

Biology 101 Final Exam Practice Test Study Guide

biology 101 final exam practice test is an essential resource for students seeking to excel in their introductory biology course. Whether you're preparing for your final exam or aiming to reinforce your understanding of fundamental concepts, practicing with a well-structured practice test can significantly boost your confidence and performance. In this comprehensive guide, we'll explore key topics in biology 101, provide sample questions, and offer effective study strategies to help you succeed.

Understanding the Importance of a Biology 101 Final Exam Practice Test

A practice test serves multiple purposes in your study routine:

- **Assessment of Knowledge:** Identifies areas of strength and topics requiring further review.
- **Exam Familiarity:** Helps you become comfortable with the format and types of questions you'll encounter.
- **Time Management:** Trains you to allocate appropriate time to each section of the exam.
- **Stress Reduction:** Reduces exam anxiety by simulating real test conditions.

Key Topics Covered in a Biology 101 Final Exam Practice Test

A typical Biology 101 final exam encompasses a broad spectrum of foundational concepts. Familiarity with these topics is crucial for effective preparation.

1. Cell Structure and Function

Understanding the basic units of life is central to biology. Topics include:

- Prokaryotic vs. eukaryotic cells
- Cell organelles and their functions (nucleus, mitochondria, endoplasmic reticulum, etc.)
- Cell membrane structure and transport mechanisms

2. Genetics and Heredity

This section covers:

- DNA structure and replication
- Genetic inheritance patterns (dominant, recessive, codominance)
- Punnett squares and probability
- Mutations and genetic variation

3. Evolution and Natural Selection

Key concepts include:

- Darwin's theory of evolution
- Evidence for evolution (fossil record, genetic evidence)
- Natural selection mechanisms

4. Ecology and Ecosystems

Focus areas include:

- Biotic and abiotic factors
- Food chains and webs
- Population dynamics
- Energy flow and nutrient cycling

5. Photosynthesis and Cellular Respiration

Understanding how organisms produce and utilize energy:

- The photosynthesis process and its stages
- Cellular respiration pathways (glycolysis, Krebs cycle, electron transport chain)

6. Molecular Biology and Biochemistry

Covering the chemical basis of life:

- Macromolecules: carbohydrates, proteins, lipids, nucleic acids

- Enzyme function and factors affecting enzyme activity

Sample Questions for Your Biology 101 Final Exam Practice Test

Practicing with sample questions can help you prepare effectively. Here are some examples categorized by topic:

Cell Structure and Function

- Which organelle is responsible for energy production in eukaryotic cells?
- Describe the primary difference between prokaryotic and eukaryotic cells.

Genetics and Heredity

- What is the probability of obtaining a heterozygous offspring from a cross between two heterozygous parents?
- Explain the significance of the law of independent assortment.

Evolution and Natural Selection

- Provide an example of natural selection in action.
- What role does genetic variation play in evolution?

Ecology and Ecosystems

- Define an ecological niche.
- How does energy flow through an ecosystem?

Photosynthesis and Cellular Respiration

- Write the overall chemical equation for photosynthesis.
- Compare and contrast glycolysis and the Krebs cycle.

Molecular Biology and Biochemistry

- What are the building blocks of nucleic acids?
- Describe the function of enzymes in biological reactions.

Study Strategies for Success on Your Biology 101 Final

Effective preparation involves more than just reviewing content. Consider these strategies:

1. Utilize Practice Tests

Regularly attempt practice questions to familiarize yourself with the exam format and identify weak areas.

2. Create Summary Notes and Diagrams

Summarize key concepts in your own words and use diagrams to visualize complex processes like cellular respiration.

3. Form Study Groups

Collaborate with classmates to discuss difficult topics, quiz each other, and share insights.

4. Use Flashcards

Create flashcards for terminology, definitions, and processes to reinforce memory.

5. Review Past Quizzes and Assignments

Identify recurring themes and common question types from previous coursework.

6. Schedule Regular Study Sessions

Avoid cramming by spreading study sessions over several weeks leading up to the exam.

Additional Resources for Biology 101 Final Exam Preparation

Enhance your study efforts with the following resources:

- **Textbooks and Lecture Notes:** Review your course materials thoroughly.
- **Online Tutorials and Videos:** Websites like Khan Academy and CrashCourse offer engaging biology content.

