

# Latex cheat sheet : Mobile and Cloud Computing Seminar - MTAT.03.280

CHINMAYA DEHURY\*, Institute of computer Science,  
University of Tartu, Estonia

Your abstract goes here... This is a supplementary file for the lecture on *Software stack for Research writing*<sup>1</sup> in *Mobile and Cloud Computing Seminar*. This demonstrate some basic latex commands related to figures, table, math, algorithms, etc.

Additional Key Words and Phrases: Latex, ACM, Software stack, Cheetsheet

## ACM Reference Format:

Chinmaya Dehury. 2022. Latex cheat sheet : Mobile and Cloud Computing Seminar - MTAT.03.280. 1, 1 (March 2022), 3 pages. <https://doi.org/10.1145/nnnnnnn.nnnnnnn>

## 1 SECITON-1 : INTRODUCTION

Introduction of the paper goes here....

### 1.1 This is subsec.

1.1.1 This is subsub sec.

## 2 MATHEMATICAL EQUATIONS & SYMBOLS

In following section we will have some examples, how to write mathematical equations in Latex.

Please use following package:

```
\usepackage{amsmath}
```

### Example-1:

Hello student, here is the first math equation example. For this inline equation  $c = a + b$ , below is the output.

### Output:

Hello student, here is the first math equation example. For this inline equation  $c = a + b$ , below is the output.

### Example-2:

Hello student, here is the second math equation example. This same equation can be wrapped in equation environment  $c = a + b$

### Output:

Hello student, here is the second math equation example. This same equation can be wrapped in equation environment

$$c = a + b$$

<sup>1</sup><https://courses.cs.ut.ee/2022/mcsem/spring/Main/Seminars>

Author's address: Chinmaya Dehury, chinmaya.dehury@ut.ee, Institute of computer Science, University of Tartu, Narva mnt 18 - 3040, Tartu, Estonia.

Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for components of this work owned by others than ACM must be honored. Abstracting with credit is permitted. To copy otherwise, or republish, to post on servers or to redistribute to lists, requires prior specific permission and/or a fee. Request permissions from [permissions@acm.org](mailto:permissions@acm.org).

© 2022 Association for Computing Machinery.

XXXX-XXXX/2022/3-ART \$15.00

<https://doi.org/10.1145/nnnnnnn.nnnnnnn>

$$c = a + b \tag{1}$$

### More Examples:

#### Example:

Writing equations in *equation* environment

$$L_i^a = \max_{\forall S_j \in N^s} \{L_{ij}^a\}, \quad i \neq j \tag{2}$$

#### Example:

Writing equations in *equation* environment without equation number:

$$L_i^a = \max_{\forall S_j \in N^s} \{L_{ij}^a\}, \quad i \neq j \text{text here.}$$

#### Example:

$$\beta = \begin{cases} 1 & \text{if } \alpha = \text{Class 3, less delay sensitive VN} \\ 2 & \text{if } \alpha = \text{Class 2, mderately delay sensitive VN} \\ 3 & \text{if } \alpha = \text{Class 1, highly delay sensitive VN} \end{cases} \tag{3}$$

#### Example:

$$\beta = \left\{ \begin{array}{l} 1 \text{ if } \alpha = \text{Class 3, less delay sensitive VN} \\ 2 \text{ if } \alpha = \text{Class 2, mderately delay sensitive VN} \\ 3 \text{ if } \alpha = \text{Class 1, highly delay sensitive VN} \end{array} \right\} \tag{4}$$

#### Example:

Multi-column option

$$\begin{aligned} t &= (a + b) * (a + b) \\ &= \{a * (a + b) + b * (a + b)\} \\ &= a^2 + b^2 + 2 * a * b \end{aligned}$$

[?]

#### Example:

$$t = (a + b) * (a + b) \tag{5}$$

$$= \{a * (a + b) + b * (a + b)\} \tag{6}$$

$$= a^2 + b^2 + 2 * a * b \tag{7}$$

#### Example:

Multiple lines, with *nonumber* option

$$t = (a + b) * (a + b)$$

$$= \{a * (a + b) + b * (a + b)\}$$

$$= a^2 + b^2 + 2 * a * b \tag{8}$$

**Example:**

$$\underbrace{\begin{bmatrix} \exp(-\gamma) & \dots & \exp(-\gamma\|x_1 - x_N\|^2) \\ \exp(-\gamma) & \dots & \exp(-\gamma\|x_2 - x_N\|^2) \\ \dots & \dots & \dots \\ \exp(-\gamma) & \dots & \exp(-\gamma\|x_N - x_N\|^2) \end{bmatrix}}_{\Phi} \underbrace{\begin{bmatrix} w_1 \\ w_2 \\ \dots \\ w_N \end{bmatrix}}_w = \underbrace{\begin{bmatrix} y_{m1} \\ y_{m2} \\ \dots \\ y_{mN} \end{bmatrix}}_y \quad (9)$$

Matrix related examples: **Example:**

3 FIGURES

*Did you use the wizard to insert this pic?*

3.1 Wrapping the figures

Do not forget to include the following package  
`\usepackage{wrapfig}`

Home  
 Welcome to the Mobile & Cloud Computing Laboratory (Mobile & Cloud Lab) at Institute of Computer Science, Faculty of Science and Technology, University of Tartu.



