Functional Requirements Document for Tip Calculator

Contents:

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1. Introduction

1.1 Purpose

This project aims to simplify the process of calculating a tip based on service quality, splitting the total bill among multiple people, and enabling fast digital payments via QR code.

1.2 Scope

The "Tip Calculator" is a web-based mini-project designed using HTML, CSS, and JavaScript. It allows users to:

- Enter the bill amount
- Rate the quality of service (on a scale of 1 to 10)
- Calculate the appropriate tip
- Split the total amount among multiple people
- Generate a QR code for convenient digital payment

The system is ideal for use in restaurants, cafés, or any group setting where a bill needs to be shared easily and fairly.

1.3 Intended Audience

- Project evaluators/instructors
- Developers

1.4 Definitions, Acronyms, and Abbreviations

- **QR**: Quick Response
- **UI**: User Interface

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2. Overall Description

2.1 Product Perspective

The application is a lightweight, browser-based standalone solution with no need for back-end support. It is client-side only.

2.2 User Classes and Characteristics

- **Casual Users:** Users looking to calculate and split tips quickly with minimal technical knowledge.
- **Restaurant Patrons:** Individuals or groups dining together and wanting to split the bill.

2.3 Operating Environment

- Modern web browsers: Google Chrome, Mozilla Firefox, Microsoft Edge
- Desktop or mobile devices
- Internet connectivity (for QR payment functionality)

2.4 Design and Implementation Constraints

- Built using only front-end web technologies (HTML, CSS, JavaScript)
- QR code generation may use an external API

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3. Functional Requirements

Requirement ID	Description
FR1	The user shall input the **bill amount**
FR2	The user shall select a **service rating** (1–10 scale) using a slider
FR3	The system shall display an **emoji reaction** that changes dynamically based on user's service rating
FR4	The system shall **calculate the tip** based on the rating
FR5	The user shall enter the **number of people** to split the bill
FR6	The system shall calculate and display the **total bill** and **per person share**
FR7	The system shall generate a **QR code** with the total bill amount for payment

4. Non-Functional Requirements

Type	Description
Performance	The calculator should provide real-time feedback upon user interaction
Usability	The UI shall be simple, responsive, and mobile-friendly

Type	Description
Portability	The application must work on all modern browsers and screen sizes
Security	The QR link (if using a third-party API) must be secure and protected
Reliability	QR generation and calculations must consistently return correct values

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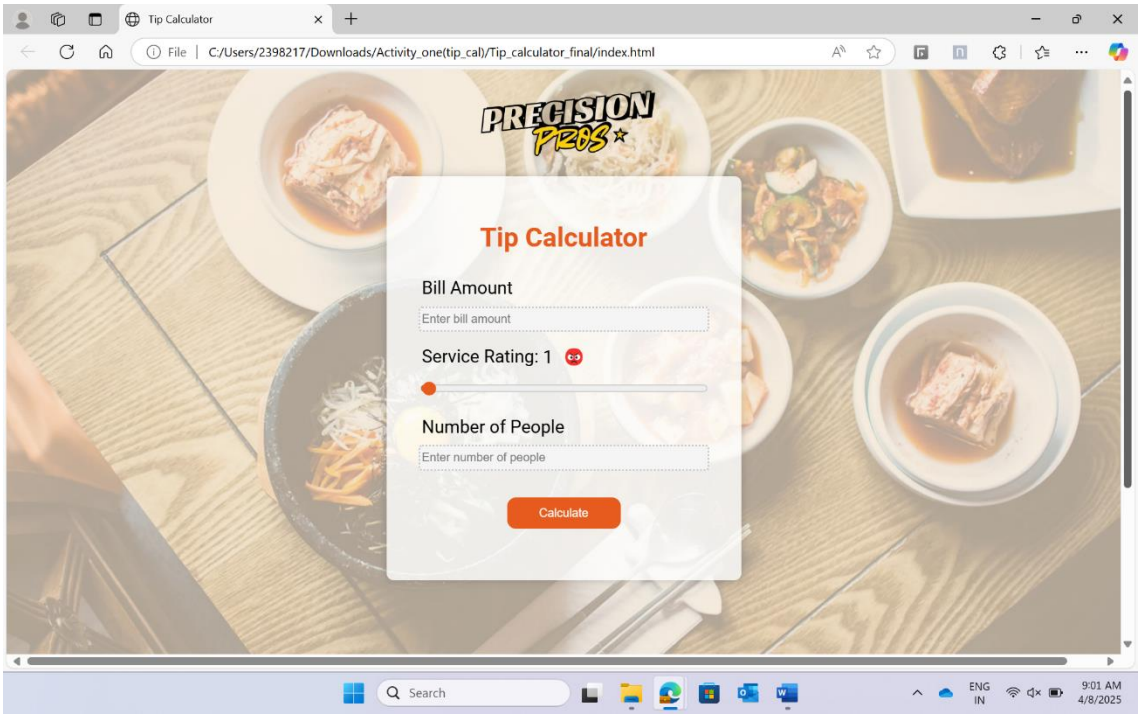
5. External Interface Requirements

