

Loops and Ordering for Sort. Boucles et Ordonnement et Triage.

Object of the **Premisse**: reasoning by recurrence: Bankok and Bourbaki: Good for 0 and 1, and for $n \in \mathbb{N}$, then $n + 1$ valid : a property for all $\mathbb{N}$. Defined as Ambiance. A family v_i is free if v_i , are linearly independent: as linear programming by orthonormalization of v_i , by Gram Schmidt. The **Loop** is by GraphTree where nodes ridges: have as extremities same node as networks. **The Loop is as: portion of code as many times in a row: until a condition drives you out from Loop.** Safeguard. The condition may not function some times and goes to ∞ without interruptions: as mono task: where multi tasks comes to first tasks at beginning of iteration.

While is defined: Pré-Condition as Condition of Stop: where $\mathbb{N}$ iteration and Post-Condition at **Do or Until** as branched Loop making a List as a Casino.

The Tree is by: *arête ayant pour extrémité même Sommet: Compteurs (associé a une variable incrementée de façon variable dans la boucle et Iterateurs pour différents types pour ces Boucles.*

Control Structure: Rosenthal and Audience where teaching is tom a Group over time. Branding and Parallelism: as Home Detox: Insurance and Buying Insurance. A Clinical Practitioner and Parallelism of Floor is for Relaxation $O(n)$ with Home Proof: Safety with Half Line Continuity: see Fitbit. The Identification as elimination of toxines eliminated from Room: Maintenance and MUHC and Tree Traversal: Access to Ambiance: as Home Domain, Method as $O(n)$, Kitchen Bathroom Bedroom LivingRoom LaundryRoom and Home Office: Ressources for Toxin Tests Sewage Ridge: Home Detox: Restoration of Health: $O(n)$ Exposure in $\mathbb{N}$ Tree Exposure for Health: with Range as no Inflammation: and DNA Risk: suffering and Quality of Life: triggering In and Out (Loop for Protection: Onto Surjective and defective $O(n)$).

Reduced Kidney Function: Air Surface of Home as Application and Walls: determining Path. Detox as Map: from Generic Graph *Domain* $\rightarrow$ *Range* as Tract Groin at MUHC as *Root* $\sqrt{x}$ and $sgn(x) = \frac{x}{|x|}$. Number Theory for *Les Étapes*: Convexity of f as Straight Line or Circle: As such Chernikova: an example $f(x) = 2x - 3$: Slope 2, Intercept -3, $g(x) = \sqrt{16 - x^2}$, $\sqrt{x + 1} = f(x)$, $g(x) = \frac{x-1}{x}$ at $f + g, fg, \frac{f}{g}$. End Growth and Finite Increments as f and g and $|f'| < |g'|$. The tree at Welfare at Destination $\Delta f = \Delta g$ as $|f(b) - f(a)| \leq |g(b) - g(a)|$. The Luxury is defined as Circularity and $O(n)$ is by the Wall: McGill.

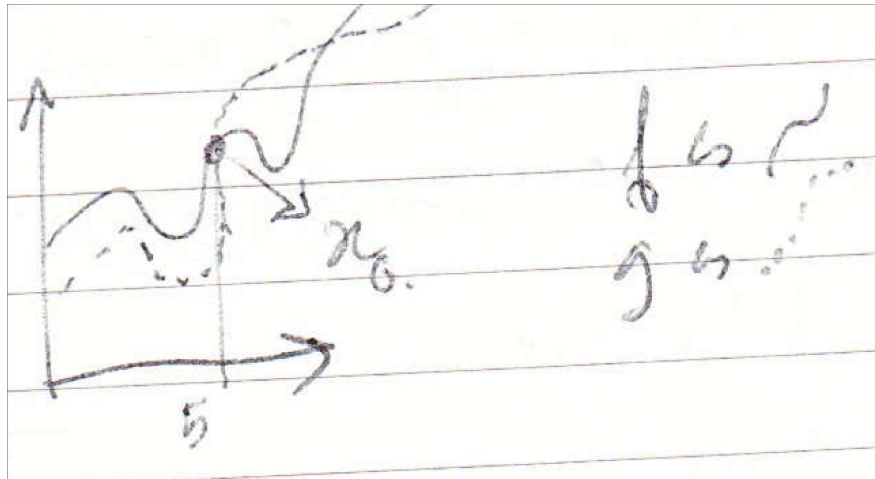
Path Increment (Diet and Removing) : Onto Cells and Applications: discerning f and g . Outer Loop: metals pesticides fungi bacteria and Inner liver kidneys lungs lymph tract sweat locating toxines. Tree for Well Being as Network: toys and body for consistent exposure by hidden toxines and blue print of toxines: Energy and Removing.

