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Erasmus+ Project

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Strengthening the Digital
Transformation of Higher Education
Through Low-Code

WHAT CAN YOU BUILD WITH LOW-CODE

University of Niš



Dauphine | PSL
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WHAT CAN YOU BUILD WITH LOW-CODE

This chapter explores the range of applications that can be built using low-code, from simple mobile apps to complex business solutions. Real-world examples are included to inspire and elucidate the concepts.

PRELIMINARY OVERVIEW AND FOUNDATIONS

Low-code platforms have transformed the way organizations approach application development, offering a powerful, user-friendly alternative to traditional coding. These platforms provide an environment where both technical and non-technical users can build, customize, and deploy a wide range of applications quickly and efficiently.

This chapter explores the expansive range of applications achievable with low-code technology, from simple mobile apps to complex business solutions. By examining real-world examples, we aim to inspire and elucidate the potential of low-code platforms to address diverse business needs and drive innovation. Throughout this chapter, we will delve into real-world examples that demonstrate the versatility and impact of low-code platforms. These case studies will showcase how organizations across different industries have successfully implemented low-code solutions to address specific challenges, improve operational efficiency, and drive business growth. By examining these examples, readers will gain a deeper understanding of the practical applications of low-code technology and the transformative potential it holds for modern businesses.

The spectrum of applications achievable with low-code platforms is vast and varied, offering solutions that cater to a wide range of business needs. From simple mobile apps to complex enterprise systems, low-code platforms provide

the tools and capabilities necessary to bring innovative ideas to life, driving efficiency, agility, and growth in today's competitive landscape.

Foundations of Low-Code Development can be considered as following:

1. Democratization of Development: Low-code platforms democratize application development by empowering a broader range of individuals to participate in the creation process. Users with varying levels of technical expertise, including business analysts, project managers, and even end-users, can leverage visual development tools, pre-built templates, and drag-and-drop interfaces to turn their ideas into functional applications. This democratization fosters a culture of innovation and collaboration, enabling organizations to harness the collective creativity and problem-solving abilities of their workforce.

2. Speed and Agility: One of the most significant advantages of low-code platforms is the speed and agility they bring to the development process. Traditional coding methods can be time-consuming and resource-intensive, often leading to prolonged development cycles. Low-code platforms, on the other hand, streamline the development process, allowing for rapid prototyping, iteration, and deployment. This accelerated pace enables businesses to respond more quickly to market changes, customer needs, and emerging opportunities.

3. Versatility and Scalability: Low-code platforms are incredibly versatile, capable of supporting a wide array of applications across different industries and use cases. From building simple mobile apps for customer engagement to developing complex enterprise systems that integrate multiple business processes, low-code platforms provide the flexibility and scalability needed to meet diverse business requirements. Additionally, these platforms can seamlessly integrate with existing systems and technologies, ensuring that new applications complement and enhance the overall IT ecosystem.

4. Cost Efficiency: By reducing the need for extensive coding and minimizing the reliance on specialized development skills, low-code platforms significantly lower the cost of application development. Organizations can allocate resources more efficiently, investing in strategic initiatives and innovation rather than spending heavily on development and maintenance. The cost efficiency of low-code platforms makes them an attractive option for businesses of all sizes, from startups to large enterprises.

OVERVIEW

Low-code platforms have revolutionized the landscape of application development, enabling organizations to swiftly create a wide range of applications with minimal hand-coding. These platforms democratize the development process, allowing both technical and non-technical users to contribute to digital solutions. By leveraging pre-built components, drag-and-drop interfaces, and robust integration capabilities, low-code platforms empower businesses to innovate rapidly and efficiently.

Low-code platforms are not limited to a specific type of application; they cater to diverse needs across various industries and functions. From streamlining internal processes to enhancing customer experiences, the versatility of low-code platforms makes them an indispensable tool in the modern digital toolkit. Whether it's developing custom business applications, automating workflows, building customer-facing apps, or integrating with emerging technologies, low-code platforms provide the flexibility and speed necessary to keep pace with the ever-evolving demands of the digital age.

This chapter sets the stage for exploring the wide array of applications that can be developed using low-code platforms, highlighting their potential to drive innovation, improve operational efficiency, and create value across the organization.

