왕혜수 연습문제

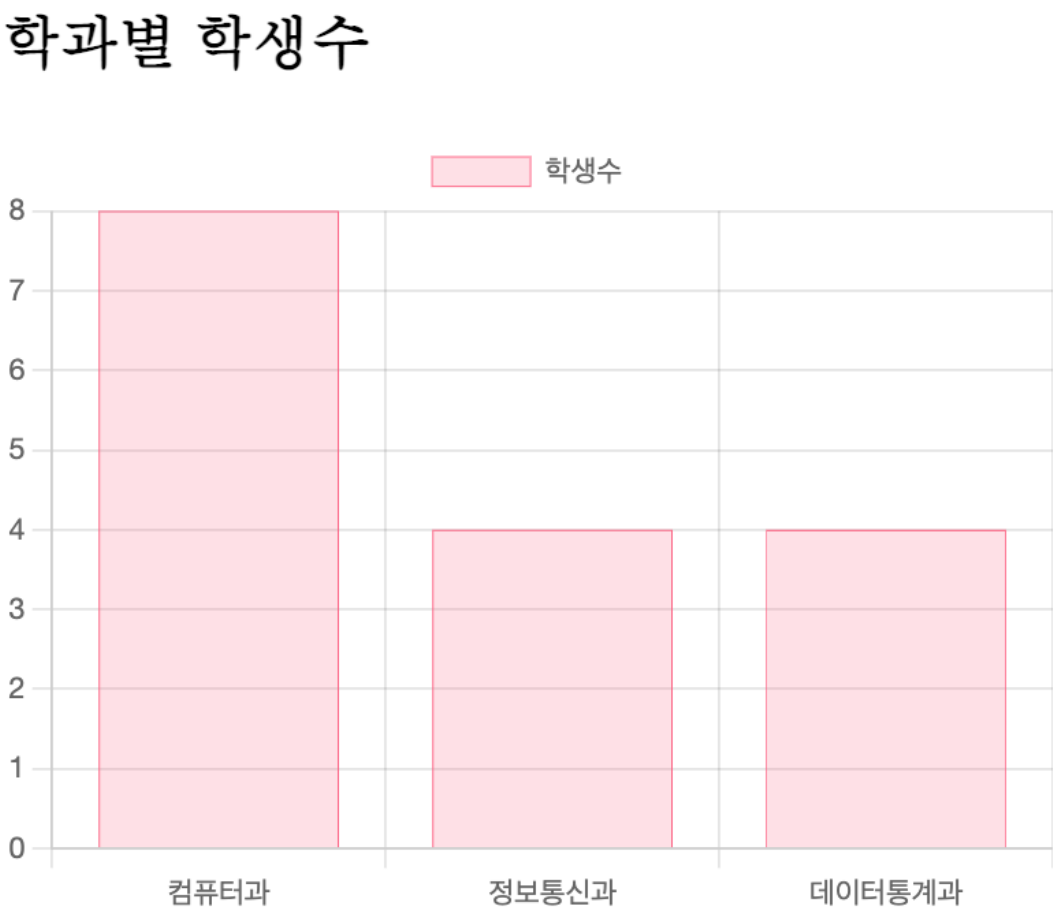
> 2022-03-31

문제1

```
<!DOCTYPE html>
<html lang="en">
  <head>
    <meta charset="UTF-8" />
    <meta http-equiv="X-UA-Compatible" content="IE=edge" />
    <meta name="viewport" content="width=device-width, initial-scale=1.0"
/>
    <title>Document</title>
    <style>
      .subplot {
        float: left;
        width: 33.3%;
        padding: 50px;
        box-sizing: border-box;
      }
      .subplot-item {
        width: auto;
        height: 320px;
      }
    </style>
  </head>
  <body>
    <div class="subplot">
      <h2>학과별 학생수</h2>
      <div class="subplot-item">
        <canvas id="mychart2"></canvas>
      </div>
    </div>
    <div class="subplot">
      <h2>학년에따른 평균 나이변화</h2>
      <div class="subplot-item">
        <canvas id="mychart1"></canvas>
      </div>
    </div>
    <div class="subplot">
      <h2>학년변 평균키와 평균몸무게</h2>
      <div class="subplot-item">
        <canvas id="mychart3"></canvas>
      </div>
    </div>

    <script
src="https://cdnjs.cloudflare.com/ajax/libs/Chart.js/3.7.1/chart.min.js">
</script>
```

```
    <script src="dataset.js"></script>
    <script>
      //문제1

      //각학생들의 학과를 도출
      const deptno = [];
      for (let i = 0; i < student.length; i++) {
        deptno[i] = student[i].deptno;
      }

      //중복되는 않는 학과 따로 배열화
      const department = [];
      deptno.map((i) => {
        if (department.indexOf(i) == -1) {
          department.push(i);
        }
      });
      console.log(department);

      //학과별 학생수를 카운트하기 위한 숫자0으로만 이루어진 배열 생성
      const studentCount = [];
      department.map((i) => {
        studentCount.push(0);
      });

      //department[i] 와 deptno 원소가 같은때마다 studentCount[i] 증가
      for (let i = 0; i < studentCount.length; i++) {
        deptno.map((v) => {
          if (department[i] == v) {
            studentCount[i]++;
          }
        });
      }
      console.log(studentCount);

      const mychart2 = document.getElementById("mychart2");

      /*기본 막대 그래프 그리기*/
      new Chart(mychart2, {
        type: "bar",
        data: {
          labels: department,
          datasets: [
            {
              label: "학생수",
              data: studentCount,
              borderWidth: 0.5,
              borderColor: ["rgba(255,99,132,1)"],
              backgroundColor: ["rgba(255,99,132,0.2)"],
            },
          ],
        },
        options: {
          maintainAspectRatio: false,
```

```
          indexAxis: "x",
        },
      });
    </script>
  </body>
</html>
```

