Tim Tanasse

Starting with gap = 3 and at the beginning of the middle loop:

Middle Loop (Iteration 1)

i = 3	gap = 3	temp = 47									
17	28	18	47	07	25	83	86	53	69	62	95

Inner Loop (Iteration 1) (compare (17,47))

i = 3	gap = 3	temp = 47	j = 3	j-g = 0							
(17)	28	18	(47)	07	25	83	86	53	69	62	95

Middle Loop (Iteration 2) (a[j-gap] < temp and exited inner loop)

i = 4	gap = 3	temp = 07									
17	28	18	47	07	25	83	86	53	69	62	95

Inner Loop (Iteration 1) (compare(28,07))

i = 4	gap = 3	temp = 07	j = 4	j-g = 1							
17	(07)	18	47	(28)	25	83	86	53	69	62	95

Middle Loop (Iteration 3) (j < gap and exited inner loop)

i = 5	gap = 3	temp = 25									
17	07	18	47	28	25	83	86	53	69	62	95

Inner Loop (Iteration 1) (compare(18, 25))

i = 5	gap = 3	temp = 25	j = 5	j-g = 2							
17	07	(18)	47	28	(25)	83	86	53	69	62	95

Middle Loop (Iteration 4) (a[j-gap] < temp and exited inner loop)

i = 6	gap = 3	temp = 83									
17	07	18	47	28	25	83	86	53	69	62	95

Inner Loop (Iteration 1) (compare(47, 83))

i = 6	gap = 3	temp = 83	j = 6	j-g = 3							
17	07	18	47	28	25	83	86	53	69	62	95

Middle Loop (Iteration 5) (a[j-gap] < temp and exited inner loop)

i = 7	gap = 3	temp = 86									
17	07	18	47	28	25	83	86	53	69	62	95

Inner Loop (Iteration 1) (compare(28, 86))

i = 7	gap = 3	temp = 86	j = 7	j-g = 4							
17	07	18	47	(28)	25	83	(86)	53	69	62	95

Middle Loop (Iteration 6) (a[j-gap] < temp and exited inner loop)

i = 8	gap = 3	temp = 53									
17	07	18	47	28	25	83	86	53	69	62	95

Inner Loop (Iteration 1) (compare(25, 53))

i = 8	gap = 3	temp = 53	j = 8	j-g = 5							
17	07	18	47	28	(25)	83	86	(53)	69	62	95

Middle Loop (Iteration 7) (a[j-gap] < temp and exited inner loop)

i = 9	gap = 3	temp = 69									
17	07	18	47	28	25	83	86	53	69	62	95

Inner Loop (Iteration 1) (compare(83, 69))

i = 9	gap = 3	temp = 69	j = 9	j-g = 6							
17	07	18	47	28	25	(69)	86	53	(83)	62	95

Middle Loop (Iteration 8) (a[j - gap] < temp and exited inner loop)

i = 10	gap = 3	temp = 62									
17	07	18	47	28	25	69	86	53	83	62	95

Inner Loop (Iteration 1) (compare(86, 62))

i = 10	gap = 3	temp = 62	j = 10	j-g = 7							
17	07	18	47	28	25	69	(62)	53	83	(86)	95

Middle Loop (Iteration 9) (a[j - gap] < temp and exited inner loop)

i = 11	gap = 3	temp = 95									
17	07	18	47	28	25	69	62	53	83	86	95

Inner Loop (Iteration 1) (compare(53, 95))

i = 11	gap = 3	temp = 95	j = 11	j-g = 8							
17	07	18	47	28	25	69	62	(53)	83	86	(95)

Outer Loop (a[j - gap] < temp and i == a.length exited inner and middle loop)

	gap = 1										
17	07	18	47	28	25	69	62	53	83	86	95

Middle Loop (Iteration 1)

i = 1	gap = 1	temp = 07									
17	07	18	47	28	25	69	62	53	83	86	95

Inner Loop (Iteration 1) (compare(17, 07))

i = 1	gap = 1	temp = 07	j = 1	j-g = 0							
(07	17)	18	47	28	25	69	62	53	83	86	95

Middle Loop (Iteration 2)

i = 2	gap = 1	temp = 18									
07	17	18	47	28	25	69	62	53	83	86	95

From here on I will skip when the function does not enter the inner for loop (on condition a[j - gap] < temp):

Middle Loop (Iteration 3)

i = 2 gap = 1 temp = 18

07 17 18 47 28 25 69 62 53 83 86 95

Middle Loop (Iteration 4)

i = 3 gap = 1 temp = 47

07 17 18 47 28 25 69 62 53 83 86 95

Middle Loop (Iteration 5)

i = 4 gap = 1 temp = 28

07 17 18 47 28 25 69 62 53 83 86 95

Inner Loop (Iteration 1) (compare(47, 28))

i = 4 gap = 1 temp = 28 j = 4 j-g = 3

07 17 18 (28 47) 25 69 62 53 83 86 95

Middle Loop (Iteration 6) (a[j - gap] < temp)

i = 5 gap = 1 temp = 25

07 17 18 28 47 25 69 62 53 83 86 95

Inner Loop (Iteration 1) (compare(47, 25))

i = 5 gap = 1 temp = 25 j = 5 j-g = 4

07 17 18 28 (25 47) 69 62 53 83 86 95

Inner Loop (Iteration 2) (compare(28, 25))

i = 5 gap = 1 temp = 25 j = 4 j-g = 3

07 17 18 (25 28) 47 69 62 53 83 86 95

Middle Loop (Iteration 7) (a[j - gap] < temp)

i = 6 gap = 1 temp = 69

07 17 18 25 28 47 69 62 53 83 86 95

Middle Loop (Iteration 8) (a[j - gap] < temp)

i = 7 gap = 1 temp =

62

07 17 18 25 28 47 69 62 53 83 86 95

Inner Loop (Iteration 1) (compare(69, 62))

i = 7 gap = 1 temp = 62 j = 7 j-g = 6

07 17 18 25 28 47 (62 69) 53 83 86 95

Middle Loop (Iteration 9) (a[j - gap] < temp)

i = 8 gap = 1 temp = 53

07 17 18 25 28 47 62 69 53 83 86 95

Inner Loop (Iteration 1) (compare(69, 53))

i = 8 gap = 1 temp = 53 j = 8 j-g = 7

07 17 18 25 28 47 62 (53 69) 83 86 95

Inner Loop (Iteration 2) (compare(62, 53))

i = 8 gap = 1 temp = 53 j = 7 j-g = 6

07 17 18 25 28 47 (53 62) 69 83 86 95

Middle Loop (Iteration 9) (a[j - gap] < temp)

i = 9 gap = 1 temp = 83

07 17 18 25 28 47 52 62 69 83 86 95

Middle Loop (Iteration 10) (a[j - gap] < temp)

i = 10 gap = 1 temp = 86

07 17 18 25 28 47 52 62 69 83 86 95

Middle Loop (Iteration 11) (a[j - gap] < temp)

i = 1 gap = 1 temp = 95

07 17 18 25 28 47 52 62 69 83 86 95

The array is now sorted!