Our project title is the DiabetesInsight. The goal for the project is to create a website with an interface that allows users to access a variety of different metrics related to diabetes and then determine the odds that they are likely to be diagnosed with diabetes. The databases connected to the website would contain a variety of different values, such as people's gender, age, their physical activity, stress levels, BMI, and more. The database also contains a boolean value of 0 or 1 that indicates if someone has gotten diabetes or not. The user must enter in their own information for each of these different items and then the website will output the individual's risk of getting diabetes.

One creative feature that we could create is an interactive graph generated from our data. It would be a graph that would depict someone's odds of diabetes increasing or decreasing based on different lifestyle changes, with the y-coordinate always being the odds of diabetes and the x-coordinate being different metrics, such as gender, age, stress levels, or BMI. Then the individual could see their place within the general population, which could help contextualize their solution and also potentially motivate them to improve themselves so as to better their quality of health and reduce their risk of diabetes.

The main problem we aim to tackle with the DiabetesInsight is because of the extremely high rates of diabetes throughout the world, including America. This is a travesty in many ways, as diabetes has numerous horrendous effects on one's health. According to data from 2021, about 38.4 million, or 11% of Americans, suffer from diabetes. Diabetes can hurt one's mobility, vision, body, and even cause heart disease or worse conditions. This is a genuine problem — over a tenth of Americans are at risk of a severe medical disorder and do not realize how easily they could avoid their fate. Most Americans who suffer from diabetes have Type 2 diabetes, and in fact, nine out of ten individuals who suffer from type 2 diabetes could have avoided it through

lifestyle changes. The DiabetesInsight will allow users to understand how to improve their life to avoid getting Type 2 diabetes.

While there are other websites with a somewhat similar function to DiabetesInsight out there for certain — such as Diabetes Daily's Diabetes Calculator, the American Diabetes Association's Conversion Calculator, and Omni Calculator's Diabetes Risk Calculator. However, they often use fewer metrics and thus are unlikely to have quality predictions. For instance, Diabetes Daily's Diabetes calculator only checks for blood sugar levels, the ADA only checks for glucose in the body, and Omni Calculator checks for age, height, weight, glucose levels, and cholesterol, along with family history and ethnicity. While some of these calculators are moderately robust, ultimately, our calculator will take in far more metrics and be much more thorough. Our DiabetesInsight will take in far more metrics to calculate a far more precise chance of one getting diabetes based on their lifestyle.

There will be three different datasets utilized for this project. One is this: Diabetes Diagnosis Dataset (kaggle.com). It is a Diabetes Diagnosis Dataset stored in a .csv format. Its column names are patientID, age, gender, country, blood glucose level, insulin level, and whether or not they get a diagnosis of diabetes. It has a cardinality of 10,000, as it possesses 10,000 rows, and a degree of 7, as it possesses 7 columns, which have already been named.

Another dataset we could use is this: Diabetes Dataset for Classification (kaggle.com). It is a Diabetes Dataset that connects information involving lifestyle and a diabetes diagnosis. It is all stored in a .csv format. It has a cardinality of 100,000, as it has 100,000 rows, and a degree of 9, as it has 9 columns: Gender, Age, Hypertension, Heart Disease, Smoking History, Hb1ac level, blood glucose level, and whether or not they were diagnosed with diabetes.