- **Practice Test Banks:** Many educational platforms provide free or paid practice tests tailored for introductory biology courses.
- **Study Apps:** Use apps like Quizlet to create and review flashcards on the go.

Conclusion: Preparing Effectively for Your Biology 101 Final Exam

Success in your biology final exam hinges on thorough preparation, understanding core concepts, and practicing with sample questions. A biology 101 final exam practice test is a vital tool to gauge your readiness and build confidence. By focusing on key topics such as cell biology, genetics, evolution, ecology, and biochemistry, and employing varied study strategies, you'll be well-equipped to excel. Remember, consistent effort and active engagement with the material are the keys to mastering biology 101 and achieving your academic goals. Good luck!

Biology 101 Final Exam Practice Test: A Comprehensive Review Guide

Preparing for a Biology 101 final exam can be a daunting task, especially when faced with a vast array of topics spanning from cellular structures to ecological systems. To maximize your study efforts and enhance your confidence, engaging with practice tests is a proven strategy. In this article, we delve deeply into the essential components of a Biology 101 final exam practice test, providing an investigative overview of key concepts, question types, and effective study techniques to ensure thorough preparation.

The Significance of Practice Tests in Biology 101 Preparation

Before dissecting the specifics of what a practice test entails, it's important to understand why they are pivotal in exam readiness.

Reinforcement of Core Concepts

Practice tests serve as a bridge between passive review and active recall. By testing yourself on core concepts—such as cell theory, biological macromolecules, or genetics—you cement your understanding and identify areas needing further review.

Familiarization with Exam Format

Biology exams often contain multiple-choice questions, short-answer prompts, and diagram-based questions. Taking practice tests helps you become comfortable with the question format, time constraints, and the exam's overall structure.

Assessment of Knowledge Gaps

A practice test functions as a diagnostic tool, revealing topics where your grasp is weak, enabling targeted study.

Key Components of a Biology 101 Final Exam Practice Test

A comprehensive practice test for Biology 101 should cover the breadth of the course curriculum, emphasizing both breadth and depth of understanding.

Multiple-Choice Questions (MCQs)

These are the most common question format, assessing recognition, recall, and application.

Sample Topics Covered:

- Cell structure and function
- Biochemical principles
- Genetics and inheritance
- Evolution and natural selection
- Ecology and ecosystems
- Photosynthesis and respiration

Question Types:

- Definition-based questions
- Application scenarios
- Data interpretation (e.g., graphs, tables)

Short-Answer and Explanation Questions

Require concise explanations, encouraging students to articulate concepts clearly.

Examples:

- Describe the role of the mitochondria in cellular respiration.
- Explain how enzymes lower activation energy.

Diagram-based Questions

Visual questions test your ability to interpret and label biological diagrams.

Common Diagrams:

- Cell organelles
- The process of mitosis/meiosis
- Photosynthesis and respiration cycles
- Ecological pyramids

Data Analysis and Interpretation

These questions involve analyzing experimental data, interpreting graphs, or drawing conclusions based on provided information.

Sample Task:

- Given a graph showing enzyme activity at different pH levels, identify the optimal pH and explain its significance.

Core Topics and Conceptual Areas in a Biology 101 Final Practice Test

A thorough practice test should encompass the major themes covered during the course. Below is an investigative breakdown of these topics.

Cell Biology

- Cell theory and cell types (prokaryotic vs. eukaryotic)
- Cell membrane structure and functions (phospholipid bilayer, membrane proteins)
- Organelles and their roles (nucleus, mitochondria, endoplasmic reticulum, Golgi apparatus)
- Cell transport mechanisms (diffusion, osmosis, active transport)
- Cell cycle and division (mitosis, meiosis)

Biochemistry and Molecules of Life

- Properties of water and pH
- Macromolecules (carbohydrates, lipids, proteins, nucleic acids)

- Enzyme structure and function
- ATP and energy transfer in cells

Genetics and Evolution

- Mendelian inheritance patterns
- DNA structure and replication
- Gene expression and regulation
- Natural selection and evolutionary mechanisms
- Genetic variation and mutations

Photosynthesis and Cellular Respiration

- Photosynthetic pathways (light-dependent and light-independent reactions)
- Aerobic and anaerobic respiration
- Energy flow in ecosystems

Ecology and Ecosystems

- Population dynamics
- Food chains and webs
- Biogeochemical cycles
- Habitat and niche concepts
- Human impacts on ecosystems

Effective Strategies for Using Practice Tests

Passing the final exam involves more than just completing practice tests; it requires strategic study methods.

