



# Ansys Meshing Guide

**John E. Matsson**



## **Ansys Meshing Guide:**

**ANSYS Workbench 2019 R2: A Tutorial Approach, 3rd Edition** Prof. Sham Tickoo, 2019 ANSYS Workbench 2019 R2 A Tutorial Approach book introduces the readers to ANSYS Workbench 2019 one of the world's leading widely distributed and popular commercial CAE packages. It is used across the globe in various industries such as aerospace, automotive, manufacturing, nuclear, electronics, biomedical, and so on. ANSYS provides simulation solutions that enable designers to simulate design performance. This book covers various simulation streams of ANSYS such as Static Structural, Modal, Steady State, and Transient Thermal analyses. Structured in pedagogical sequence for effective and easy learning, the content in this textbook will help FEA analysts in quickly understanding the capability and usage of tools of ANSYS Workbench. Salient Features: Book consisting of 11 chapters that are organized in a pedagogical sequence. Summarized content on the first page of the topics that are covered in the chapter. More than 10 real world mechanical engineering problems used as tutorials. Additional information throughout the book in the form of notes, tips, Self Evaluation Tests, and Review Questions at the end of each chapter to help the users assess their knowledge. Table of Contents: Chapter 1 Introduction to FEA, Chapter 2 Introduction to ANSYS Workbench, Chapter 3 Part Modeling I, Chapter 4 Part Modeling II, Chapter 5 Part Modeling III, Chapter 6 Defining Material Properties, Chapter 7 Generating Mesh I, Chapter 8 Generating Mesh II, Chapter 9 Static Structural Analysis, Chapter 10 Modal Analysis, Chapter 11 Thermal Analysis, Index.

**ANSYS Workbench 2021 R1: A Tutorial Approach, 4th Edition** Prof. Sham Tickoo, 2021-10-22 ANSYS Workbench 2021 R1 A Tutorial Approach book introduces the readers to ANSYS Workbench 2021 one of the world's leading widely distributed and popular commercial CAE packages. It is used across the globe in various industries such as aerospace, automotive, manufacturing, nuclear, electronics, biomedical, and so on. ANSYS provides simulation solutions that enable designers to simulate design performance. This book covers various simulation streams of ANSYS such as Static Structural, Modal, Steady State, and Transient Thermal analyses. Structured in pedagogical sequence for effective and easy learning, the content in this book will help FEA analysts in quickly understanding the capability and usage of tools of ANSYS Workbench. Salient Features: Book consisting of 11 chapters that are organized in a pedagogical sequence. Summarized content on the first page of the topics that are covered in the chapter. More than 10 real world mechanical engineering problems used as tutorials. Additional information throughout the book in the form of notes and tips, Self Evaluation Tests, and Review Questions at the end of each chapter to help the users assess their knowledge. Table of Contents: Chapter 1 Introduction to FEA, Chapter 2 Introduction to ANSYS Workbench, Chapter 3 Part Modeling I, Chapter 4 Part Modeling II, Chapter 5 Part Modeling III, Chapter 6 Defining Material Properties, Chapter 7 Generating Mesh I, Chapter 8 Generating Mesh II, Chapter 9 Static Structural Analysis, Chapter 10 Vibration Analysis, Chapter 11 Thermal Analysis, Index.

**ANSYS Workbench 2022 R1: A Tutorial Approach, 5th Edition** Prof. Sham Tickoo, 2022-08-24 ANSYS Workbench 2022 R1 A Tutorial Approach book introduces the readers to ANSYS Workbench 2022

one of the world's leading widely distributed and popular commercial CAE packages. It is used across the globe in various industries such as aerospace, automotive, manufacturing, nuclear, electronics, biomedical, and so on. ANSYS provides simulation solutions that enable designers to simulate design performance. This book covers various simulation streams of ANSYS such as Static Structural, Modal, Steady State, and Transient Thermal analyses. Structured in a pedagogical sequence for effective and easy learning, the content in this book will help FEA analysts quickly understand the capability and usage of tools of ANSYS Workbench. Salient Features: Book consisting of 11 chapters that are organized in a pedagogical sequence. Summarized content on the first page of the topics that are covered in the chapter. More than 10 real-world mechanical engineering problems used as tutorials. Additional information throughout the book in the form of notes and tips. Self-Evaluation Tests and Review Questions at the end of each chapter to help the users assess their knowledge. Table of Contents: Chapter 1: Introduction to FEA; Chapter 2: Introduction to ANSYS Workbench; Chapter 3: Part Modeling I; Chapter 4: Part Modeling II; Chapter 5: Part Modeling III; Chapter 6: Defining Material Properties; Chapter 7: Generating Mesh I; Chapter 8: Generating Mesh II; Chapter 9: Static Structural Analysis; Chapter 10: Vibration Analysis; Chapter 11: Thermal Analysis; Index.

