**Link to Website: ​​**[**https://diyakadakia.github.io/DS4200\_Project/**](https://diyakadakia.github.io/DS4200_Project/)

**Visualization 1: Curricular Unit Evaluation Heatmap**

This visualization serves to highlight the effectiveness of each course, measured by the approval rates of the curricular units of the second semester (whether a student was approved through their evaluation). The tasks were to query the data by course and compare the approval rates across courses. The x axis is labeled “Approved” and the y axis is labeled with each of the courses. The heatmap, as indicated by the colorbar, displays a range of approval rates, from 0 (mapping to purple) to 100% (mapping to yellow). The marks of this graph are the bars, and each one represents a different course. The channels are the colors, which are yellow, green, blue, and purple. From these marks and channels, we are able to see that courses such as Informatics Engineering, Agronomy, and Veterinary Nursing are on the lower end of the spectrum of approval rates as indicated by the purple, and courses such as Tourism and Social Service are on the higher end, as indicated by the yellow.

**Visualization 2: Effect of Courses on Grades and Dropout Rates**

This visualization is intended to help understand the relationship between the courses a student is taking, their grade in the course, and if they drop out, graduate, or are currently enrolled. The user could choose, from a drop down menu, which courses they wanted to compare. The task was to filter/query the data by course and dropout status and compare grades and dropout trends across selected courses. The marks of this graph are the bars themselves. The bars are used to encode the values and they are stacked to show the sum of the subcategories for each group. The channels for this graph are position and color. Each color shows a distinct subcategory, dropout, graduate, or enrolled. We used [Bang Wong’s color palette](https://davidmathlogic.com/colorblind/#%23000000-%23E69F00-%2356B4E9-%23009E73-%23F0E442-%230072B2-%23E8DFD7-%23CC79A7) for individuals with protanopia and deuteranopia from this research study to make the visualization more accessible. Next, the size of each segment (height for vertical, width for horizontal) represents the value of a subcategory within the group. The X-axis represents the courses, while the Y-axis shows the total number of students.

**Visualization 3: Average Grades by Dropout Status and Course**

The purpose of this visualization is to help instructors and administrators understand academic performance in/across each course and for students in different dropout categories. The tasks for the visualizations were to filter the data by dropout status and course and compare average grades across the dropout statuses in/across courses. The marks are area to form the “box” for the boxplot, lines to form the whiskers of the boxplot, and points to indicate outliers. The channels are x and y-position to align the boxplots with dropout statuses on the x-axis and indicate grades on the y-axis, as well as color to indicate which dropout status each boxplot belongs to and to make the plot easier to read since the faceting makes the visualization long and the x-axis is only labeled on the bottom plots.We used [Bang Wong’s color palette](https://davidmathlogic.com/colorblind/#%23000000-%23E69F00-%2356B4E9-%23009E73-%23F0E442-%230072B2-%23E8DFD7-%23CC79A7) for individuals with protanopia and deuteranopia from this research study to make the visualization more accessible. Faceting was implemented for juxtaposition so that comparisons could be made across courses.

**Visualization 4: Previous Qualification vs. Admission Grade + Dropout Status by Gender and Marital Status**

The purpose of this visualization is to understand the influence of admission grade and previous qualification on dropout rates, as well as how gender and marital status relate to and/or affect these factors. The tasks are to identify overall trends in admission grades and previous qualifications, explore their relationships to dropout rates, and search for patterns in how gender and marital status relate to grades and dropout decisions. For this, we created a scatterplot and two stacked bar charts. The marks for the scatterplot are points and rectangular bars for the stacked bar charts. For the scatterplot, the channels include x and y positions to represent admission grade and previous qualification and color to indicate individual students’ dropout status. We used [Bang Wong’s color palette](https://davidmathlogic.com/colorblind/#%23000000-%23E69F00-%2356B4E9-%23009E73-%23F0E442-%230072B2-%23E8DFD7-%23CC79A7) for individuals with protanopia and deuteranopia from this research study to make the visualization more accessible. For the stacked bar charts, the channels are x and y position to indicate gender/marital status categories and counts, as well as colors to indicate the dropout statuses.

**Visualization 5: Influence of Unemployment Rate and GDP on Dropout Rate**

The purpose of this visualization is to show the influence of the unemployment rate and GDP on the dropout rate. The graph plots the unemployment rate on the x-axis and GDP on the y-axis, with each data point representing a specific combination of these two variables. The tasks were to group the data by unemployment rate and GDP and identify the overall trends in dropout rates regarding unemployment rate and GDP. The color of the data points represents the percentage of dropouts in each unemployment-GDP group, with darker points indicating a higher dropout rate. The main marks in the graph are points and the channels used to encode the information are position, representing the unemployment rate and GDP, and color, encoding the percentage of dropouts.