Active Recall and Spaced Repetition

- Use flashcards for key terms and concepts.
- Review material at increasing intervals to enhance memory retention.

Simulate Exam Conditions

- Take timed practice tests to improve time management.
- Avoid distractions to mimic actual exam conditions.

Review and Analyze Mistakes

- Correct errors and revisit misunderstood topics.
- Understand why certain answers are correct or incorrect.

Integrate Visual Learning

- Practice labeling diagrams.
- Create concept maps linking major topics.

Sample Practice Questions for Biology 101 Final Exam

To give you an investigative insight, here are sample questions akin to those you might encounter on your practice test:

- Multiple Choice: Which organelle is primarily responsible for energy production in eukaryotic cells?
 - a) Nucleus
 - b) Mitochondria
 - c) Ribosome
 - d) Chloroplast
- Short Answer: Explain the process of osmosis and how it differs from simple diffusion.
- Diagram: Label the stages of mitosis in the provided cell diagram.
- Data Interpretation: Given a graph showing enzyme activity across pH levels, determine the enzyme's optimal pH and justify your answer.

- Conceptual: Describe how natural selection can lead to adaptations in a population over time.

Conclusion: Mastering the Biology 101 Final with Practice

A well-designed Biology 101 final exam practice test is more than a mere collection of questions; it's a diagnostic and preparatory tool that, when used effectively, can significantly enhance your comprehension and confidence. By engaging actively with diverse question formats—multiple-choice, short-answer, diagram interpretation, and data analysis—you deepen your understanding of fundamental biological principles.

Remember, consistent practice, strategic review, and thorough analysis of your mistakes are key to mastering the material. As you prepare, keep in mind the core topics outlined above and tailor your practice sessions to target weaker areas. With diligent effort and smart study techniques, you'll be well-equipped to excel on your final exam and demonstrate your mastery of Biology 101.

Good luck!

Question What is the primary function of the cell membrane in biology 101? The primary function of the cell membrane is to regulate the movement of substances in and out of the cell, acting as a protective barrier and maintaining homeostasis. Which organelle is known as the 'powerhouse of the cell'? The mitochondria is known as the 'powerhouse of the cell' because it generates ATP through cellular respiration. What is the difference between prokaryotic and eukaryotic cells? Prokaryotic cells lack a nucleus and membrane-bound organelles, whereas eukaryotic cells have a defined nucleus and various membrane-bound organelles. Which biomolecule is primarily responsible for storing genetic information? DNA (Deoxyribonucleic acid) is the biomolecule responsible for storing genetic information. What process do cells use to divide and produce two identical daughter cells? Cells use mitosis to divide and produce two genetically identical daughter cells. Why is photosynthesis important for life on Earth? Photosynthesis is important because it converts sunlight into chemical energy stored in glucose, producing oxygen and supporting the base of most food chains.

Related keywords: biology, final exam, practice test, biology 101, biology exam review, biology quiz, introductory biology, biology exam prep, biology test questions, biology study guide

MICROSOFT TEST MANAGER TUTORIAL

Microsoft Test Manager Tutorial: A Comprehensive Guide to Efficient Test Management

In the world of software development, ensuring the quality and reliability of your applications is paramount. Microsoft Test Manager (MTM) is a powerful tool designed to streamline the testing process, enabling teams to plan, execute, and track testing efforts with ease. Whether you're a beginner or looking to enhance your testing workflows, this **Microsoft Test Manager tutorial** will provide you with a step-by-step guide to harnessing MTM's full potential for your projects.

Understanding Microsoft Test Manager

Before diving into the tutorial, it's essential to grasp what Microsoft Test Manager is and how it integrates into the broader Visual Studio ecosystem.

What is Microsoft Test Manager?

Microsoft Test Manager is a test management tool integrated with Visual Studio Team Services (VSTS) and Azure DevOps. It provides an intuitive interface for managing test plans, creating and executing test cases, and tracking testing progress. MTM supports both manual and exploratory testing, making it versatile for various testing scenarios.

