Technical Design Document

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Date Created: June 29, 2025

# Program Description:

This program validates user inputs for U.S. phone numbers, Social Security Numbers (SSNs), and ZIP codes using regular expressions (regex). It prompts the user to enter each value and then checks if the format matches commonly accepted patterns. The supported formats are:  
  
- Phone Number: 123-456-7890, (123) 456-7890, 1234567890  
- SSN: 123-45-6789  
- ZIP Code: 12345 or 12345-6789  
  
This program is useful for basic input validation in forms or data entry systems to ensure consistency and correctness of these common U.S. identifiers.

# Functions used in the Program (listed in order of execution):

## 1. Function Name: validate\_phone\_number

Description: Validates the format of a U.S. phone number using regex.

Parameters:  
- phone (str): The user input phone number string.

Variables:  
- pat (str): Regex pattern to match phone numbers in accepted formats.  
- phone\_numbers (Match object or None): Result of re.fullmatch() checking if input matches the pattern.

Logical Steps:  
1. Define a regex pattern that matches phone numbers in the formats:  
 - (123) 456-7890  
 - 123-456-7890  
 - 1234567890  
2. Use re.fullmatch() to match the entire input string against the pattern.  
3. Return True if the input matches the pattern; otherwise, return False.

Returns:  
- bool: True if valid phone number format, else False.

## 2. Function Name: validate\_ssn

Description: Validates the format of a Social Security Number (SSN).

Parameters:  
- ssn (str): The user input SSN string.

Variables:  
- pat (str): Regex pattern to match SSNs in the format 123-45-6789.  
- social\_security (Match object or None): Result of re.fullmatch() checking input.

Logical Steps:  
1. Define a regex pattern that matches the SSN format: three digits, hyphen, two digits, hyphen, four digits.  
2. Use re.fullmatch() to verify the entire input string matches the pattern.  
3. Return True if valid; else, return False.

Returns:  
- bool: True if valid SSN format, else False.

## 3. Function Name: validate\_zip\_codes

Description: Validates U.S. ZIP codes in standard or extended format.

Parameters:  
- zipcode (str): The user input ZIP code string.

Variables:  
- pat (str): Regex pattern to match ZIP codes: either 5 digits or 5 digits followed by a hyphen and 4 digits.  
- zip\_code (Match object or None): Result of re.fullmatch() checking input.

Logical Steps:  
1. Define a regex pattern for ZIP codes in two accepted formats:  
 - 12345  
 - 12345-6789  
2. Use re.fullmatch() to check if the entire string matches the pattern.  
3. Return True if valid format, else False.

Returns:  
- bool: True if valid ZIP code format, else False.

## 4. Function Name: main

Description: Coordinates user input collection and validation result display.

Parameters: None

Variables:  
- phone\_numbers (str): Input from user for phone number.  
- social\_security (str): Input from user for SSN.  
- zip\_code (str): Input from user for ZIP code.

Logical Steps:  
1. Prompt the user to enter a phone number.  
2. Prompt the user to enter an SSN.  
3. Prompt the user to enter a ZIP code.  
4. Call each validation function with the respective user input.  
5. Print the validation results, indicating "Yes" for valid and "No" for invalid.

Returns: None

# Logical Flow Summary:

1. The program begins by running main().  
2. User is prompted sequentially for phone number, SSN, and ZIP code inputs.  
3. Each input is validated using the respective regex validation functions.  
4. Validation results are displayed clearly to the user.

# Link to your repository:

# Output Screenshot:

Valid inputs.

A screenshot of a computer

AI-generated content may be incorrect.

Invalid inputs:

A screenshot of a computer

AI-generated content may be incorrect.