Discrete Assignment
EE1205 Signals and Systems

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Question 11.9.5.6: Find the sum of all two digit numbers which when divided by 4,yields 1 as reminder?

Solution:

1) Identify the range of two-digit numbers: The two-digit numbers that satisfy the condition are 13, 17, 21, ..., 97.
2) Find the number of terms in the sequence using the formula:

$$\mathrm{x(n)} = \mathrm{x(0)} + (n-1) \times (d) \tag{1}$$

$$\mathrm{n} = \frac{\mathrm{x(n)} - \mathrm{x(0)}}{\mathrm{d}} + 1 \tag{2}$$

$$n = \frac{97 - 13}{4} + 1 = 22 \tag{3}$$

3) Use the sum formula to find the sum:

$$S = \frac{n}{2} \times (2a + (n-1)d) \tag{4}$$

where S is the sum, n is the number of terms, a is the first term, and d is the common difference.

Let's calculate it:

Input parameters are:

S.NO	ITEM	VALUE
1	a	13
2	d	4
3	n	22

$$S = \frac{22}{2} \times (2 \times 13 + (22-1) \times 4) \tag{5}$$

$$S = 11 \times (26 + 84) = 1210 \tag{6}$$

Therefore, the sum of all two-digit numbers that, when divided by 4, yield a remainder of 1 is 1210.