**Chapter 1:**

TUTUM HOW-TO

**1. TUTUM Tutorial**

In this chapter we will cover:

1: Info about Tutum

2: How to install Tutum

3: Running a Python App in Tutum

4: Running Cloudandbigdatalab Docker Tutorial 1 in Tutum and its Challenges

**Introduction**

We will start typing here in this line with an included indentation and continue writing on the following lines as we are writing in this document.

**1.**

We will start typing here in this line with an included indentation and continue writing on the following lines as we are writing in this document.

**Title of Subsection (Times New Roman 12 - Bold)**

We will start typing here in this line with an included indentation and continue writing on the following lines as we are writing in this document.

**Title of Subsection (Times New Roman 12 - Bold)**

We will start typing here in this line with an included indentation and continue writing on the following lines as we are writing in this document.

**Title of Subsection (Times New Roman 12 - Bold)**

We will start typing here in this line with an included indentation and continue writing on the following lines as we are writing in this document.

**Title of Subsection (Times New Roman 12 - Bold)**

We will start typing here in this line with an included indentation and continue writing on the following lines as we are writing in this document. As seen on Table 1.1, (Chapter number. table number sequence)

Table 1.1. 4G-PS Bandwidth and subcarrier parameters

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Sampling Frequency | FFT Size | Bandwidth Spectrum Allocation | Spectrum Subcarriers | Channel Bandwidth for positioning | Available Useful Subcarriers |
| MHz |  | MHz | n | MHz |  |
| 1.92 | 128 | 1.4 | 93 | 1.08 | 72 |
| 3.84 | 256 | 3 | 200 | 2.7 | 180 |
| 7.68 | 512 | 5 | 333 | 4.5 | 300 |
| 15.36 | 1024 | 10 | 667 | 9 | 600 |
| 23.04 | 1536 | 15 | 1000 | 13.5 | 900 |
| 30.72 | 2048 | 20 | 1333 | 18 | 1200 |

Source: From 3GPP [1] [Reference number]

**Title of Subsection (Times New Roman 12 - Bold)**

We will start typing here in this line with an included indentation and continue writing on the following lines as we are writing in this document. As seen on Table 1.1, (Chapter number. table number sequence)

To add code blocks or command line output’s using insert > object > opendocument textor insert>object>Microsoft word 97-2004 Document and then copy paster your command or code from command line or editor. Then add color to it, choose light gray and add some space between lines to look something like this.

****

****

I have created a small video for this. Please have a look at it. I think this has to work with all versions of word. The video has been not edited properly so I apologies for that in advance.

<https://youtu.be/rbW2c4R_-A8>

**Title of Subsection (Times New Roman 12 - Bold)**

We will start typing here in this line with an included indentation and continue writing on the following lines as we are writing in this document. As seen on Figure 1.1, (Chapter number. figure sequence)



Figure 1.1. OpenStack

(Figures must be centered and must be the same size throughout the document. Specially screenshots, these should cover from left margin to right margin)

This is a new paragraph and I want to list some items by using bullet point arranged in a hierarchy mode:

* Main
  + Sub 1
  + Sub 1
    - Sub 2
    - Sub 2
    - Sub 2
* Main
  + Sub 1
  + Sub 1
    - Sub 2
    - Sub 2
    - Sub 2

|  |
| --- |
| Notes: Place your notes in a box (created with insert table 1x1) in any part of your document |

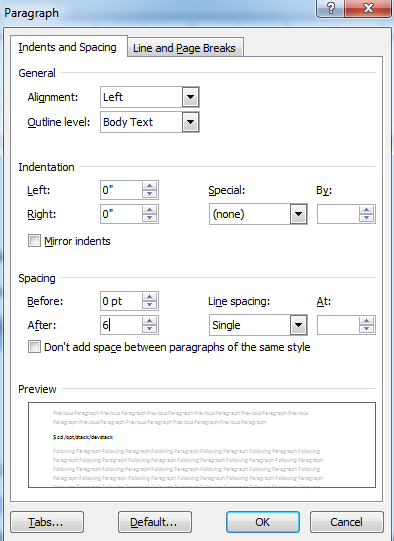
**Title of Subsection (Times New Roman 12 - Bold)**

Let us assume now that you would like to insert some code:

$ cd /opt/stack/devstack

$ source openrc

The format for code examples and commands should be Courier New Size 11 and set the paragraph Line Spacing to "Single" and the Spacing after 6



**References**

Please refer to EndNote X7 (Available downlad at asap.utsa.edu-->Sotware Downloads → EndNote X7)

Optionally, refer to IEEE Style References Manual for manual referencing.

