Don Bosco Institute of Technology, Mumbai

Digital Signal and Image Processing

Experiment 1

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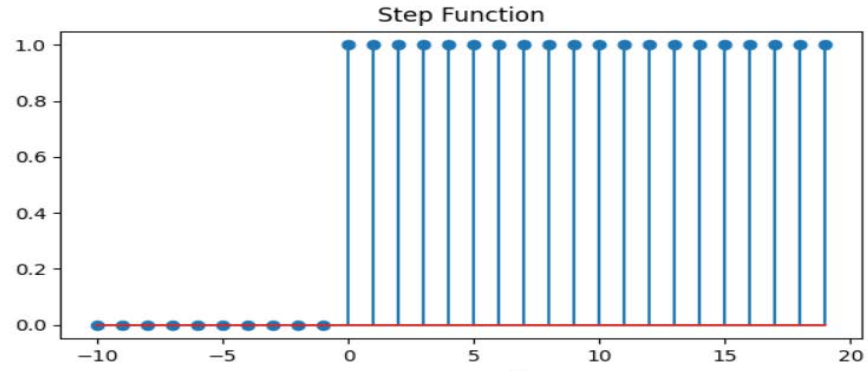
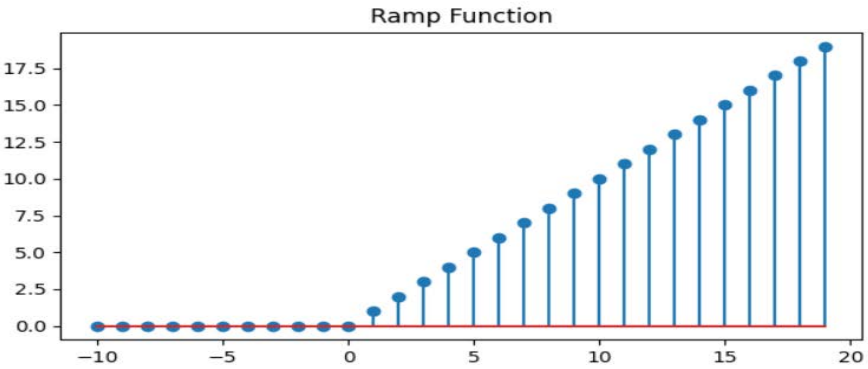
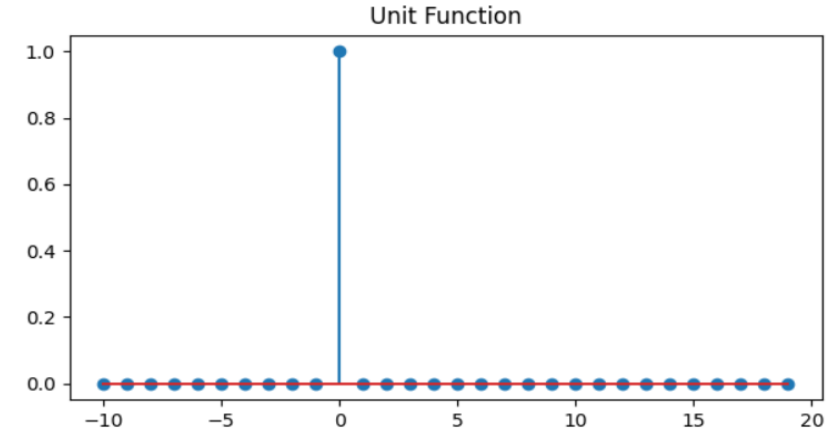
Title	Generation of Signals

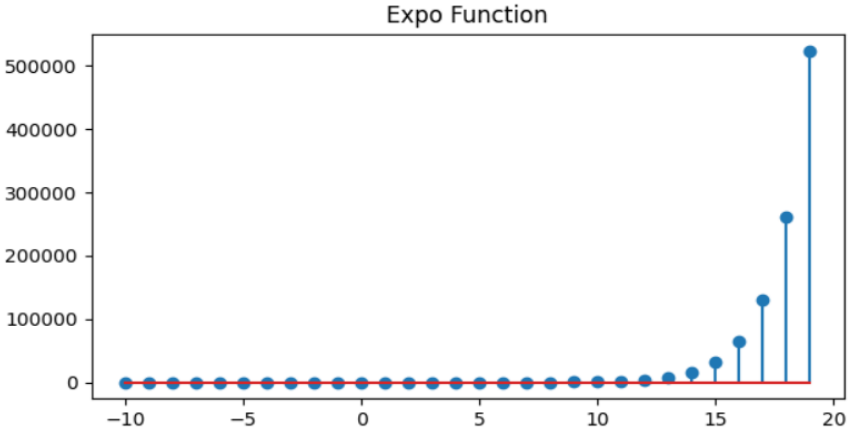
Program	import matplotlib.pyplot as plt
	figure, axis = plt.subplots(2, 2)
	figure.set_size_inches(18.5, 10.5)
	# impulse
	x1=[i for i in range(-10,10)]
	y1=[0 if i!=0 else 1 for i in x1]
	# step
	x2=[i for i in range(-10,10)]
	y2=[0 if i<0 else 1 for i in x2]
	# expo
	x3=[i for i in range(-10,10)]
	y3=[0 if i<0 else pow(2,i) for i in x3]
	# ramp
	x4=[i for i in range(-10,10)]
	y4=[0 if i<0 else i for i in x4]
	axis[0, 0].stem(x1, y1)
	axis[0, 0].set_title("Unit Function")
	axis[0, 1].stem(x2, y2)
	axis[0, 1].set_title("Step Function")
	axis[1, 0].stem(x3, y3)
	axis[1, 0].set_title("Expo Function")
	axis[1, 1].stem(x4, y4)
	axis[1, 1].set_title("Ramp Function")
	plt.show()

Output


Step Function
1.0
0.8
0.6
0.4
0.2
0.0
−10
−5
0
5
10
15
20


Ramp Function
17.5
15.0
12.5
10.0
7.5
5.0
2.5
0.0
−10
−5
0
5
10
15
20


Unit Function
1.0
0.8
0.6
0.4
0.2
0.0
−10
−5
0
5
10
15
20


Expo Function
500000
400000
300000
200000
100000
0
−10
−5
0
5
10
15
20

Outcome	A python program was developed to generate singals