Path Method: Maintenance Relaxation: Loops as sponges brushes vacuum All Rooms Air Purifiers brooms Dustpans Brushes

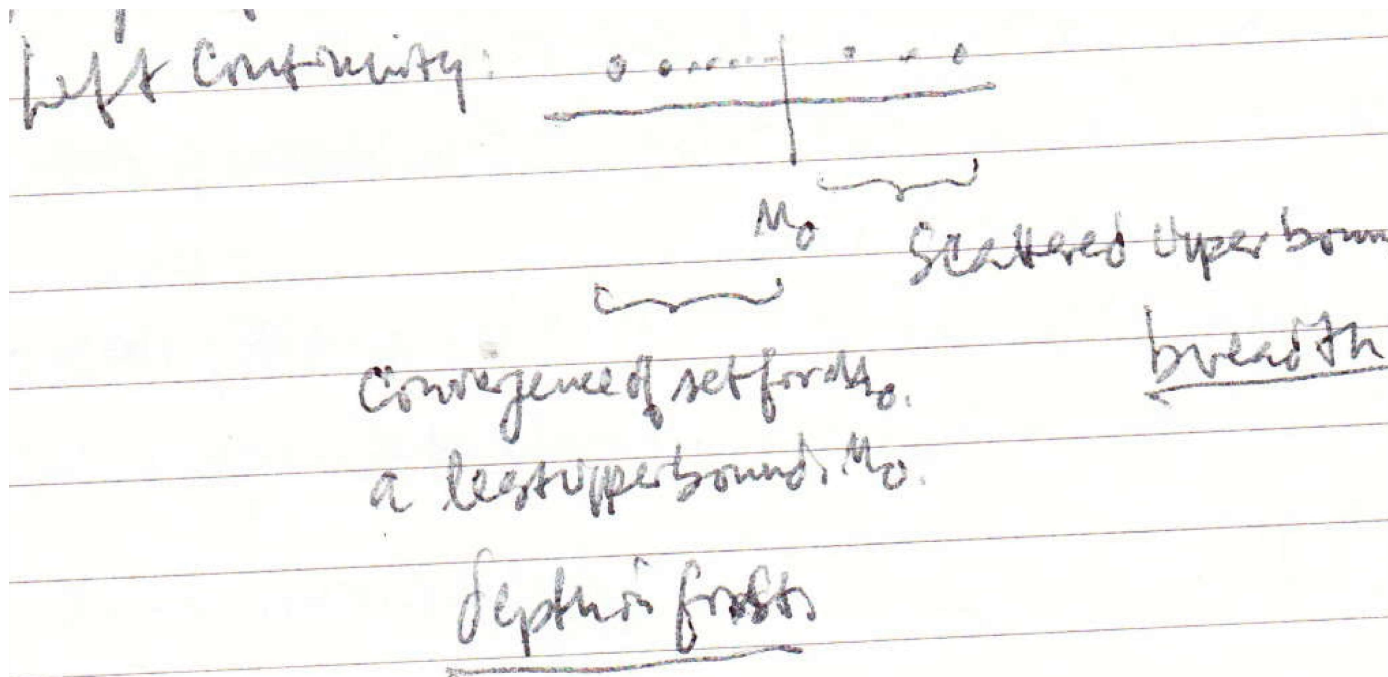
From The Right of Principality: π_i and $O(n_i)$ where Super Toxins as $x \in \partial G$:Loop as asthma, headaches, inflammation and fatigue: Kidneys toxines Skin Care: No Synthetic and mineral and Plants. π_i as Home Detox by Love and Social Order: Soins Santé and Social

Services for Work and Policy in $O(n)$ to Resume: emotional Intelligence: see Ticket and Catastrophy. member@npqmag.org in Book of Home Detox.

