusorminus === false && clearnum ===
false) { // adding next numbers for first number
        let numStr = this.calc.getNumberOne() + "" + number;
        this.calc.setNumberOne(numStr)
        this.showNum(numStr)
      }
    }
    if (toplusorminus === true) { // change num to positive or negative
      let num = this.calc.changeNumberNegativeOrPositive('first')
      this.showNum(num)
    }
  }
}
```

```

        if(clearnum == true){
            let num = this.calc.clearNumber('first')
            this.showNum(num)
        }
    }
    if (this.calc.getNumberTwo() == null && (this.calc.getPlus() == true
|| this.calc.getMinus() == true
    || this.calc.getDivide() == true || this.calc.getMultiply() ==
true) && this.calc.getResult() == null && toplusorminus == false && clearnum
== false) {
        this.calc.setNumberTwo(number + "");
        this.showNum(number)
    } else if ((this.calc.getPlus() == true || this.calc.getMinus() ==
true || this.calc.getDivide() == true
    || this.calc.getMultiply() == true) && this.calc.getNumberTwo()
!= null && this.calc.getResult() == null) {
        if (dot == true && this.calc.getNumberTwo().indexOf(".") <= -1 &&
toplusorminus == false) {
            let numStr = this.calc.getNumberTwo() + ".";
            this.calc.setNumberTwo(numStr)
            this.showNum(numStr)
        } else if (dot == false && toplusorminus == false && clearnum ==
false) {
            let numStr = this.calc.getNumberTwo() + "" + number;
            this.calc.setNumberTwo(numStr);
            this.showNum(numStr)
        }
    }
    if(toplusorminus == true){
        let num = this.calc.changeNumberNegativeOrPositive('second')
        this.showNum(num)
    }
    if(clearnum == true){
        let num = this.calc.clearNumber('second')
        this.showNum(num)
    }
}

    if (this.calc.getResult() != null && (this.calc.getPlus() == true ||
this.calc.getMinus() == true
    || this.calc.getDivide() == true || this.calc.getMultiply()
== true)
    && this.calc.getAdditionalNumber() == null && toplusorminus ==
false) {
        this.calc.setAdditionalNumber(number + "");
        this.showNum(number)
    } else if (this.calc.getResult() != null && (this.calc.getPlus() ==
true || this.calc.getMinus() == true
    || this.calc.getDivide() == true || this.calc.getMultiply()
== true)
    && this.calc.getAdditionalNumber() != null) {
        if (dot == true && this.calc.getAdditionalNumber().indexOf(".")
<= -1 && toplusorminus == false) {
            let numStr = this.calc.getAdditionalNumber() + ".";
            this.calc.setAdditionalNumber(numStr)
            this.showNum(numStr)
        } else if (dot == false && toplusorminus == false && clearnum ==
false) {

```

```
        let numStr = this.calc.getAdditionalNumber() + "" + number;
        this.calc.setAdditionalNumber(numStr);
        this.showNum(numStr)
    }
    if(toplusorminus == true){
        let num =
this.calc.changeNumberNegativeOrPositive('additional')
        this.showNum(num)
    }
    if(clearnum == true){
        let num = this.calc.clearNumber('additional')
        this.showNum(num)
    }
}

doCalculations(operation) {
    let res = this.calc.doMath(operation)
    this.showNum(res)
}

toDefaultValues() {
    this.calc.setDefault();
    this.showNum(null)
}
}
```