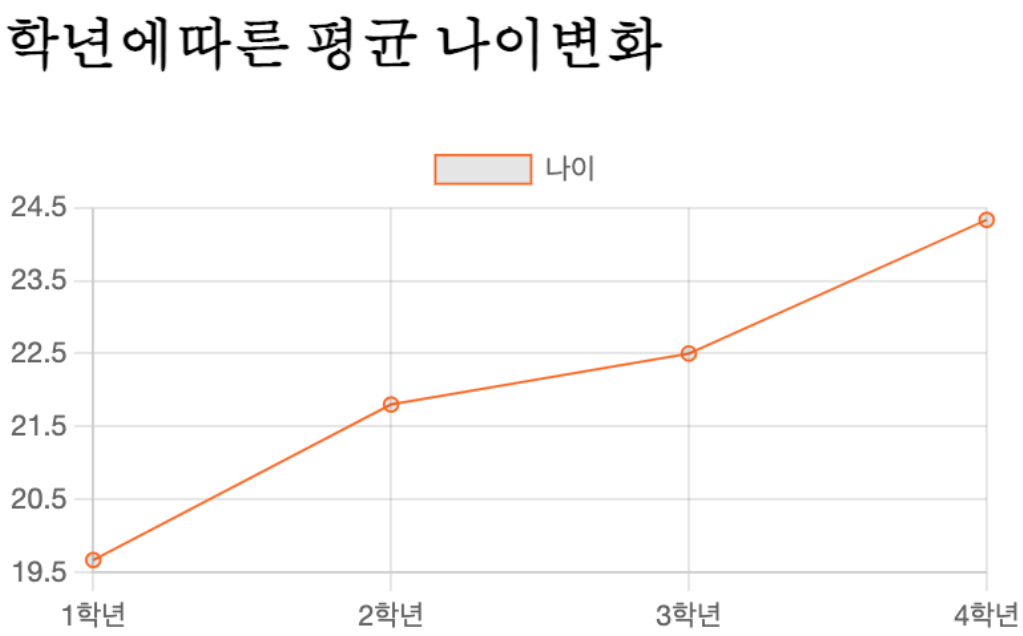


문제2

```
<!DOCTYPE html>
<html lang="en">
  <head>
    <meta charset="UTF-8" />
    <meta http-equiv="X-UA-Compatible" content="IE=edge" />
    <meta name="viewport" content="width=device-width, initial-scale=1.0"
/>
    <title>Document</title>
    <style>
      .subplot {
```

```
        float: left;
        width: 33.3%;
        padding: 50px;
        box-sizing: border-box;
      }
      .subplot-item {
        width: auto;
        height: 320px;
      }
    </style>
  </head>
  <body>
    <div class="subplot">
      <h2>학과별 학생수</h2>
      <div class="subplot-item">
        <canvas id="mychart2"></canvas>
      </div>
    </div>
    <div class="subplot">
      <h2>학년에따른 평균 나이변화</h2>
      <div class="subplot-item">
        <canvas id="mychart1"></canvas>
      </div>
    </div>
    <div class="subplot">
      <h2>학년변 평균키와 평균몸무게</h2>
      <div class="subplot-item">
        <canvas id="mychart3"></canvas>
      </div>
    </div>

    <script
src="https://cdnjs.cloudflare.com/ajax/libs/Chart.js/3.7.1/chart.min.js">
</script>
    <script src="dataset.js"></script>
    <script>


      //문제2

      //ageInfo 객체설정해주고 키값을 grade로 설정한다
      const ageInfo = {};
      student.map((i) => {
        const key = i.grade + "학년";
        ageInfo[key] = [];
      });

      //나이를 계산해 각 학년의 배열에 넣어준다
      student.map((i) => {
        const today = new Date();
        const year = i.birthdate.slice(0, 4);
        const month = i.birthdate.slice(5, 7);
        const date = i.birthdate.slice(8, 10);
        const birthDate = new Date(year, month, date);
```

```
    const age = today.getFullYear() - birthDate.getFullYear() + 1;
    const key = i.grade + "학년";
    ageInfo[key].push(age);
  });
  console.log(ageInfo);

  //학년 정렬을 위한 빈객체
  const age_ordered = {};

  //표 만들기 위한 정렬된 배열 생성
  const grades = Object.keys(ageInfo).sort();
  Object.keys(ageInfo)
    .sort()
    .forEach((key) => {
      age_ordered[key] = ageInfo[key];
    });
  const ages = [];
  //각 학년 평균나이 구하기
  for (key in age_ordered) {
    const arr = age_ordered[key];
    const sum = arr.reduce((prev, curr) => prev + curr, 0);
    const avr = sum / arr.length;
    ages.push(avr);
  }

  console.log(grades, ages);

  const mychart1 = document.getElementById("mychart1");

  //선 그래프 그리기
  new Chart(mychart1, {
    type: "line",
    data: {
      labels: grades,
      datasets: [
        {
          label: "나이",
          data: ages,
          borderWidth: 1,
          borderColor: "#ff6600",
        },
      ],
    },
  });
```