**An Introduction to Ansys Fluent 2025** John E. Matsson, 2025-08. Teaches new users how to run Computational Fluid Dynamics simulations using Ansys Fluent. Uses applied problems with detailed step-by-step instructions. Designed to supplement undergraduate and graduate courses. Covers the use of Ansys Workbench, Ansys DesignModeler, Ansys Meshing, Ansys Fluent, and Ansys Polyflow. Compares results from Ansys Fluent with numerical solutions using Mathematica. This edition features a new chapter simulating the flight of an ultimate frisbee. As an engineer, you may need to test how a design interacts with fluids. For example, you may need to simulate how air flows over an aircraft wing, how water flows through a filter, or how water seeps under a dam. Carrying out simulations is often a critical step in verifying that a design will be successful. In this hands-on book, you will learn in detail how to run Computational Fluid Dynamics (CFD) simulations using Ansys Fluent. Ansys Fluent is known for its power, simplicity, and speed, which has helped make it a world leader in CFD software, both in academia and industry. Unlike any other Ansys Fluent textbook currently on the market, this book uses applied problems to walk you step-by-step through completing CFD simulations for many common flow cases, including internal and external flows, laminar and turbulent flows, steady and unsteady flows, and single-phase and multiphase flows. You will also learn how to visualize the computed flows in the post-processing phase using different types of plots. To better understand the mathematical models being applied, we will validate the results from Ansys Fluent with numerical solutions calculated using Mathematica. Throughout this book, we will learn how to create geometry using Ansys Workbench and Ansys DesignModeler, how to create mesh using Ansys Meshing, how to use physical models, and how to perform calculations using Ansys Fluent. The chapters in this book can be used in any order and are suitable for beginners with little or no previous experience using Ansys. Intermediate users already familiar with the basics of Ansys Fluent will still find new areas to explore and learn. An

Introduction to Ansys Fluent 2025 is designed to be used as a supplement to undergraduate courses in Aerodynamics Finite Element Methods and Fluid Mechanics and is suitable for graduate level courses such as Viscous Fluid Flows and Hydrodynamic Stability The use of CFD simulation software is rapidly growing in all industries Companies are now expecting graduating engineers to have knowledge of how to perform simulations Even if you don't eventually complete simulations yourself understanding the process used to complete these simulations is necessary to be an effective team member People with experience using Ansys Fluent are highly sought after in the industry so learning this software will not only give you an advantage in your classes but also when applying for jobs and in the workplace This book is a valuable tool that will help you master Ansys Fluent and better understand the underlying theory

*An Introduction to Ansys Fluent 2024* John E. Matsson, Teaches new users how to run Computational Fluid Dynamics simulations using Ansys Fluent Uses applied problems with detailed step by step instructions Designed to supplement undergraduate and graduate courses Covers the use of Ansys Workbench Ansys DesignModeler Ansys Meshing Ansys Fluent and Ansys Polyflow Compares results from Ansys Fluent with numerical solutions using Mathematica This edition features new chapters on a Spinning Propeller and a Pool Table Ball Simulation As an engineer you may need to test how a design interacts with fluids For example you may need to simulate how air flows over an aircraft wing how water flows through a filter or how water seeps under a dam Carrying out simulations is often a critical step in verifying that a design will be successful In this hands on book you'll learn in detail how to run Computational Fluid Dynamics CFD simulations using Ansys Fluent Ansys Fluent is known for its power simplicity and speed which has helped make it a world leader in CFD software both in academia and industry Unlike any other Ansys Fluent textbook currently on the market this book uses applied problems to walk you step by step through completing CFD simulations for many common flow cases including internal and external flows laminar and turbulent flows steady and unsteady flows and single phase and multiphase flows You will also learn how to visualize the computed flows in the post processing phase using different types of plots To better understand the mathematical models being applied we'll validate the results from Ansys Fluent with numerical solutions calculated using Mathematica Throughout this book we'll learn how to create geometry using Ansys Workbench and Ansys DesignModeler how to create mesh using Ansys Meshing how to use physical models and how to perform calculations using Ansys Fluent The chapters in this book can be used in any order and are suitable for beginners with little or no previous experience using Ansys Intermediate users already familiar with the basics of Ansys Fluent will still find new areas to explore and learn An Introduction to Ansys Fluent 2024 is designed to be used as a supplement to undergraduate courses in Aerodynamics Finite Element Methods and Fluid Mechanics and is suitable for graduate level courses such as Viscous Fluid Flows and Hydrodynamic Stability The use of CFD simulation software is rapidly growing in all industries Companies are now expecting graduating engineers to have knowledge of how to perform simulations Even if you don't eventually complete simulations yourself understanding the process used to complete