5.1 User Interface

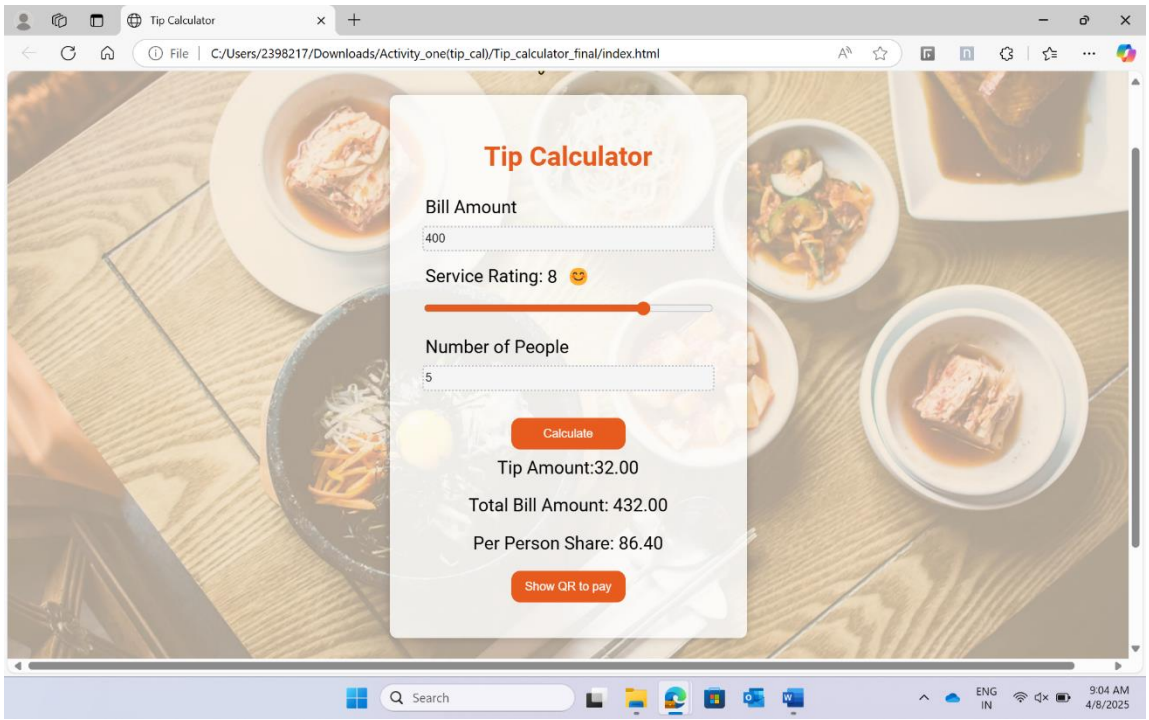
The interface will consist of:

- Input fields for:
  - Bill Amount
  - Number of People
- A slider for Service Rating (1–10)
  - Emoji based slider
  - Emoji reaction changes based on rating
- A **"Calculate"** button
- Output fields showing:
  - Tip Amount
  - Total Bill Amount
  - Per Person Share
- A **"Show QR to Pay"** button
  - A pop-up of QR code will be displayed