WHY & LEARNING OUTCOMES

The versatility of low-code platforms lies in their ability to simplify and accelerate the application development process while accommodating a wide range of business needs and technical requirements.

Low-code platforms are transforming the way individuals and organizations develop digital solutions. By minimizing the need for extensive coding knowledge, they empower professionals from various fields — business, social sciences, healthcare, education, and beyond to become "citizen developers." Instead of waiting for IT departments to create applications, users can quickly design, test, and deploy tools that address real-world needs. This democratization of software development shortens delivery times, reduces costs, and enhances innovation capacity.

Real-world examples - the spectrum of applications achievable with low-code platforms is vast and varied, offering solutions that cater to a wide range of business needs. From simple mobile apps to complex enterprise systems, low-code platforms provide the tools and capabilities necessary to bring innovative ideas to life, driving efficiency, agility, and growth in today's competitive landscape.

Learning Outcomes:

Recognize the breadth of applications that can be developed using low-code.

- Identify various types of applications that can be built using low-code platforms, including web, mobile, and desktop applications.
- Understand the potential for low-code platforms to address diverse industry needs, from healthcare to finance to education.
- Explore real-world case studies and examples of successful low-code applications.

Understand the adaptability of low-code platforms to different project needs.

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- Learn how low-code platforms can be tailored to meet specific project requirements and constraints.
- Discover how low-code tools integrate with existing systems, databases, and third-party services.
- Analyze the scalability of low-code applications and how they can grow with increasing user demands.

Gain insights into the creative possibilities with low-code development

- Explore the creative potential of low-code platforms in designing unique and innovative user experiences.
- Understand how low-code enables rapid prototyping and iterative development to refine and enhance applications.
- Learn about the collaboration features in low-code platforms that allow diverse teams to contribute to the development process, fostering creativity and innovation.

Structure of the module is the following:

- **Preliminary overview and foundations**
- **Scope of low-code applications**
- **Low-code in various sectors**
- **From concept to reality: the process of turning ideas into functional applications using low-code platforms**
- **Overcoming challenges with low-code**
- **Innovation and creativity in low-code**
- **Conclusion**

Prerequisites

It is recommended to complete Chapters 1 and 2 before reading this module. Basic familiarity with digital interfaces and simple logic (e.g., forms, rules) is helpful, but no prior coding knowledge is required.

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Quiz: Understanding Low-Code Capabilities and Limitations

Multiple Choice Questions

1. **What is a primary benefit of low-code platforms?**
 - a) Requires extensive hand-coding
 - b) Only professional developers can use it
 - c) Accelerates development cycles
 - d) Increases manual coding tasks
2. **Who can typically develop applications using low-code platforms?**
 - a) Only IT professionals
 - b) Business users with no coding experience
 - c) Only external consultants
 - d) Only senior management
3. **Which of the following is NOT a typical application of low-code platforms?**
 - a) Simple departmental tools
 - b) Custom business applications
 - c) Routine workflow automation
 - d) Writing low-level device drivers
4. **How do low-code platforms foster innovation?**
 - a) By requiring detailed coding knowledge
 - b) By enabling rapid prototyping and iteration
 - c) By restricting application development to IT departments
 - d) By increasing the development cycle time
5. **What is a common challenge associated with low-code platforms?**
 - a) High coding requirement
 - b) Difficulty in scaling applications
 - c) Limited to basic applications only
 - d) Poor integration capabilities

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True or False

6. True or False: Low-code platforms can integrate with emerging technologies like AI and IoT.
7. True or False: Low-code development is suitable for creating complex, enterprise-level systems.
8. True or False: Only technical users with coding knowledge can use low-code platforms effectively.
9. True or False: Low-code platforms can help in achieving faster digital transformation.
10. True or False: Low-code platforms typically do not offer pre-built components and templates.

Short Answer Questions

11. Describe how low-code platforms can contribute to cost efficiency in application development.
12. What strategies can organizations use to overcome the security challenges of low-code platforms?
13. Explain how low-code platforms democratize the development process within an organization.
14. Give an example of a real-world application that can be developed using a low-code platform and explain its benefits.
15. Discuss the role of governance in managing the proliferation of applications developed with low-code platforms.