**Mobile & Cloud Lab**

Mobile & Cloud Lab conducts research and teaching in the mobile computing and cloud computing domains. Our research topics include cloud computing, mobile application development, mobile cloud, mobile web services, Internet of Things and migrating scientific computing and enterprise applications to the cloud.

The group was founded by Prof. Dr. Satish Narayana Srirama. Mobile Cloud Lab together with Prof. Eero Vainikko ( Head of Distributed Systems Chair, 2nd from left ) Mobile Cloud Lab together with Prof. Eero Vainikko ( Head of Distributed Systems Chair, 2nd from left )

4 TABLES

Country List		
Country Name or Area Name	ISO ALPHA 2 Code	ISO ALPHA 3
Afghanistan	AF	AFG
Alaska	AK	ALA
Albania	AL	ALB
Algeria	DZ	DZA
Andorra	AD	AND
Angola	AO	AGO

4.1 A tricky table

Open Ms Word -> insert table -> populate table -> *Layout* menu -> *Size* -> resize page size -> export PDF

Item 1		
Items2	vdfvds	vsdf
mhj	vdf	vsfdv
dfv	vdsfv	sfvdf
vvvvvv	dfvdfdv	vdfv
njjhm	sdfv	sdv

5 BULLET AND NUMBERING

**Example:**

The constraints of the function are described as follows.

- The constraint shown in Eq. 1 ensures each VM is ...
- The constraint shown in Eq. 2 ensures that VN request ...
- The constraint shown in Eq. 3 refers to embedding the VM ...
- $\omega_x$  and  $\omega_n$  are the constants introduced to as...

**Example:**

The constraints of the function are described as follows.

- (1) The constraint shown in Eq. 1 ensures each VM is ...
- (2) The constraint shown in Eq. 2 ensures that VN request ...
- (3) The constraint shown in Eq. 3 refers to embedding the VM ...
- (4)  $\omega_x$  and  $\omega_n$  are the constants introduced to as...

**Example:**

you can use your own symbol:

- (1) The constraint shown in Eq. 1 ensures each VM is ...
- ★ The constraint shown in Eq. 2 ensures that VN request ...
- ⊙ The constraint shown in Eq. 3 refers to embedding the VM ...
- ⊗  $\omega_x$  and  $\omega_n$  are the constants introduced to as...

**Example:**

An example of nested list:

- (1) The constraint shown in Eq. 1 ensures each VM is ...
- (2) The constraint shown in Eq. 2 ensures that VN request ...
  - (a) The constraint shown in Eq. 3 refers to ...
  - (b)  $\omega_x$  and  $\omega_n$  are the constants introduced to as...

**Example:**

Another example of nested list:

- The constraint shown in Eq. ?? ensures each VM is ...
- The constraint shown in Eq. 2 ensures that VN request ...
  - The constraint shown in Eq. 3 refers to ...
  - $\omega_x$  and  $\omega_n$  are the constants introduced to as...

6 ALGORITHMS

7 CITATION & REFERENCES

[Conti et al. 2009] [Werneck et al. 2000] dsbkvajd... [Jonas et al. 2019] THE introduction of thie paper is given in Section 1 The line is in Line 2.

8 BONUS: TODO

Do not forget to use followig packages:

```
\usepackage[table]{xcolor}
\usepackage{todonotes}
\usepackage{menukeys}
```

Fig. 1. No long caption




---

**Algorithm 1:** Algorithm for data authorizer

---

```

Data: ipStream ← input data stream
Result: Authorized output data stream
1 data ← convertToJSON(ipStream);
  /* Here is a comment line.                                */
2 src ← data["source"];
3 srcList ← getSourceRegistry();
4 if src in srcList then
5   | data["Authorization"] = "AUTHORIZED";
6 else
7   | data["Authorization"] = "UNAUTHORIZED";
8 end
9 retData ← dumpJSON(data);
10 while cont1 == True do
11   | while statement1;
12   | while statement2;
13 end
14 return retData;

```

---



Fig. 2. MC Lab Logo

this  
is  
todo  
list.

Explore todo package here <http://tug.ctan.org/macros/latex/contrib/todonotes/todonotes.pdf>

**REFERENCES**

Mauro Conti, Roberto Di Pietro, Luigi V. Mancini, and Alessandro Mei. 2009. (old) Distributed data source verification in wireless sensor networks. *Inf. Fusion* 10, 4 (2009), 342–353. <https://doi.org/10.1016/j.inffus.2009.01.002>

Eric Jonas, Johann Schleier-Smith, Vikram Sreekanti, Chia-Che Tsai, Anurag Khandelwal, Qifan Pu, Vaishaal Shankar, Joao Carreira, Karl Krauth, Neeraja Yadwadkar, et al. 2019. Cloud programming simplified: A berkeley view on serverless computing. *arXiv preprint arXiv:1902.03383* (2019).

Renato Werneck, João Setubal, and Arlindo da Conceição. 2000. (old) Finding minimum congestion spanning trees. *J. Exp. Algorithmics* 5 (2000), 11. <https://doi.org/10.1145/351827.384253>