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An Introduction to ANSYS Fluent 2022 John E. Matsson, 2022-08 Teaches new users how to run Computational Fluid Dynamics simulations using ANSYS Fluent Uses applied problems with detailed step by step instructions Designed to supplement undergraduate and graduate courses Covers the use of ANSYS Workbench ANSYS DesignModeler ANSYS Meshing and ANSYS Fluent Compares results from ANSYS Fluent with numerical solutions using Mathematica This edition feature three new chapters analyzing an optimized elbow golf balls and a car As an engineer you may need to test how a design interacts with fluids For example you may need to simulate how air flows over an aircraft wing how water flows through a filter or how water seeps under a dam Carrying out simulations is often a critical step in verifying that a design will be successful In this hands on book you ll learn in detail how to run Computational Fluid Dynamics CFD simulations using ANSYS Fluent ANSYS Fluent is known for its power simplicity and speed which has helped make it a world leader in CFD software both in academia and industry Unlike any other ANSYS Fluent textbook currently on the market this book uses applied problems to walk you step by step through completing CFD simulations for many common flow cases including internal and external flows laminar and turbulent flows steady and unsteady flows and single phase and multiphase flows You will also learn how to visualize the computed flows in the post processing phase using different types of plots To better understand the mathematical models being applied we ll validate the results from ANSYS Fluent with numerical solutions calculated using Mathematica Throughout this book we ll learn how to create geometry using ANSYS Workbench and ANSYS DesignModeler how to create mesh using ANSYS Meshing how to use physical models and how to perform calculations using ANSYS Fluent The chapters in this book can be used in any order and are suitable for beginners with little or no previous experience using ANSYS Intermediate users already familiar with the basics of ANSYS Fluent will still find new areas to explore and learn An Introduction to ANSYS Fluent 2022 is designed to be used as a supplement to undergraduate courses in Aerodynamics Finite Element Methods and Fluid Mechanics and is suitable for graduate level courses such as Viscous Fluid Flows and Hydrodynamic Stability The use of CFD simulation software is rapidly growing in all industries Companies are now expecting graduating engineers to have knowledge of how to perform simulations Even if you don t eventually complete simulations yourself understanding the process used to complete these simulations is necessary to

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### **An Introduction to ANSYS Fluent 2020** John