Key Features of Microsoft Test Manager

- Test Planning: Create and organize test plans, test suites, and test cases.
- Test Execution: Execute manual tests and record results efficiently.
- Test Tracking: Monitor testing progress and generate detailed reports.
- Exploratory Testing: Conduct ad-hoc testing sessions with session-based testing capabilities.
- Integration: Seamlessly connects with Azure DevOps for continuous testing workflows.

Setting Up Microsoft Test Manager

Getting started with MTM involves installing and configuring the tool for your environment.

Prerequisites

- Visual Studio Enterprise or Professional edition (with test management features).
- Azure DevOps account or TFS (Team Foundation Server) setup.
- Appropriate permissions to access test management features.

Installing Microsoft Test Manager

- Download the Visual Studio Installer from the official Microsoft website.
- Choose the edition that includes testing tools (e.g., Visual Studio Enterprise).
- During installation, select the "Testing Tools" workload to install MTM.
- Complete the installation and launch Visual Studio.
- Connect to your Azure DevOps project or TFS server within Visual Studio.

Creating and Managing Test Plans

A well-structured test plan is the foundation of successful testing. MTM simplifies organizing your testing efforts through test plans and suites.

Creating a Test Plan

- Open Microsoft Test Manager from Visual Studio or the Azure DevOps portal.
- Navigate to the "Test Plans" section.
- Click "New Test Plan" and provide a descriptive name, description, and start/end dates.
- Associate the test plan with a specific build or release if needed.
- Save the test plan to begin adding test cases.

Organizing Test Suites

Test suites help categorize test cases based on features, modules, or testing strategies.

- **Static Test Suites:** Manually organize test cases into logical groups.
- **Requirement-Based Test Suites:** Link test cases to specific requirements or user stories.
- **Query-Based Test Suites:** Dynamically generate test cases based on queries.

Adding Test Cases

- Within your test suite, click "New Test Case" or import existing cases.
- Define the test case steps, expected results, and associated requirements.
- Assign priority, owner, and other metadata to facilitate management.
- Save the test case to include it in your suite.

Executing Tests with Microsoft Test Manager

Once your test cases are organized, the next step is executing tests and recording results.

Manual Test Execution

- Open the test plan and select the test suite to execute.
- Click "Run" on the test case you wish to execute.
- Follow the test steps as documented, marking each step as "Passed" or "Failed."
- If a test fails, record detailed bug information directly from the test runner.
- Complete the test run, and the results will be saved automatically.

Using Action Recording and Data Collection

MTM allows capturing detailed logs and screenshots during test execution, aiding in defect analysis and reproducibility.

Exploratory Testing

For ad-hoc testing, MTM offers session-based testing:

- Schedule a testing session with session details.
- Conduct testing while documenting observations and findings.
- Record bugs and issues discovered during the session.

Tracking and Reporting Testing Progress

Effective test management requires insight into testing status and quality metrics.

Monitoring Test Results

- Navigate to the "Test Results" section in MTM or Azure DevOps.
- Review individual test case outcomes and overall progress.
- Filter results by tester, status, or test plan for detailed analysis.

Generating Reports

MTM provides various built-in reports to visualize testing status:

- Test Results Summary
- Test Case Progress and Trends

- Bugs and Defects Reports

Integrating with Bug Tracking

During testing, bugs can be logged directly from MTM, linked to specific failed test cases, ensuring traceability and quick resolution.

Advanced Tips and Best Practices

Maximize your testing efficiency with these expert tips:

Automate Repetitive Tests

Integrate MTM with automated testing frameworks like MSTest, NUnit, or Selenium to run automated tests alongside manual efforts.

Maintain Test Cases Regularly

Keep your test cases updated with application changes to ensure relevance and accuracy.

Use Tags and Filters

Leverage tags and filters to quickly locate and execute specific test cases based on criteria like priority, feature, or owner.

Collaborate Effectively

Encourage team collaboration by sharing test plans and results, and conducting regular review meetings to discuss testing progress.

Conclusion

Microsoft Test Manager is an essential tool for teams aiming to implement structured and efficient testing workflows. From creating comprehensive test plans and organizing test suites to executing tests and tracking outcomes, MTM provides a centralized platform that enhances test visibility and quality assurance. By following this **Microsoft Test Manager tutorial**, you can streamline your testing process, improve defect detection, and deliver higher-quality software products. Remember to stay updated with the latest features and best practices to maximize your testing success with MTM.