Juridic Right, Home and Loops: happens that Inner Loops run many times inside some Outer Loops: and there is Interchange: two Iteration Variables used by nested or Outer Loops. The Ellipsoid and Higher Social Stand at Snagov. The Limit behaviour als Ordnung $f(x) = O(g(x))$, $x \rightarrow \infty, M > 0$. Perpendicularity with some $x_0 = 5, 0 \leq f(x) \leq Mg(x), x > x_0$. Here $f(x) - Mg(x) \leq 0$ as Run Time or Space requirement. Recall that the Growth Rate is by f as a Valued Function (forwarding f) and g_i as a Comaprison (corrector g_i). We have Domain as Unbounded Set (Half Line): $f(x) = O(g(x))$. If $|f(x)|$ is at most a positive Constant multiple of $g(x)$, $\forall$ large x . If $\exists M > 0, \exists x_0$ such that $|f(x)| \leq Mg(x)$, as $x \geq x_0$. Therefore $|f(x)| - Mg(x) \leq 0$ and $f(x) = O(g(x))$.



In the Loop: we may have asymptotic Growth Rates as $g(x)$ from $f(x)$. (see Tuineag)
 One may determine a Pension Fund by $O(n)$, called Order of Function: upper Bound of Growth Rate of Forward as Evidence: with Majorant as Subset of Preordered of K preordered : Majorant $\in$ Subset and Minorant as Subset of Preordered of K preordered : Minorant $\in$ Subset. Majorized or Minorated as bounded form above and below with Left Continuity:

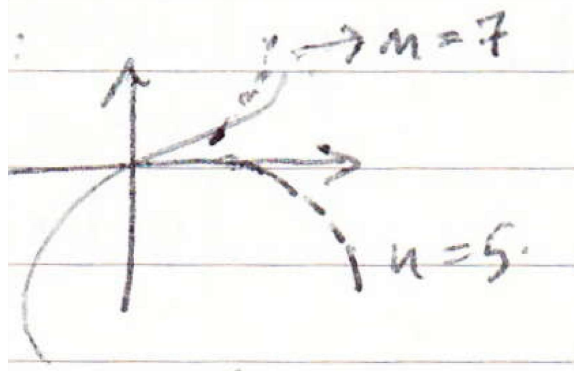


Problem: f and g_i , defined on some **unbounded** Subset of $x \in \mathbb{R}^+$. Here unbounded as No Boundary (No finite Major or Minor and no Measure). A circle is boundary less but a Half Plane is as Left Continuity: Not necessarily a Closed Set. $f(x) = x^2 + 1$, $g(x) = x^2 - 1$. Constrained on $S \subset \mathbb{R}^2$ and is closed. Well defined on $\mathbb{R}$ but Unbounded.

$|f(x)| \leq Mg(x)$, $\forall x \geq x_0$ as $x \rightarrow \infty$ and no $x = a$ but $x \rightarrow a$. Here $0 \leq |x - a| < \delta$, $\forall x$.
 $|f(x)| \leq Mg(x)$ with $g(x)$ strictly positive for all x close to a . See