Answers

Multiple Choice:

1. c) Accelerates development cycles
2. b) Business users with no coding experience
3. d) Writing low-level device drivers
4. b) By enabling rapid prototyping and iteration
5. b) Difficulty in scaling applications

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True or False: 6. True 7. True 8. False 9. True 10. False

Short Answer: 11. Low-code platforms reduce the need for extensive coding and shorten development cycles, leading to lower development costs and faster time-to-market for applications. 12. Organizations can follow industry-standard security practices, ensure compliance with regulations, choose platforms with robust built-in security features, and conduct regular security audits. 13. By providing drag-and-drop interfaces and pre-built components, low-code platforms enable non-technical users to create applications, thus involving a broader range of employees in the development process. 14. Example: A customer relationship management (CRM) system. Benefits include tailored features specific to business needs, faster deployment, and improved customer interactions. 15. Governance involves setting policies and procedures for low-code development, implementing approval workflows, and maintaining an application inventory to ensure consistency and control over the development process.

SCOPE OF LOW-CODE APPLICATIONS

Low-code platforms have revolutionized the development landscape by making it possible to create a wide range of applications with minimal hand-coding. This chapter explores the scope of low-code application development, from simple apps to complex systems, and provides real-world examples to illustrate the diversity of low-code projects. Additionally, an exercise and quiz are included to help identify suitable projects for low-code development.

Simple Applications

Low-code platforms are particularly well-suited for building simple applications that require quick development and deployment. These applications typically have straightforward functionalities and can be developed by users with minimal technical expertise.

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Examples of Simple Applications

1. **Task Management Apps:** These apps help users track and manage tasks, set deadlines, and organize workflows. They are often used for personal productivity or small team collaboration.
2. **Form Builders:** Low-code platforms can easily create custom forms for data collection, surveys, or feedback. These forms can be integrated with databases or other systems for seamless data processing.
3. **Basic Reporting Tools:** Applications that generate simple reports based on user inputs or existing data can be quickly built using low-code platforms. These tools help in visualizing and understanding data without complex analytics.

Intermediate Applications

Intermediate applications are more complex than simple apps and often involve multiple functionalities and integrations. These applications are typically used by small to medium-sized businesses to automate processes and improve efficiency.

Examples of Intermediate Applications

1. **Customer Relationship Management (CRM) Systems:** Low-code platforms can be used to develop CRM systems that help businesses manage customer interactions, sales processes, and support services.
2. **Inventory Management Systems:** These applications track inventory levels, manage orders, and streamline supply chain operations. They often integrate with other business systems like ERP and accounting software.

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3. **Human Resources Management Systems (HRMS):** Low-code platforms can build HRMS applications that manage employee data, recruitment processes, payroll, and performance evaluations.

Complex Systems

Low-code platforms are also capable of building complex systems that require sophisticated functionalities, integrations, and high scalability. These systems are often used by large enterprises to support critical business operations.

Examples of Complex Systems

1. **Enterprise Resource Planning (ERP) Systems:** ERPs integrate various business processes, including finance, HR, manufacturing, and supply chain, into a single system. Low-code platforms enable rapid development and customization of ERP modules to meet specific business needs.
2. **Telehealth Platforms:** In the healthcare sector, low-code platforms can develop telehealth systems that include video consultations, patient management, electronic health records, and integration with diagnostic tools.
3. **Financial Services Platforms:** Low-code can be used to build comprehensive financial services platforms that offer features like online banking, investment management, fraud detection, and regulatory compliance.

Exploring the Range of Applications

1. Simple Mobile Applications:

- Example: A retail company creating a customer loyalty app that allows users to track points, receive personalized offers, and access exclusive promotions.
- Key Features: User-friendly interface, push notifications, integration with existing CRM systems.

2. Workflow Automation Tools:

- Example: An HR department developing an onboarding application to streamline the employee onboarding process, including digital forms, task management, and document uploads.
- Key Features: Automated workflows, task assignments, notification systems.

3. Business Process Management (BPM) Solutions:

- Example: A manufacturing company implementing a BPM solution to optimize production workflows, monitor equipment performance, and manage inventory.
- Key Features: Real-time data analytics, integration with IoT devices, process visualization.

4. Customer Relationship Management (CRM) Systems:

- Example: A financial services firm building a custom CRM system to manage client interactions, track sales pipelines, and analyze customer data.
- Key Features: Customizable dashboards, data integration, reporting tools.