Microsoft Test Manager tutorial: A Comprehensive Guide to Streamlining Your Testing Process

Microsoft Test Manager (MTM) is a powerful tool integrated within the Azure DevOps suite, designed to facilitate efficient test planning, management, and execution. Whether you are a QA professional, a developer, or a project manager, mastering MTM can significantly enhance your testing workflows, improve defect detection rates, and ensure higher quality software releases. This tutorial aims to provide an in-depth overview of Microsoft Test Manager, guiding you through its features, setup, best practices, and real-world applications.

Introduction to Microsoft Test Manager

Microsoft Test Manager is a dedicated testing management environment that helps teams plan, execute, and track testing activities seamlessly. Originally part of Visual Studio Test Professional, MTM is now integrated within Azure DevOps, offering a unified platform for Agile testing, exploratory testing, and manual test case management.

Key Features of Microsoft Test Manager

- Test Planning: Create and organize test plans, test suites, and test cases.
- Test Execution: Run manual tests, record results, and capture screenshots.
- Test Management: Track defects, manage test configurations, and generate reports.
- Integration: Seamlessly connect with Azure DevOps for continuous integration and automated testing workflows.
- Exploratory Testing: Record exploratory sessions with detailed notes and recordings.

Setting Up Microsoft Test Manager

Before diving into testing, proper setup of MTM is essential.

Prerequisites

- A valid Azure DevOps account with appropriate permissions.
- Installed Visual Studio Test Professional or access via Azure DevOps.
- Access to a test environment or lab machines.

Installation and Configuration

- Download and Install: Download Microsoft Test Manager from the Visual Studio downloads page or via Azure DevOps.
- Connect to Azure DevOps: Launch MTM and connect it to your Azure DevOps project by

signing in with your credentials.

- Configure Test Environments: Set up test machines, configurations, and network environments to align with your testing needs.

Tips for Effective Setup

- Organize your test plans hierarchically for easier management.
- Maintain a clear mapping between test environments and real-world configurations.
- Regularly update test artifacts to ensure they reflect current application versions.

Creating and Managing Test Plans

Test planning is the foundation of effective testing.

Creating a Test Plan

- In MTM, navigate to the "Test Plans" section.
- Click "New Test Plan" and provide a descriptive name, start/end dates, and any relevant details.
- Assign ownership and stakeholders.

Organizing Test Suites

- Static Test Suites: Manually added test cases grouped logically.
- Requirement-based Suites: Linked to user stories or requirements for traceability.
- Query-based Suites: Dynamic grouping based on queries.

Best Practices

- Break down large test plans into smaller, manageable suites.
- Link test cases to user stories or bugs for better traceability.
- Regularly review and update test plans to reflect current project scope.

Designing and Managing Test Cases

Creating effective test cases is critical to uncovering defects early.

Writing Test Cases

- Clear, concise steps with expected results.
- Use descriptive titles and tags for easy filtering.
- Include preconditions and postconditions.

Reusing Test Cases

- Modularize test steps for reuse across different test cases.
- Attach relevant documentation, screenshots, or scripts.

Organizing Test Cases

- Group related test cases into shared test suites.
- Use labels and tags for categorization.

Tips for Effective Test Cases

- Prioritize test cases based on risk and impact.
- Keep test cases up-to-date with application changes.
- Incorporate exploratory testing notes within test cases or as separate sessions.

Test Execution and Result Recording

Executing tests efficiently and accurately recording results is vital.

Running Manual Tests

- Select a test case from your test suite.
- Follow each step, observing the actual behavior.
- Record outcomes: Passed, Failed, Blocked, or Not Applicable.
- Capture screenshots or record videos if needed.

Recording Defects

- Link defects directly to failed test cases.
- Provide detailed descriptions, steps to reproduce, and severity.
- Attach logs or screenshots to aid debugging.

Managing Test Runs

- Use test configurations to run multiple test cases under different environments.
- Schedule and assign test runs to team members.
- Monitor real-time progress and results.

Pros and Cons of Test Execution Features

Pros:

- Streamlined process for manual testing.
- Rich media capture for detailed documentation.
- Easy defect linkage and traceability.