Matsson,2020-09-10 As an engineer you may need to test how a design interacts with fluids For example you may need to simulate how air flows over an aircraft wing how water flows through a filter or how water seeps under a dam Carrying out simulations is often a critical step in verifying that a design will be successful In this hands on book you ll learn in detail how to run Computational Fluid Dynamics CFD simulations using ANSYS Fluent ANSYS Fluent is known for its power simplicity and speed which has helped make it a world leader in CFD software both in academia and industry Unlike any other ANSYS Fluent textbook currently on the market this book uses applied problems to walk you step by step through completing CFD simulations for many common flow cases including internal and external flows laminar and turbulent flows steady and unsteady flows and single phase and multiphase flows You will also learn how to visualize the computed flows in the post processing phase using different types of plots To better understand the mathematical models being applied we ll validate the results from ANSYS Fluent with numerical solutions calculated using Mathematica Throughout this book we ll learn how to create geometry using ANSYS Workbench and ANSYS DesignModeler how to create mesh using ANSYS Meshing how to use physical models and how to perform calculations using ANSYS Fluent The twenty chapters in this book can be used in any order and are suitable for beginners with little or no previous experience using ANSYS Intermediate users already familiar with the basics of ANSYS Fluent will still find new areas to explore and learn An Introduction to ANSYS Fluent 2020 is designed to be used as a supplement to undergraduate courses in Aerodynamics Finite Element Methods and Fluid Mechanics and is suitable for graduate level courses such as Viscous Fluid Flows and Hydrodynamic Stability The use of CFD simulation software is rapidly growing in all industries Companies are now expecting graduating engineers to have knowledge of how to perform simulations Even if you don t eventually complete simulations yourself understanding the process used to complete these simulations is necessary to be an effective team member People with experience using ANSYS Fluent are highly sought after in the industry so learning this software will not only give you an advantage in your classes but also when applying for jobs and in the workplace This book is a valuable tool that will help you master ANSYS Fluent and better understand the underlying theory

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may need to test how a design interacts with fluids For example you may need to simulate how air flows over an aircraft wing how water flows through a filter or how water seeps under a dam Carrying out simulations is often a critical step in verifying that a design will be successful In this hands on book you ll learn in detail how to run Computational Fluid Dynamics CFD simulations using Ansys Fluent Ansys Fluent is known for its power simplicity and speed which has helped make it a world leader in CFD software both in academia and industry Unlike any other Ansys Fluent textbook currently on the market this book uses applied problems to walk you step by step through completing CFD simulations for many common flow cases including internal and external flows laminar and turbulent flows steady and unsteady flows and single phase and multiphase flows You will also learn how to visualize the computed flows in the post processing phase using different types of plots To better understand the mathematical models being applied we ll validate the results from Ansys Fluent with numerical solutions calculated using Mathematica Throughout this book we ll learn how to create geometry using Ansys Workbench and Ansys DesignModeler how to create mesh using Ansys Meshing how to use physical models and how to perform calculations using Ansys Fluent The chapters in this book can be used in any order and are suitable for beginners with little or no previous experience using Ansys Intermediate users already familiar with the basics of Ansys Fluent will still find new areas to explore and learn An Introduction to Ansys Fluent 2022 is designed to be used as a supplement to undergraduate courses in Aerodynamics Finite Element Methods and Fluid Mechanics and is suitable for graduate level courses such as Viscous Fluid Flows and Hydrodynamic Stability The use of CFD simulation software is rapidly growing in all industries Companies are now expecting graduating engineers to have knowledge of how to perform simulations Even if you don t eventually complete simulations yourself understanding the process used to complete these simulations is necessary to be an effective team member People with experience using Ansys Fluent are highly sought after in the industry so learning this software will not only give you an advantage in your classes but also when applying for jobs and in the workplace This book is a valuable tool that will help you master Ansys Fluent and better understand the underlying theory **ANSYS Tutorial**

**Release 2020** Kent Lawrence,2020-08 The eight lessons in this book introduce you to effective finite element problem solving by demonstrating the use of the comprehensive ANSYS FEM Release 2020 software in a series of step by step tutorials The tutorials are suitable for either professional or student use The lessons discuss linear static response for problems involving truss plane stress plane strain axisymmetric solid beam and plate structural elements Example problems in heat transfer thermal stress mesh creation and transferring models from CAD solid modelers to ANSYS are also included The tutorials progress from simple to complex Each lesson can be mastered in a short period of time and lessons 1 through 7 should all be completed to obtain a thorough understanding of basic ANSYS structural analysis The concise treatment includes examples of truss beam and shell elements completely updated for use with ANSYS APDL 2020 **ANSYS**