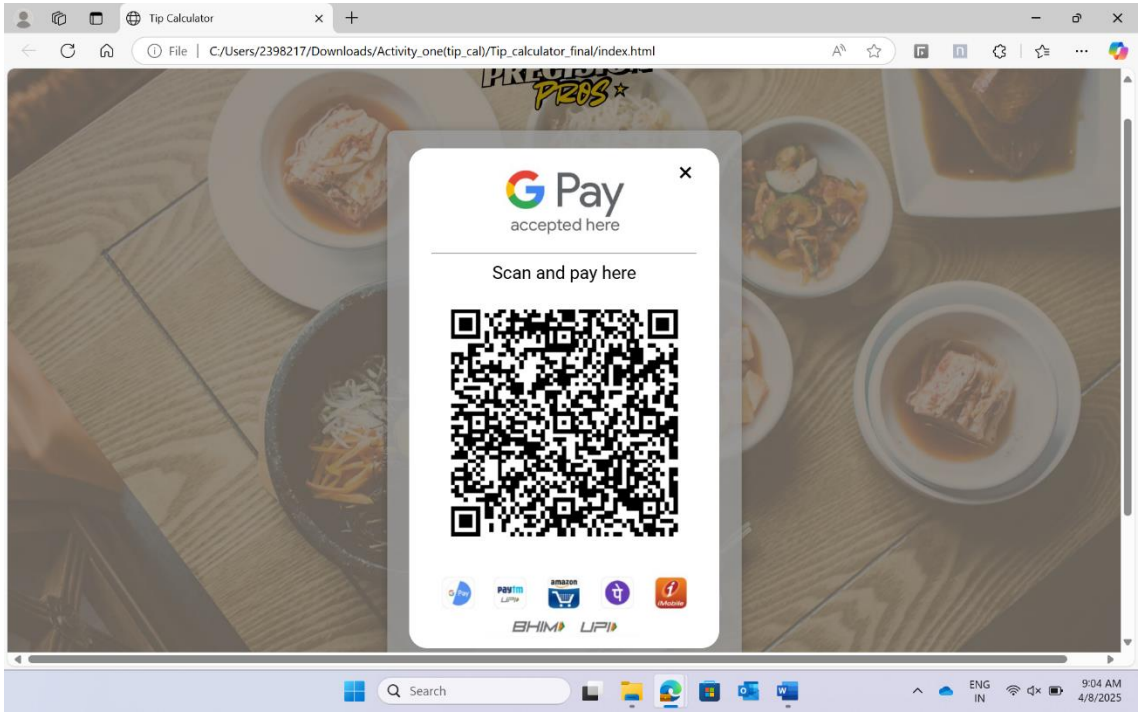
Screenshot 1: *Initial Web Page (before input is provided)*



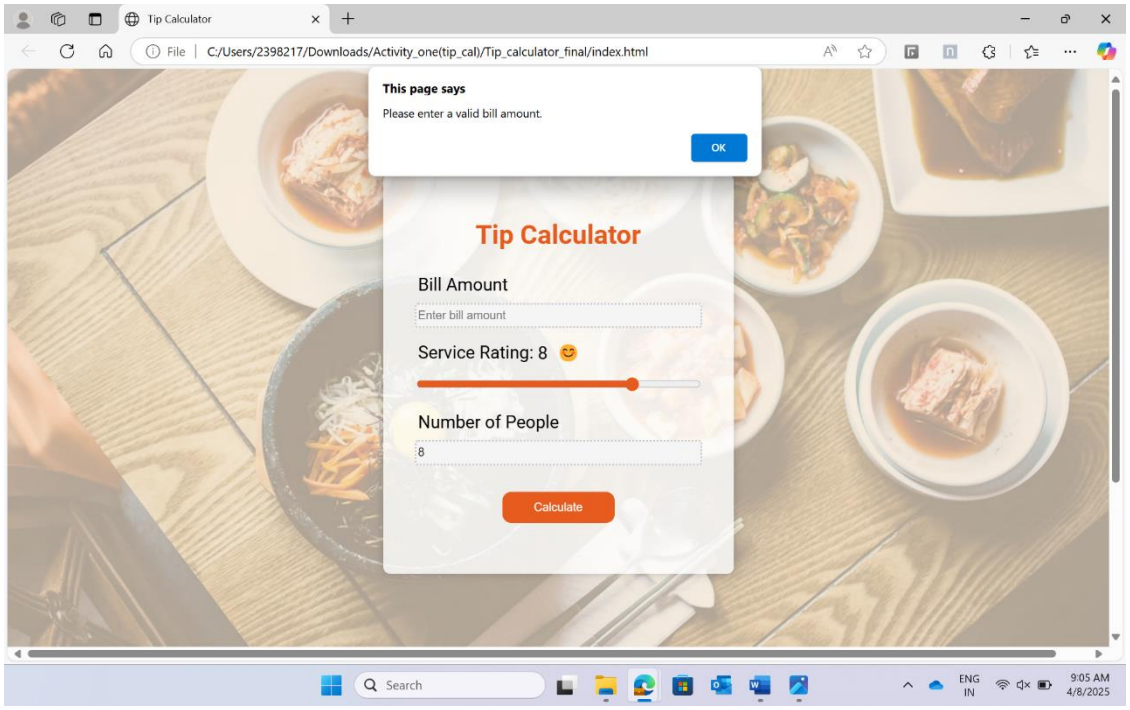
Screenshot 2: *After calculation (showing calculated values)*



Screenshot 3: *QR Code screen (generated for payment)*



Screenshot 4: *Alerts for invalid input values*



6. System Features

- **Calculation Logic:** Based on service rating, the system calculates a tip (for example, rating 9 = 9% tip).
- **Dynamic UI Feedback:** Displays calculated values without page reload.
- **Payment Integration:** Generates a scannable QR code with total amount pre-filled.

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7. Technologies Used

- **Frontend:** HTML, CSS, JavaScript
- **Libraries:** QRCode.js JavaScript library