

# Title

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— *Author* —

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# 1 Introduction

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## 1.1 Subsection

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### 1.1.1 Subsubsection

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## 2 Itemize and Enumerate

### 2.1 Itemize

- I am an item
- I am an item
- I am an item
  - I am an item
  - I am an item
  - I am an item
    - \* I am an item
    - \* I am an item
    - \* I am an item

### 2.2 Enumerate

1. I am an item
2. I am an item
3. I am an item
  - (a) I am an item
  - (b) I am an item
  - (c) I am an item
    - i. I am an item
    - ii. I am an item
    - iii. I am an item

## 3 Math

### 3.1 Abs and Norm

Commands `\abs` and `\norm`<sup>1</sup> produce the following:

command	non-starred	starred
<code>\abs</code>	$ \frac{1}{2}x^2 $	$ \frac{1}{2}x^2 $
<code>\norm</code>	$\ \frac{1}{2}x^2\ $	$\ \frac{1}{2}x^2\ $

The difference between *starred* and *non-starred* lies in the scaling of the bars.

---

<sup>1</sup>see <https://tex.stackexchange.com/a/43009>

### 3.2 Set

Command: `\mset` produces the following:

$$\{1, 2, 3, 4\}$$
$$\left\{ a \mid \frac{a}{2} > 5 \right\}$$

### 3.3 Conditions

Environment: `\begin{conditions}`<sup>2</sup> can be used for the following:

Boltzmann distribution: state occupation probability of a thermodynamical system within fixed temperature  $T$ :

$$p(x) = \alpha \cdot e^{-\frac{E(x)}{k \cdot T}}$$

where:

$x$  ... state

$\alpha$  ... degeneracy (= number of states  $x'$  with the same energy as  $x$ )

$E(x)$  ... energy

$k$  ... Boltzmann constant

It is possible to have different symbols instead of the dots.

## 4 lstlistings

### 4.1 Python

```
1 import numpy as np
2
3 def incmatrix(genl1, genl2):
4     m = len(genl1)
5     n = len(genl2)
6     M = None #to become the incidence matrix
7     VT = np.zeros((n*m, 1), int) #dummy variable
8
9     #compute the bitwise xor matrix
10    M1 = bitxormatrix(genl1)
11    M2 = np.triu(bitxormatrix(genl2), 1)
12
13    for i in range(m-1):
14        for j in range(i+1, m):
15            [r, c] = np.where(M2 == M1[i, j])
16            for k in range(len(r)):
17                VT[(i)*n + r[k]] = 1;
18                VT[(i)*n + c[k]] = 1;
19                VT[(j)*n + r[k]] = 1;
20                VT[(j)*n + c[k]] = 1;
21
22            if M is None:
23                M = np.copy(VT)
24            else:
25                M = np.concatenate((M, VT), 1)
26
27            VT = np.zeros((n*m, 1), int)
28
29    return M
```

### 4.2 C++

```
1 #include <iostream>
2 using namespace std;
3
```

---

<sup>2</sup>see <https://tex.stackexchange.com/a/95842>

```

4 int main() {
5     int n, t1 = 0, t2 = 1, nextTerm = 0;
6
7     cout << "Enter the number of terms: ";
8     cin >> n;
9
10    cout << "Fibonacci Series: ";
11
12    for (int i = 1; i <= n; ++i) {
13        // Prints the first two terms.
14        if(i == 1) {
15            cout << t1 << ", ";
16            continue;
17        }
18        if(i == 2) {
19            cout << t2 << ", ";
20            continue;
21        }
22        nextTerm = t1 + t2;
23        t1 = t2;
24        t2 = nextTerm;
25
26        cout << nextTerm << ", ";
27    }
28    return 0;
29 }

```

### 4.3 Output

#### Output

```

Enter a positive integer: 100
Fibonacci Series: 0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89,

```

### 4.4 Pseudocode

```

1 function Tree-Search(problem) returns a solution, or failure
2   initialize the frontier using the initial state of problem
3   loop do
4     if the frontier is empty then return failure
5     choose a leaf node and remove it from the frontier
6     if the node contains a goal state then return the corresponding solution
7     expand the chosen node, adding the resulting nodes to the frontier

```

#### code.pseudo

```

1 function Tree-Search(problem) returns a solution, or failure
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```

*pseudo*

This is a very very very very very very very very very very very very very very very very long title

```

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11  loop do

```

```
12  if the frontier is empty then return failure
13  choose a leaf node and remove it from the frontier
14  if the node contains a goal state then return the corresponding solution
15  expand the chosen node, adding the resulting nodes to the frontier
```

*pseudo*

## 5 Boxes

### 5.1 Infobox

#### Wichtig:

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#### 5.1.1 Infobox in a minipage

##### This is the title

I am the left info box.

##### This is the title

I am the right info box.

### 5.2 Highlightbox

$$1 + 2 = 3$$