**Computer Science Capstone Topic Approval Form**

The purpose of this document is to help you clearly explain your capstone topic, project scope, and timeline. Identify each of these areas so that you will have a complete and realistic overview of your project. Your course instructor cannot sign off on your project topic without this information*.*

*Note: You must fill out and submit this form. Space beneath each number will expand as needed. Any cost associated with developing the application will be the responsibility of the student.*

**INFORM INSTRUCTOR:**

Potential use of proprietary company information:

No.

**ANALYSIS:**

1. Project topic AND description:

Topic: Predicting Customer Purchases

Description: This project will analyze a given dataset representing a row of distinct customers and their attributes. Attributes may include gender, salary, age, and whether the customer purchased the item or not. Based on this dataset a linear regression model will be created to identify whether a new customer will purchase the item based on their attributes. Understanding the dataset by thoroughly examining the information contained in it will be the first step of the project. The data will be cleaned by handling missing values, outliers, and inconsistencies. Then, through a Python programming algorithm, the training dataset will be analyzed and used to fit a linear regression model. The model will learn the relationship between independent variables (customer attributes) and the dependent variable (purchase decision).

1. Project purpose/goals:

This project seeks to provide business analysts with insights into shopping trends. By understanding the factors that influence customer purchasing decisions, businesses can tailor their marketing strategies more effectively. For example, they can target specific customer segments with personalized promotions based on their demographic characteristics. Predicting which customers are more likely to make a purchase allows businesses to focus their efforts on those individuals, therefore increasing the likelihood of sales and revenue generation. This can lead to improved profitability and growth for the organization.

1. Descriptive method:

The descriptive method involves collecting and analyzing data to describe the demographic characteristics of the retail company’s customer base. This information helps the company gain insights into their customers’ profiles and informs strategic decision-making processes.

1. Predictive/Prescriptive method:

Once the retail company has gathered and analyzed demographic data using the descriptive method, they might want to employ predictive analytics to forecast future trends or outcomes. In this case, they could use predictive modeling techniques, such as regression analysis or machine learning algorithms, to predict customer behavior or purchasing patterns based on demographic characteristics and other relevant variables.

**DESIGN and DEVELOPMENT:**

1. Computer science application type (select one):

Stand-Alone

1. Programming/development language(s) you will use:

Python3

1. Operating System(s)/Platform(s) you will use:

MacOS Sonoma version 14.3.1

1. Database Management System you will use:

CSV file

1. Estimated number of hours for the following:
   * 1. Planning and Design: 9-12 hrs
     2. Development: 18-21 hrs
     3. Documentation: 18-21 hrs
     4. Total: 45-54 hrs
2. Projected completion date:

May 13th

**IMPLEMENTATION and EVALUATION:**

1. Describe how you will approach the execution of your project:

I will be spending a total of 5-6 weeks on this project. On average, each week will consist of an estimated 7.5-9 hrs of project work. Weeks 1-2 week will mostly be spent focusing on the planning and design of the project. Weeks 2-4 will be spent in the development phase. Weeks 4-6 will be spent in the documentation phase.

* **This project does not involve human subjects research and is exempt from WGU IRB review.**

**STUDENT SIGNATURE:**

**­­­­­­­­­­­­­­­­­­­­­­­Samuel Diaz**

**By signing and submitting this form, you acknowledge** any cost associated with the development and execution of the application will be your (the student’s) responsibility.

**COURSE INSTRUCTOR’S NAME:**

**COURSE INSTRUCTOR APPROVAL DATE:**