$$\limsup_{x \rightarrow a} \frac{|f(x)|}{g(x)} < \infty$$

The limit point $a \in \mathbb{R}$, (wether $a = \infty$ or not) is a cluster point of $D(f)$ and $R(f)$. There is an Accumulation Point as Critical and Singular. $\forall f \& g$ of some unbounded Set as Accumulation Point of $i \in \mathbb{N}$, $\forall x \in \text{Range } \mathbb{R}^+$ as $f(x) = O(g(x))$, if there exists M , with x_0 such that $f(i) \leq Mg(i)$, $\forall i \geq x_0$. Example: for large x , $f(x) = 6x^4 - 2x^3 + 5$ as $x \rightarrow \infty$. The Highest Growth Rate is $6x^4$ as $|f(x)| \leq Mg(x)$. $f(x) = O(x^4)$. $|6x^4 - 2x^3 + 5| \leq Mx^4$. How closely a finite series approximates a given function? g_i is a simple function omitting Constant factors and lower order terms. Infinite Assymthoties with different limits for the function argument: The number of Steps of Loop is the $n^{\text{biggerPower}} = n^x$ dominating. The **coefficient irrelevant as \$ Support**: Infinitesimal Assymptotic: Error Term (Approximation). Significant terms: Taylor's Polynomial or Residual with Size of Reminders



$\sin x \approx x - \frac{x^3}{3!} + \frac{x^5}{5!} - \frac{x^7}{7!}$ on Support $-\pi \leq x \leq \pi$. Infinite Asymptotic: $n!, 2^n, n^2, n \log n, n$. Infinitesimal Asymptotic: Residual in Gandia: $O(n^c)$ & $O(c^n)$. if $c \geq 1$ and $O(c^n)$ a Super Polynomial.

$$O(\log n) = O(\log n^c).$$

$f_1 f_2 = O(g_1 g_2)$, $\forall f_i = O(g_i)$ and $f \cdot O(g) = O(fg)$, and by $f_1 + f_2$ as $O(\max g_1 g_2)$ a convex cone as Chernikova's Cone or other convex cone.

Multiple Variables and Help with Vectors $[x_i] = \vec{x}$. Let $f(x_i)$ is $O(g(x_i))$, $[x_i] \rightarrow \infty$ iff $\exists M, c \geq 0$ such that $|f([x_i])| \leq c |g([x_i])|$, $\forall [x_i] \geq M, i \in \mathbb{N}, \|[x_i]\|_\infty \geq M$ the Chebyshev Norm. Example: $f(n, m) = n^2 + m^3 + O(n + m)$ as $n, m \rightarrow \infty, \exists c, M$ such that $|f(n, m) - [n^2 + m^3]| \leq c|n + m|$, $m \geq M, n \geq M$. There are Multiple Variables as Home Detox Complexity or 2^{nd} dimension.

$$O(1)$$

$O(\log \log n)$:Interpolating Research with Key in Array ordered by i as x_i numerical value order.

$O(\log n)$:Balanced Tree Search: Binary and Half Interval Search: Position of Target Value in a sorted Array.

$$O((\log n)^c), c \geq 1, \text{ Matrix chain Ordering (isotope)}$$

$$O(n^c), 0 \leq c \leq 1 \text{ in Tree}$$

$$O(n) \text{ as linear}$$

$$O(n \log^* n) \text{ at } \log^*(n) = \begin{cases} 0 \\ 1 + \log^* \log(n) \end{cases}$$

$O(n \log n) = O(\log(n!))$ a Merge Sort at PeepShow (Divide and Conquer Algorithm)- at all neighbors.

$$O(n^2) \text{ Buble Insertion and Quick Sort}$$

$O(n^c)$ Tree adjoining Grammar: Parsing matching and Bipartite Graph: LU decomposition.

$$O(c^n) \text{ Salesman Problem: travelling Brute Force Search.}$$

The Salesman Problem: from List of Cities and Distances: find order in shortest possible visits of each City and come back to Origin.

The Peep Shop: Moving to Ethical Device: Accessible Story and Ticket by Catastrophy. Telling an actionable frame work for comprehensive ethical Risk at Organization: Data

Science and Étude du Point: at the Geek Squad Community: Transfer as **Merge Sort with Arab** $O(n \log^*(n))$ as **Cairo Rare and Algiers: $O(n)$ Artiste Peintre Illustration as Application with Left Right Joint and Catastrophy and Ticket as Maintenance as a Cone where Chernikova's Algorithm suits as Erdos Number where Maintenance comes as a Cone as Property of Hamams.** (Vertices and Loops). Cairo Rare. Equivoque as both ways map (same invertibility) and Univoque as One to One and Reverted, with Biunivoque as same map for inversion and One to One. Cartography and Tuineag.