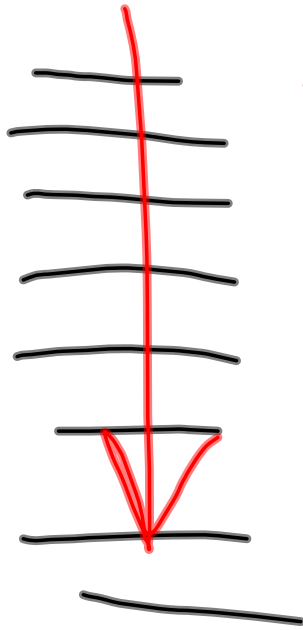


default
Flow



if
branch



if else
branch



Loop Flow control

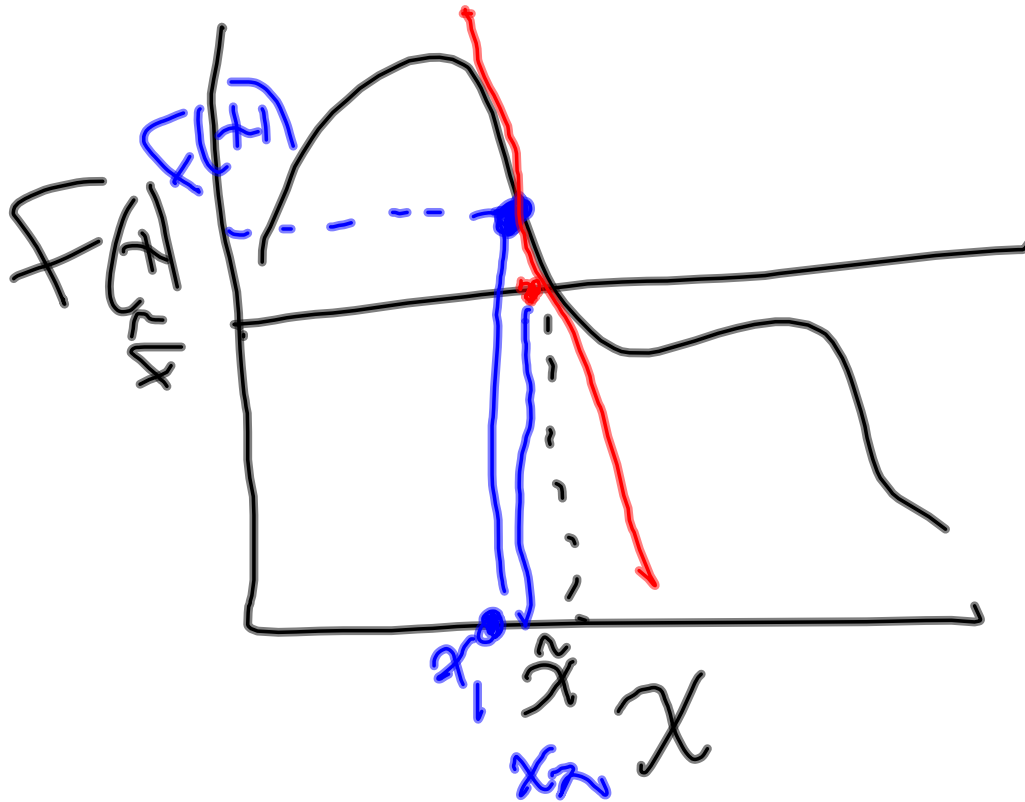


Syntax

for (i in 1:10) b

for (j in 1:5) {
}

Newton's method
"hill climbing"



Weighted average

m values x_1, x_2, \dots, x_m

m weights w_1, w_2, \dots, w_m

$$\bar{x} = \frac{\sum_{i=1}^m x_i w_i}{\sum_{i=1}^m w_i}$$

Variance

$$\text{Var}(x) = \frac{\sum_{i=1}^n (x_i - \bar{x})^2}{n}$$

$$= \frac{\sum_{i=1}^n x_i^2 - 2x_i \bar{x} + \bar{x}^2}{n}$$

$$= \frac{\sum_{i=1}^n x_i^2 - \sum_{i=1}^n 2x_i \bar{x} + \sum_{i=1}^n \bar{x}^2}{n}$$

$$= \frac{\sum_{i=1}^n x_i^2 - 2\bar{x} \sum_{i=1}^n x_i + n\bar{x}^2}{n}$$

9y

$$= \frac{1}{n} \sum_{i=1}^n x_i^2 - 2 \bar{x} \bar{x} + \bar{x}^2$$

$$= \frac{1}{n} \sum_{i=1}^n x_i^2 - \bar{x}^2$$

$$= E(x^2) - (E(x))^2$$

$$\frac{\sum_{i=1}^n w_i x_i^2}{\sum_{i=1}^n w_i}$$