문제3

```
<!DOCTYPE html>
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    <div class="subplot">
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      <div class="subplot-item">
        <canvas id="mychart2"></canvas>
```

```
      </div>
    </div>
    <div class="subplot">
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      <div class="subplot-item">
        <canvas id="mychart3"></canvas>
      </div>
    </div>

    <script
src="https://cdnjs.cloudflare.com/ajax/libs/Chart.js/3.7.1/chart.min.js">
</script>
    <script src="dataset.js"></script>
    <script>


      //문제3
      //bodyinfo안에 학년 오브제트 만들기
      const bodyInfo = {};
      student.map((i) => {
        const key = i.grade + "학년";
        bodyInfo[key] = { height: [], weight: [] };
      });
      //학년객체안에 키 몸무게 값 복사
      student.map((i) => {
        bodyInfo[i.grade + "학년"].height.push(i.height);
        bodyInfo[i.grade + "학년"].weight.push(i.weight);
      });
      console.log(bodyInfo);
      const body_ordered = {};

      //표를 만들기 위한 배열 생성 및 value값 복사
      Object.keys(bodyInfo)
        .sort()
        .forEach((key) => {
          body_ordered[key] = bodyInfo[key];
        });
      console.log(body_ordered);

      const avr_heights = [];
      const avr_weights = [];

      //학년별 키 몸무게 평균값 배열로 정리
      for (let g in body_ordered) {