<https://drive.google.com/open?id=0B_6QD8ZT8P4gQ1hJMjF1RTIyVkE>

1. Ha Duyen Trung and W. Benjapolakul, “Location-aided multipath routing method for mobile ad hoc wireless networks,” *Proc. of First Intl Conf. on Communications and Electronics (ICCE)*, Hanoi, 2006, pp. 7-12. (Conference Publication)
2. L. Blazevic, J.Y. Boudec, and S. Giordano, “A location-based routing method for mobile ad hoc networks,” *IEEE Transactions on Mobile Computing*, vol. 4, pp. 97-110, Mar. 2005. (IEEE Transaction)
3. K. Takeda, S. Nagata, Y. Kishiyama, M. Tanno, K. Higuchi, and M. Sawahashi, “Investigation on Optimum Radio Parameter Design in Layered OFDMA for LTE-Advanced,” in *IEEE 69th Vehicular Technology Conf*., Barcelona, 2009. (Conference Publication)
4. A. Ibing, D. Kuhling, and H. Boche, “Software Defined Hybrid MMSE/QRD-M Turbo Receiver for LTE Advanced Uplink on a Cell Processor,” *IEEE International Conf. on Communications: ICC Communication Workshop*, Dresden, 2009. (Conference Publication)
5. 3GPP TR-36.913 E-UTRA Requirements for Further Advancement for E-UTRA, LTE-Advanced, Release 10, Apr., 2011. (Standard)
6. 3GPP TS-36.201 E-UTRA TSPG RAN E-UTRA, LTE-Physical Layer, Release 10, Dec., 2010. (Standard)
7. Brian Kelley, “Massively Parallel Cooperative Localization in Scalable Sensor Networks,” in *Int. J. of Communication Networks and Distributed System (IJCNDS)*, 2010. (Conference Publication)
8. Brian Kelley and Ed Rivas, "OFDM Location-Based Routing Protocols in Ad-Hoc Networks," in *IEEE Wireless Hive Conf*., Austin, TX, 2008. (Conference Publication)
9. M. Cohn and A. Lempel, “On Fast M-Sequence Transforms,” *IEEE Transactions on Information Theory*, vol. 23, no. 1, pp.135-137, Jan. 1977. (IEEE Transaction)
10. A. Lempel, M. Cohn, and W. Eastman, "A Class of Balanced Binary Sequences with Optimal Autocorrelation Properties," *IEEE Transactions on Information Theory*, vol. 23, no. 1, Jan. 1977. (IEEE Transaction)
11. Branislav M. Popovic, "Generalized Chip-Like Polyphase Sequences with Optimum Correlation Properties," *IEEE Transactions on Information Theory*, vol. 38, no. 4, Jul. 1992. (IEEE Transaction)
12. Yilin Zhao, “Standardization of Mobile Phone Positioning for 3G Systems,” *IEEE Communications Magazine*, vol. 40, no. 7, pp. 109-116, Jul. 2002. (Periodical)
13. Spirent. An overview of LTE positioning. White Paper. Feb. 2012. (White Paper)
14. ERICSSON. Positioning with LTE. Maximizing performance through integrated solutions. White Paper. Sept. 2011. (White Paper)
15. Open Mobile Alliance, SUPL 1.0 Requirement document, OMA-RD-SUPL-V10 (Report)
16. E.D. Kaplan, *Understanding GPS: Principles and Applications*, 1st ed. Boston: Artech House, 1996. (Book)
17. P. Misra, P. Enge, *Global Positioning System, Signals, Measurements, and Performance*, Lincoln: Ganga-Jamuna Press, 2001. (Book)
18. US National Coordination Office for Space-Based Positioning, Navigation and Timing. *US Global Positioning System*, http://www.gps.gov/ (www)
19. Russian Federal Space Agency. *Information analytical centre of GLONASS and GPS controlling*, http://www.glonass-center.ru/en/ (www)
20. Gordon L. Stuber, *Principles of Mobile Communications*, 2nd ed. Norwell: Kluwer Academic Publishers, 2001, pp. 39-114. (Book)
21. 3GPP TS-36.101 LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) radio transmission and reception, Release 12, Nov., 2014, pp. 35, 73, 406, 511. (Standard)
22. B. Kelley, S. Chang, and D. Akopian, “4th Generaation Position Systems in OFDM Wireless Networks,” unpublished
23. B. Kelley, “Massively parallel cooperative localisation in scalable sensor networks,” *International Journal of Comm. Networks and Distributed Systems*, vol 7, no. ½, pp. 81-100, Jun, 2011. (Periodical)