**Operations Guide** ,1998 **ANSYS Tutorial Release 2023** Kent Lawrence,2023 Contains eight step by step tutorial style

lessons progressing from simple to complex Covers problems involving truss plane stress plane strain axisymmetric solid beam and plate structural elements Example problems in heat transfer thermal stress mesh creation and importing of CAD models are included Includes elementary orthotropic and composite plate examples The eight lessons in this book introduce you to effective finite element problem solving by demonstrating the use of the comprehensive ANSYS FEM Release 2023 software in a series of step by step tutorials The tutorials are suitable for either professional or student use The lessons discuss linear static response for problems involving truss plane stress plane strain axisymmetric solid beam and plate structural elements Example problems in heat transfer thermal stress mesh creation and transferring models from CAD solid modelers to ANSYS are also included The tutorials progress from simple to complex Each lesson can be mastered in a short period of time and lessons 1 through 7 should all be completed to obtain a thorough understanding of basic ANSYS structural analysis The concise treatment includes examples of truss beam and shell elements completely updated for use with ANSYS APDL 2023

**FINITE ELEMENT ANALYSIS USING ANSYS 11.0** PALETI SRINIVAS, SAMBANA KRISHNA CHAITANYA DATTI RAJESH KUMAR, Srinivas Paleti, sambana Krishna Chaitanya, datti Rajesh Kumar, 2010-01-01 This book is designed for students pursuing a course on Finite Element Analysis FEA Finite Element Methods FEM at undergraduate and post graduate levels in the areas of mechanical civil and aerospace engineering and their related disciplines It introduces the students to the implementation of finite element procedures using ANSYS FEA software The book focuses on analysis of structural mechanics problems and imparts a thorough understanding of the functioning of the software by making the students interact with several real world problems

**Finite Element Simulations with ANSYS Workbench 19** Huei-Huang Lee, 2018-09 Finite Element Simulations with ANSYS Workbench 19 is a comprehensive and easy to understand workbook Printed in full color it utilizes rich graphics and step by step instructions to guide you through learning how to perform finite element simulations using ANSYS Workbench Twenty seven real world case studies are used throughout the book Many of these case studies are industrial or research projects that you build from scratch Prebuilt project files are available for download should you run into any problems Companion videos that demonstrate exactly how to perform each tutorial are also available Relevant background knowledge is reviewed whenever necessary To be efficient the review is conceptual rather than mathematical Key concepts are inserted whenever appropriate and summarized at the end of each chapter Additional exercises or extension research problems are provided as homework at the end of each chapter A learning approach emphasizing hands on experiences is utilized though this entire book A typical chapter consists of six sections The first two provide two step by step examples The third section tries to complement the exercises by providing a more systematic view of the chapter subject The following two sections provide more exercises The final section provides review problems Who this book is for This book is designed to be used mainly as a textbook for undergraduate and graduate students It will work well in a finite element simulation course taken before any theory intensive courses an auxiliary tool

used as a tutorial in parallel during a Finite Element Methods course an advanced application oriented course taken after a Finite Element Methods course

**ANSYS Mechanical APDL for Finite Element Analysis** Mary Kathryn Thompson, John Martin Thompson, 2017-07-28 ANSYS Mechanical APDL for Finite Element Analysis provides a hands on introduction to engineering analysis using one of the most powerful commercial general purposes finite element programs on the market. Students will find a practical and integrated approach that combines finite element theory with best practices for developing, verifying, validating and interpreting the results of finite element models while engineering professionals will appreciate the deep insight presented on the program's structure and behavior. Additional topics covered include an introduction to commands, input files, batch processing and other advanced features in ANSYS. The book is written in a lecture/lab style and each topic is supported by examples, exercises and suggestions for additional readings in the program documentation. Exercises gradually increase in difficulty and complexity helping readers quickly gain confidence to independently use the program. This provides a solid foundation on which to build preparing readers to become power users who can take advantage of everything the program has to offer. Includes the latest information on ANSYS Mechanical APDL for Finite Element Analysis. Aims to prepare readers to create industry standard models with ANSYS in five days or less. Provides self study exercises that gradually build in complexity helping the reader transition from novice to mastery of ANSYS. References the ANSYS documentation throughout focusing on developing overall competence with the software before tackling any specific application. Prepares the reader to work with commands, input files and other advanced techniques.

