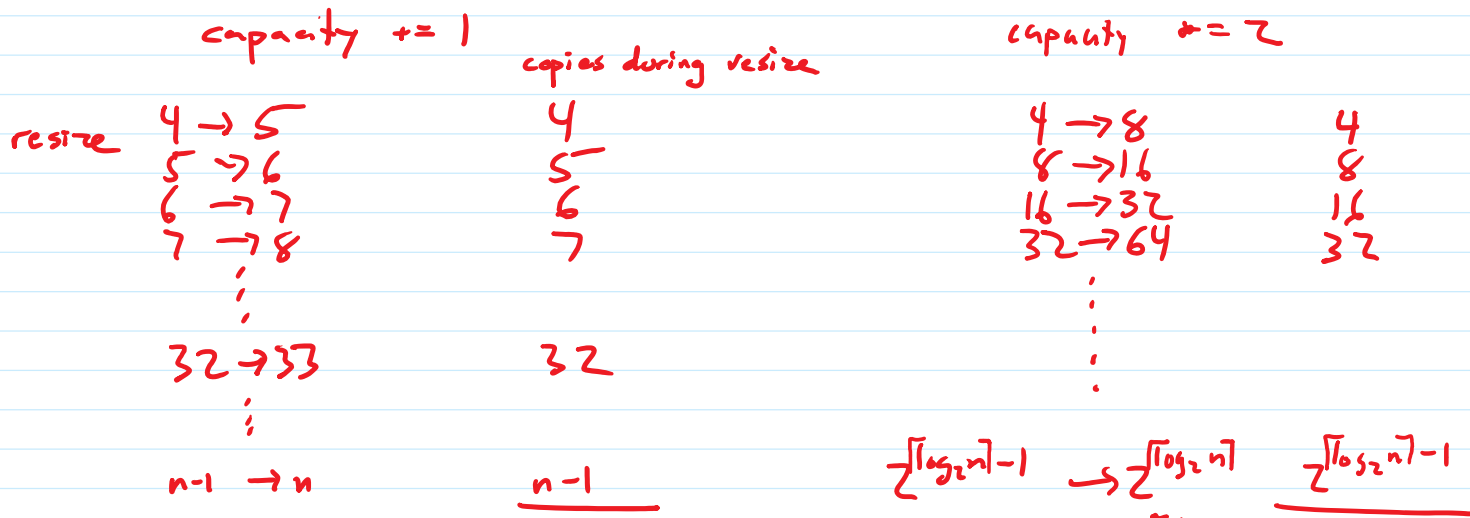


```

if (count == samples_capacity)
{
    ① int *bigger = malloc(count * 2 * sizeof(int) );
    if (bigger == NULL)
    {
        fprintf(stderr, "%s: out of memory\n", argv[0]);
        return 1;
    }
    for (int i = 0; i < count; i++)
    {
        ② bigger[i] = samples[i];
    }
    ③ free(samples);
    ④ samples = bigger;
    samples_capacity *= 2;
}

```



$$n-1 \xrightarrow{i} n$$

$$\frac{n-1}{\approx \frac{1}{2} n^2}$$

$$\sqrt{\lceil \log_2 n \rceil} - 1 \rightarrow \sqrt{\lceil \log_2 n \rceil} \approx n \quad \frac{\sqrt{\lceil \log_2 n \rceil} - 1}{\approx n}$$

capacity  $\neq 10$   
total  $\approx \frac{1}{20} n^2$

capacity  $\neq 1.5$   
total  $\approx 2n$

always quadratic if  
capacity  $\neq c$

always linear if  
capacity  $\neq c$