        const sum_h = body_ordered[g].height.reduce(
          (prev, curr) => prev + curr,
          0
        );
```
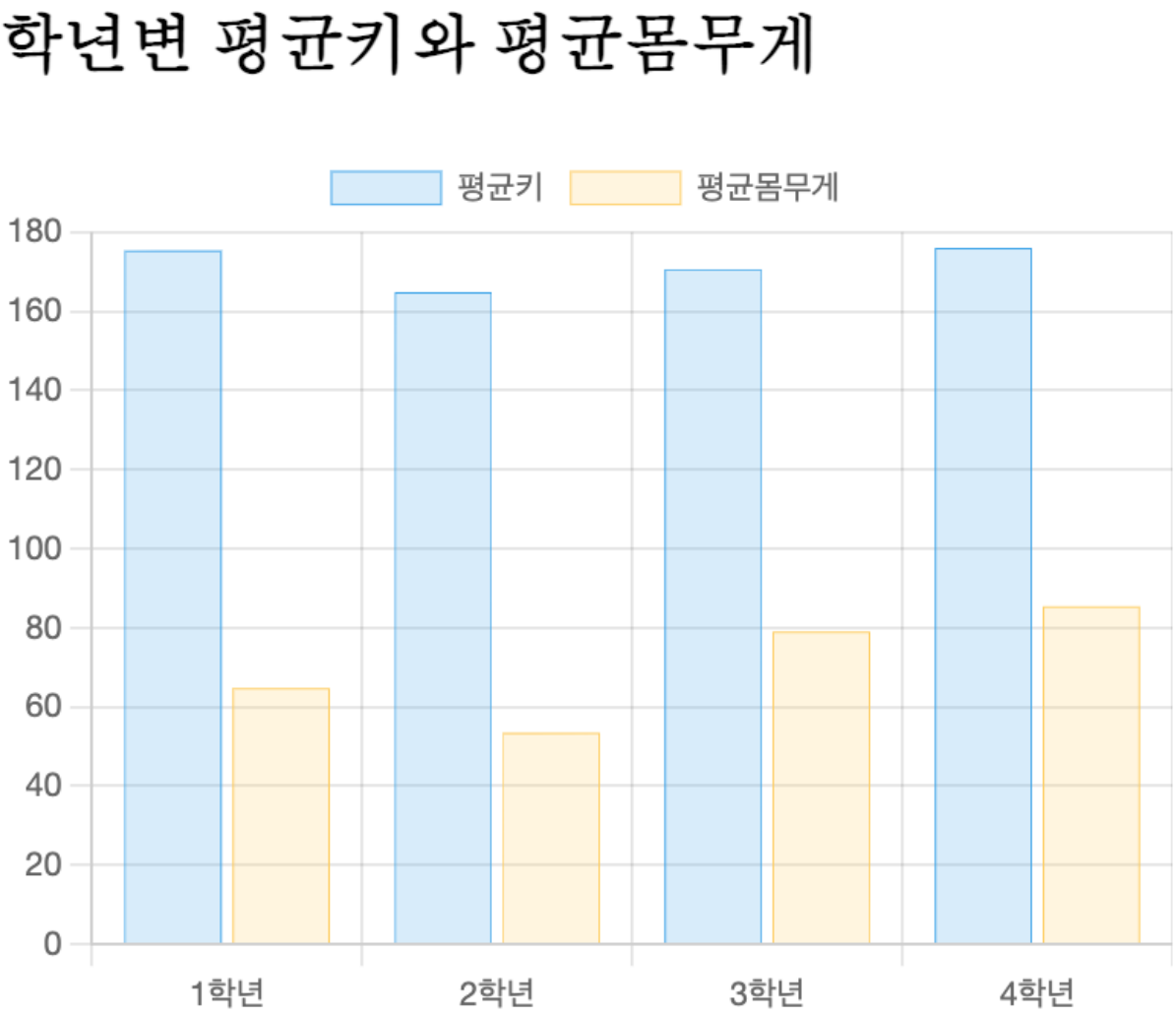

```
        const avr_h = sum_h / body_ordered[g].height.length;
        avr_heights.push(avr_h);
        const sum_w = body_ordered[g].weight.reduce(
          (prev, curr) => prev + curr,
          0
        );
        const avr_w = sum_w / body_ordered[g].weight.length;
        avr_weights.push(avr_w);
      }
      console.log(avr_heights, avr_weights);

      const mychart3 = document.getElementById("mychart3");

      new Chart(mychart3, {
        type: "bar",
        data: {
          labels: grades,
          datasets: [
            {
              label: "평균키",
              data: avr_heights,
              borderWidth: 0.5,
              borderColor: "rgba(54,162,235,1)",
              backgroundColor: "rgba(54,162,235,0.2)",
            },
            {
              label: "평균몸무게",
              data: avr_weights,
              borderWidth: 0.5,
              borderColor: "rgba(255,206,86,1)",
              backgroundColor: "rgba(255,206,86,0.2)",
            },
          ],
        },
        options: {
          maintainAspectRatio: false,
        },
      });
    </script>
  </body>
</html>
```


학년별 평균키와 평균몸무게
평균키
평균몸무게
180
160
140
120
100
80
60
40
20
0
1학년
2학년
3학년
4학년

문제4

```

```

!()[]