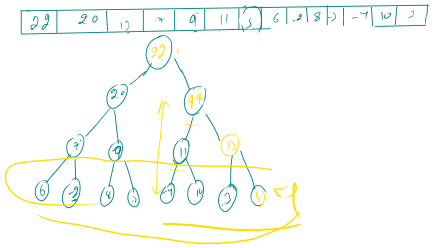
1. empty
2. size
3. insert / add
4. pop / remove
5. top



$$1\times2^{h-1} + 2\times2^{h-2} + 3\times2^{h-3} + 4\times2^{h-4} + 5\times2^{h-5} \cdots h\times2^{h-h}$$

$$\frac{1\cdot2^h}{2} + \frac{2\cdot2^h}{2^2} + \frac{3\cdot2^h}{2^3} + \frac{4\cdot2^h}{2^4} + \frac{5\times2^h}{2^5} \cdots \frac{h\times2^h}{2^h}$$

$$2^h\left[\frac{1}{2} + \frac{2}{2^2} + \frac{3}{2^3} + \frac{4}{2^4} + \frac{5}{2^5} \cdots \frac{h}{2^h}\right]$$

$$\sum_{1}^{h} \frac{h}{2^h} < \sum_{1}^{\infty} \frac{h}{2^h} < 2$$

$2h$

$$2^h \sum_{h=1}^{\infty} \frac{h}{2^h}$$

$$m \sum_{1}^{\infty} \frac{h}{2^h}$$

1. AGP
2. convergent / divergent
3. ∞ GP

x^h

Let $(x = 1/2)$

$$\sum_{0}^{\infty} x^h = \left(\frac{1}{1-x}\right) \quad , \quad (x < 1)$$

(differentiate) $h x^{h-1} = \frac{+1}{(1-x)^2}$

(multiply by x) $h x^h = \frac{x}{(1-x)^2}$ $\quad \left(x = \frac{1}{2}\right)$

$$h\cdot\left(\frac{1}{2}\right)^h = \frac{h}{2^h} = \frac{(1/2)}{(1-1/2)^2} = \frac{1}{2}\,\frac{1}{\left(\frac{1}{2}\right)^2} = \frac{1}{2}\times 2^2 = 2$$