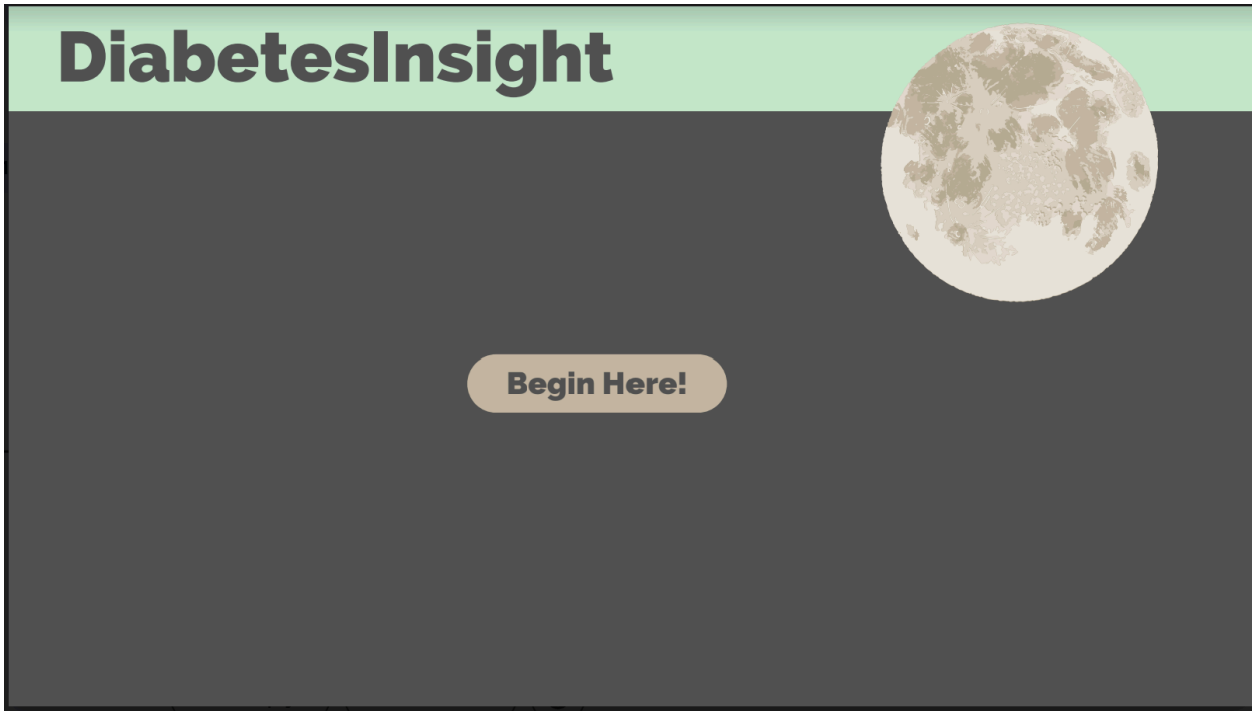
Our third and final dataset is this: Diabetes Health Indicators Dataset (kaggle.com). It is a Diabetes Health Dataset that contains a great deal of information about lifestyle indicators for diabetes. It has a cardinality of 253,680, as it possesses 253,680 rows, and a degree of 10, as it has 10 columns: Diabetes_012 (whether or not they have no diabetes, prediabetes, or diabetes, respectively), HighBP, HighChol, CholCheck, BMI, Smoker, Stroke, HeartDisease, PhysActivity, and Fruits.

In terms of the website functionality, the user will enter the website, enter in a variety of information related to them into a simple search interface, and then the values the user enters will travel to the database, where the various queries will then output their odds of diabetes they are recommended to take. We will create new tables that are joins of our diabetes databases, read them thoroughly based on user-inputted information, update them when necessary, and delete information that is defunct or no longer necessary. It is a somewhat simplistic interface, but we strongly believe that the strength of the DiabetesInsight lies not in a highly complex client-side, but rather in the variety of data and variables we consider before giving our users the best possible information about diabetes.

The work will be split among our four team members. Jeffrey (Jjhuang4) will be handling frontend web development for DiabetesInsight. He will be primarily working on the client-facing functionality of the website, such as where the user inputs their data into the website and then sees the information that is outputted. Neha (Njaga3) will work on UI/UX, designing the aesthetic, look, and overall feel of the website. She will also be assisting Jeffrey with frontend web development whenever and wherever necessary. Sam (Stinubu2) will be primarily working on the backend, developing the server-side protocols and ensuring that the database is properly connected to the client-facing end of our web application. Kedar (Kedarm2) will be mostly

focusing on the SQL queries side of the project, specifically creating the stored procedures, triggers, and queries that are necessary to retrieve the proper information about diabetes for the user.

Here are the UI mockups for our project website:



DiabetesInsight

Based on your demographics, you are at a high risk for diabetes.

Return Home