

Lab Assignment for Simple Shift, Fold and Scaling

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CSE 4104

Given a signal

$$x(n) = \{ \dots, 0, 1, 2, 3, 4, 5, 4, 3, 2, 1, 0, \dots \}$$

↑

Find—

1. $y(n) = x(n-2) + x(n+3)$

2. $y(n) = x(n-2) + x(n+3)$

Solution

$$x(n) = \{ \dots, 0, 1, 2, 3, 4, 5, 4, 3, 2, 1, 0, \dots \}$$

↑

$$\Rightarrow x(n-2) = \{ \dots, 0, 1, 2, 3, 4, 5, 4, 3, 2, 1, 0, \dots \}$$

↑

$$\Rightarrow x(2n-2) = \{ \dots, 0, 1, 3, 5, 3, 1, 0, \dots \}$$

↑

$$\text{and, } x(n+3) = \{ \dots, 0, 1, 2, 3, 4, 5, 4, 3, 2, 1, 0, \dots \}$$

↑ ↑

① $y(n) = x(n-2) + x(n+3)$

$$= \{ \dots, 0, 1, 2, 3, 4, 5, 5, 5, 5, 5, 5, 4, 3, 2, 1, 0, \dots \}$$

↑



② $y[n] = x[n-2] + x[n+3]$

$= \{ \dots, 0, 1, 2, 3, 4, 5, 4, 4, 5, 6, 3, 1, 0, \dots \}$

↑

