

House of Santa Claus

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Here is a short summary or overview of the talk – approximately one to ten lines. You should describe briefly what the main goal of the talk is and how this is accomplished.

1 Basics

Definition 1.1 (House of Santa Claus). The *House of Santa Claus* is the graph (V, E) , defined as follows:

$$V := \{1, \dots, 5\}$$

$$E := \{\{1, 2\}, \{1, 5\}, \{2, 3\}, \{2, 4\}, \{2, 5\}, \{3, 4\}, \{3, 5\}, \{4, 5\}\}$$

One can illustrate the House of Santa Claus as in Figure 1; more information on TikZ can be found in the documentation [14].

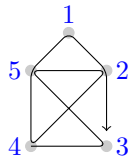


Figure 1: House of Santa Claus

2 Properties of the House of Santa Claus

Theorem 2.1 (House of Santa Claus). *The House of Santa Claus is not complete.*

Proof. We use the notation from Definition 1.1. The House of Santa Claus is not a complete graph because the edge $\{1, 3\}$ is not contained in the House of Santa Claus. \square

3 Examples

Example 3.1.

- Here is an example
- ... and another one
- ... and another one

Exercise 3.2. Please do not forget to insert a few exercises – so that the participants can test their understanding of the topic.

Example 3.3.

1. An example ...
2. ... using numbers.

References

- [1] A. Beutelspacher. *Das ist o.B.d.A. trivial!*, 9th edition, Vieweg+Teubner, 2009.
- [2] C.K. Chua, K.F. Leong, C.S. Lim. *Rapid Prototyping: Principles and Applications*, World Scientific Publishing, 2010.
- [3] H. Edelsbrunner, J.L. Harer. *Computational topology. An introduction*, American Mathematical Society, 2010.
- [4] R. Ghrist. Barcodes: the persistent topology of data, *Bull. Amer. Math. Soc.*, 45, S. 61–75, 2008.
- [5] T. Kaczynski, K. Mischaikow, M. Mrozek, Marian. *Computational homology*, Applied Mathematical Sciences, 157. Springer, 2004.
- [6] J. Lurie. *Higher Topos Theory*, Annals of Mathematics Studies, 170, Princeton University Press, 2009.
- [7] S. Mac Lane. *Categories for the Working Mathematician*, second edition, Springer, 1998.
- [8] W.S. Massey. *Algebraic Topology: An Introduction*, Graduate Texts in Mathematics, 56, Springer, 1989.
- [9] J.P. May. *Simplicial Objects in Algebraic Topology*, University of Chicago Press, 1993.
- [10] B. Mohar, C. Thomassen. *Graphs on surfaces*, Johns Hopkins Studies in the Mathematical Sciences, Johns Hopkins University Press, 2001.

- [11] J.R. Munkres. *Elements of algebraic topology*, Addison-Wesley, 1984.
- [12] F. Mittelbach, M. Goossens, J. Braams, D. Carlisle, C. Rowley. *The L^AT_EX Companion*, zweite Auflage, Addison-Wesley, 2004.
- [13] J.J. Rotman. *An Introduction to the Theory of Groups*, fourth edition, Graduate Texts in Mathematics, 148, Springer, 1999.
- [14] T. Tantau. *The TikZ and PGF Packages*,
<http://www.ctan.org/tex-archive/graphics/pgf/base/doc/generic/pgf/pgfmanual.pdf>
- [15] C.A. Weibel. *An introduction to homological algebra*, Cambridge Studies in Advanced Mathematics, 38, Cambridge University Press, 1994.