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**1. Description of the Program**

This Python program validates user input for three common U.S. data types:

* Phone numbers
* Social Security Numbers (SSNs)
* ZIP codes

It uses regular expressions to determine if the inputs match valid formats. The program includes:

* Separate functions to validate each data type
* A main() function to prompt the user for input and display the results
* A run\_tests() function to verify the correctness of the validation logic with multiple examples

**2. Functions Created**

**is\_valid\_phone(phone)**

* **Description**: Validates a U.S. phone number using a regular expression.
* **Parameters**:  
  phone (str): The input string representing a phone number.
* **Returns**:  
  True if the phone number matches acceptable formats, otherwise False.
* **Valid Formats** include:
  + 123-456-7890
  + (123) 456-7890
  + 123.456.7890
  + 1234567890
  + +1 123 456 7890

**is\_valid\_ssn(ssn)**

* **Description**: Validates a U.S. Social Security Number.
* **Parameters**:  
  ssn (str): The input string representing a Social Security Number.
* **Returns**:  
  True if the SSN matches the ###-##-#### format, otherwise False.

**is\_valid\_zip(zip\_code)**

* **Description**: Validates a U.S. ZIP code.
* **Parameters**:  
  zip\_code (str): The input string representing a ZIP code.
* **Returns**:  
  True if the ZIP code is in either 5-digit or ZIP+4 format (##### or #####-####), otherwise False.

**main()**

* **Description**: Prompts the user to enter a phone number, SSN, and ZIP code. It validates each and displays the results.
* **Parameters**:  
  None
* **Returns**:  
  None (prints output to the console)

**run\_tests()**

* **Description**: Runs a set of predefined test inputs for phone numbers, SSNs, and ZIP codes to verify the validator functions.
* **Parameters**:  
  None
* **Returns**:  
  None (prints test results to the console)

**3. Logical Steps of the Program**

1. Import the re module to use regular expressions.
2. Define the is\_valid\_phone() function using a regex pattern that matches common U.S. phone number formats.
3. Define the is\_valid\_ssn() function using a regex that matches the standard SSN format.
4. Define the is\_valid\_zip() function with a regex to match either 5-digit or ZIP+4 format.
5. Implement the main() function:
   * Prompt the user to input a phone number, SSN, and ZIP code.
   * Call each respective validation function with the input.
   * Print whether each input is valid.
6. Implement the run\_tests() function:
   * Create a list of valid and invalid examples for phone numbers, SSNs, and ZIP codes.
   * Loop through each list and print the result of the validation function.
7. If the script is run directly (not imported as a module), call both main() and run\_tests().

**4. Link to your COP2373 repository:**

<https://github.com/Shinymon/COP2373>

5. Screenshot

A screenshot of a computer

AI-generated content may be incorrect.

A computer screen shot of a black screen

AI-generated content may be incorrect.