Cons:

- Manual process can be time-consuming for large test suites.
- Limited automation capabilities within MTM itself.

Integrating Automated Testing with Microsoft Test Manager

While MTM excels at manual testing, integration with automated testing frameworks enhances overall efficiency.

Integration with Visual Studio Test Automation

- Use Visual Studio Test tools to develop automated test scripts.
- Link automated tests to test cases in MTM.
- Run automated tests as part of continuous integration pipelines.

Benefits of Integration

- Reduces manual effort.
- Ensures consistency between manual and automated testing.
- Facilitates comprehensive test coverage.

Limitations

- Setup can be complex for beginners.
- Requires scripting knowledge for automation.

Reporting and Tracking

Effective reporting provides insights into testing progress and quality metrics.

Built-in Reports

- Test Run Summary
- Test Results Trend
- Defect Status and Age
- Requirements Traceability Matrix

Custom Reports

- Use Azure DevOps Analytics or Power BI for tailored dashboards.
- Export data for external analysis.

Best Practices

- Regularly review reports to identify bottlenecks.
- Use metrics to prioritize testing efforts.
- Maintain up-to-date dashboards for stakeholder visibility.

Best Practices for Using Microsoft Test Manager

- Plan Early: Incorporate testing early in the development lifecycle.
- Maintain Test Artifacts: Keep test cases and plans updated with application changes.
- Leverage Linkages: Connect requirements, test cases, defects, and build versions.
- Automate Where Possible: Use automation to handle repetitive and regression testing.
- Collaborate: Engage team members through shared test plans and results.
- Review Regularly: Conduct test reviews and retrospectives for continuous improvement.

Common Challenges and How to Overcome Them

Challenge: Managing Large Test Suites

Solution: Break down into smaller, manageable suites; use query-based suites for dynamic grouping.

Challenge: Keeping Test Cases Up-to-date

Solution: Establish a review cycle aligned with development sprints; assign ownership.

Challenge: Integration Complexity

Solution: Invest in automation and continuous integration pipelines; use documentation and training.

Challenge: Limited Automation within MTM

Solution: Use external automation tools integrated with Azure DevOps, such as Selenium or Coded UI.

Conclusion

Microsoft Test Manager is a robust tool that, when used effectively, can significantly boost your testing efficiency, coverage, and traceability. Its comprehensive features for test planning, execution, defect management, and reporting make it indispensable for teams adopting Agile and DevOps practices. While there are challenges, especially around automation and managing large test repositories, with proper setup, training, and best practices, MTM can become a cornerstone of your software quality assurance process.

By following this tutorial, you should now have a clear understanding of how to leverage Microsoft Test Manager to streamline your testing operations, improve collaboration, and ultimately deliver higher quality software to your users. Remember, continuous learning and adaptation are key to maximizing the benefits of MTM in your projects.

Question What are the main features of Microsoft Test Manager (MTM)? Microsoft Test Manager (MTM) provides features such as test planning, manual test execution, test case management, bug tracking integration, and collaboration tools to streamline the testing process within Visual Studio and Azure DevOps. How do I create and organize test plans in Microsoft Test Manager? In MTM, you can create test plans by navigating to the 'Test Plans' hub, clicking 'New Test Plan,' and defining its name and details. You can then add test suites and test cases to organize tests based on requirements, features, or test types for better management. Can I

automate tests using Microsoft Test Manager, and how is it integrated with other tools? While MTM primarily supports manual testing, it integrates seamlessly with Visual Studio and Azure DevOps, enabling automation through test scripts and frameworks like MSTest, Selenium, or CodedUI. Automated tests can be linked to test cases for comprehensive test management. What are the best practices for using Microsoft Test Manager effectively? Best practices include maintaining detailed and reusable test cases, organizing tests into logical suites, utilizing shared steps for common actions, integrating with bug tracking, and regularly updating test plans based on project changes to ensure thorough testing coverage. Is Microsoft Test Manager suitable for Agile development environments? Yes, MTM is well-suited for Agile teams as it supports iterative testing, easy integration with Azure DevOps Agile tools, and flexible test planning, allowing teams to adapt testing activities to sprint cycles and continuous delivery workflows.

Related keywords: Microsoft Test Manager, TFS testing, test planning, test case management, automated testing, test execution, bug tracking, test lab management, test reporting, test automation tools

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