Task Description: Validating Israeli ID Numbers

Task Overview:

In this assignment, you will create a Python script to validate Israeli ID numbers. Israeli IDs consist of 9 digits and follow a specific algorithm to determine their validity. Your script will take user input through the terminal (the ID number) and then print whether it is a valid Israeli ID number or not.

Algorithm for Checking Validity:
1. Accept the user's ID number as input.
2. Verify that the input consists of exactly 9 digits. If not, inform the user of an invalid input and terminate the script.
3. Isolate the first 8 digits of the ID number for further processing. The 9th digit is the check digit.
4. For each digit in the first 8 digits (positions 1 to 8, indexed from 1), follow these rules:
   - If the digit's index is odd (1, 3, 5, 7), multiply the digit by 1.
   - If the digit's index is even (2, 4, 6, 8), multiply the digit by 2.
   - If the multiplication results in a two-digit number, add the individual digits together.
5. Sum all the results from step 4.
6. Calculate the check digit:
   - Find the next number divisible by 10 (e.g., if the sum is 36, the next number is 40).
   - Subtract the sum from the next multiple of 10 to get the check digit.
7. Compare the calculated check digit from step 6 with the 9th digit of the original ID number.
8. If the calculated check digit matches the 9th digit, print "Valid ID Number." If not, print "Invalid ID Number."

Example Calculation for the ID Number 305677494:
- Input ID number: 305677494
- First 8 digits: 30567749

- Calculation for digit at index 1 (odd): 3 * 1 = 3
- Calculation for digit at index 2 (even): 0 * 2 = 0
- Calculation for digit at index 3 (odd): 5 * 1 = 5
- Calculation for digit at index 4 (even): 6 * 2 = 12 (3)
- Calculation for digit at index 5 (odd): 7 * 1 = 7
- Calculation for digit at index 6 (even): 7 * 2 = 14 (5)
- Calculation for digit at index 7 (odd): 4 * 1 = 4
- Calculation for digit at index 8 (even): 9 * 2 = 18 (9)
- Sum of results: 3 + 0 + 5 + 3 + 7 + 5 + 4 + 9 = 36
- Check digit calculation: The next multiple of 10 after 36 is 40. Subtracting 36 from 40 gives us the check digit, which is 4.

- Check digit (from input): 4

Since the calculated check digit (4) matches the check digit from the input (4), the ID number 305677494 is valid.

Task Instructions:
1. Develop a Python script following the algorithm provided.
2. Prompt the user to enter their Israeli ID number through the terminal.
3. Output "Valid ID Number" if the ID is valid or "Invalid ID Number" if it is not.
4. Test your script with various ID numbers to ensure accuracy.
5. Submit your Python script and any necessary documentation.

Good luck with your assignment!