**Modeling and Meshing Guide**, 1998

**Finite Element Simulations with ANSYS Workbench 2021** Huei-Huang Lee, 2021 A comprehensive easy to understand workbook using step by step instructions. Designed as a textbook for undergraduate and graduate students. Relevant background knowledge is reviewed whenever necessary. Twenty seven real world case studies are used to give readers hands on experience. Comes with video demonstrations of all 45 exercises. Compatible with ANSYS Student 2021. Printed in full color. Finite Element Simulations with ANSYS Workbench 2021 is a comprehensive and easy to understand workbook. Printed in full color it utilizes rich graphics and step by step instructions to guide you through learning how to perform finite element simulations using ANSYS Workbench. Twenty seven real world case studies are used throughout the book. Many of these case studies are industrial or research projects that you build from scratch. Prebuilt project files are available for download should you run into any problems. Companion videos that demonstrate exactly how to perform each tutorial are also available. Relevant background knowledge is reviewed whenever necessary. To be efficient the review is conceptual rather than mathematical. Key concepts are inserted whenever appropriate and summarized at the end of each chapter. Additional exercises or extension research problems are provided as homework at the end of each chapter. A learning approach emphasizing hands on experiences is utilized though this entire book. A typical chapter consists of six sections. The first two provide two step by step examples. The third section tries to complement the exercises by providing a

more systematic view of the chapter subject The following two sections provide more exercises The final section provides review problems Who this book is for This book is designed to be used mainly as a textbook for undergraduate and graduate students It will work well in a finite element simulation course taken before any theory intensive courses an auxiliary tool used as a tutorial in parallel during a Finite Element Methods course an advanced application oriented course taken after a Finite Element Methods course About the Videos Each copy of this book includes access to video instruction In these videos the author provides a clear presentation of tutorials found in the book The videos reinforce the steps described in the book by allowing you to watch the exact steps the author uses to complete the exercises Table of Contents 1 Introduction 2 Sketching 3 2D Simulations 4 3D Solid Modeling 5 3D Simulations 6 Surface Models 7 Line Models 8 Optimization 9 Meshing 10 Buckling and Stress Stiffening 11 Modal Analysis 12 Transient Structural Simulations 13 Nonlinear Simulations 14 Nonlinear Materials 15 Explicit Dynamics Index

**Numerical and experimental investigations of distribution of gaseous emissions with the air flow in the indoor environment** Umer Afzal,2017 There are many sources of emissions produced by burning fuel for power or heat through chemical reactions and from leaks from industrial processes or equipment There is always a possibility of a potential hazard when these gases enter into the indoor environment with the air flow The determination of the concentration profiles are necessary to evaluate the potential hazard posed by the gas spread The main objectives of this work are to develop an appropriate measurement methodology and a 3D CFD transient multicomponent simulation model for the determination of spatial and temporal distribution of gaseous emissions with the air flow in the indoor environment This work is also aimed at comparing the numerical simulation results of different CFD programs for a 2D base case model of indoor air flow with and without emission source under laminar and turbulent flow conditions for the purpose of developing a better basic understanding of the physical phenomena and for the selection of the suitable and appropriate CFD program for the further development of the simulation model One of the goals is also to apply the developed simulation model to the loss prevention and risk mitigation in the indoor environment and to study the influence of different parameters on the concentration distribution of gaseous pollutants in the presence of air flow in the indoor environment to minimize the expensive and time consuming experimentation efforts

**The Finite Element Method for Mechanics of Solids with ANSYS Applications** Ellis H. Dill,2011-08-25 While the finite element method FEM has become the standard technique used to solve static and dynamic problems associated with structures and machines ANSYS software has developed into the engineer s software of choice to model and numerically solve those problems An invaluable tool to help engineers master and optimize analysis The Finite El

## Whispering the Secrets of Language: An Emotional Quest through **Ansys Meshing Guide**

In a digitally-driven earth wherever monitors reign supreme and immediate transmission drowns out the subtleties of language, the profound techniques and mental subtleties concealed within phrases often go unheard. Yet, located within the pages of **Ansys Meshing Guide** a interesting literary prize sporting with organic feelings, lies an exceptional quest waiting to be undertaken. Composed by an experienced wordsmith, that enchanting opus invites visitors on an introspective journey, lightly unraveling the veiled truths and profound impact resonating within the very fabric of each and every word. Within the emotional depths of the emotional review, we shall embark upon a genuine exploration of the book is core subjects, dissect its interesting writing design, and yield to the strong resonance it evokes serious within the recesses of readers hearts.

<https://forums.acdsystems.com/About/browse/index.jsp/3666017%20cummins%20manual.pdf>

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