5. E-Commerce Platforms:

- Example: A small business creating an e-commerce platform to sell products online, manage orders, and track inventory.
- Key Features: Shopping cart functionality, payment gateway integration, inventory management.

6. Enterprise Resource Planning (ERP) Systems:

- Example: A multinational corporation developing a comprehensive ERP system to manage financials, supply chain, and human resources across various departments and locations.

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- Key Features: Centralized data management, cross-functional integration, compliance tracking.

Exercise & Quiz: Identifying Suitable Projects for Low-Code Development

Exercise: From idea to app.

1. Project Identification:

- Form groups of 3-4 participants.
- Each group should brainstorm and identify three potential projects within their organization or a hypothetical business scenario that could benefit from low-code development.
- For each project, outline the key functionalities and requirements.
- Discuss and determine why low-code is a suitable approach for these projects, considering factors such as development speed, required integrations, and scalability.

2. Prototype Development:

- Select one of the identified projects.
- Using a low-code platform, create a basic prototype focusing on core features.
- Prepare a short presentation (5-10 minutes) to showcase your prototype and explain the benefits of using low-code for this project.

Quiz: From idea to app.

1. What type of application is best suited for low-code platforms due to its simplicity and quick development cycle?

- A. ERP System
- B. Task Management App
- C. Telehealth Platform

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- D. Financial Services Platform

Correct Answer: B

2. Which of the following is a characteristic of intermediate applications developed with low-code?

- A. They involve straightforward functionalities with minimal integrations.
- B. They require complex coding and high technical expertise.
- C. They often involve multiple functionalities and integrations.
- D. They are typically used by large enterprises for critical operations.

Correct Answer: C

3. Why are low-code platforms suitable for developing complex systems like ERPs and telehealth platforms?

- A. They limit customization and scalability.
- B. They provide pre-built templates that cannot be modified.
- C. They enable rapid development, customization, and integration with other systems.
- D. They are only suitable for simple, single-function applications.

Correct Answer: C

4. Which of the following applications was developed using a low-code platform to improve team collaboration in a small business?

- A. Financial Services Platform
- B. Inventory Management System
- C. Task Management App
- D. Telehealth Platform

Correct Answer: C

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5. What is a key advantage of using low-code platforms for developing inventory management systems in mid-sized companies?

- A. Increased complexity and longer development times.
- B. Limited customization and scalability.
- C. Real-time tracking, automated processes, and integration with existing systems.
- D. Inability to scale as the business grows.

Correct Answer: C

LOW-CODE IN VARIOUS SECTORS

Low-code platforms have found widespread applications across different industries, transforming how businesses, healthcare providers, educational institutions, and more develop and deploy technology solutions.

Business

In the business sector, low-code platforms are being used to streamline operations, enhance customer engagement, and improve decision-making processes. Companies leverage low-code to develop custom applications for customer relationship management (CRM), enterprise resource planning (ERP), and supply chain management (SCM). The flexibility and speed of low-code enable businesses to quickly adapt to market changes and improve operational efficiency.

Healthcare

Healthcare organizations utilize low-code platforms to create solutions that improve patient care, streamline administrative processes, and ensure regulatory compliance. Applications include electronic health records (EHR) systems, telehealth platforms, appointment scheduling systems, and patient

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management systems. Low-code enables rapid development of tailored solutions that meet the specific needs of healthcare providers and patients.

Education

In the education sector, low-code platforms facilitate the development of applications that enhance learning experiences, streamline administrative tasks, and support remote education. Examples include learning management systems (LMS), student information systems (SIS), and virtual classroom platforms. The ability to quickly deploy and modify applications helps educational institutions stay current with technological advancements and changing educational needs.

Government

Government agencies use low-code platforms to improve public services, enhance communication with citizens, and streamline internal processes. Applications include case management systems, public service portals, and data analytics platforms. Low-code allows for the rapid deployment of solutions that address specific governmental challenges and improve service delivery.

Finance

In the finance sector, low-code platforms are used to develop applications that enhance financial services, improve compliance, and streamline operations. Examples include mobile banking apps, investment management platforms, and fraud detection systems. The agility of low-code platforms enables financial institutions to quickly respond to regulatory changes and evolving customer expectations.

Example: Case Studies of Low-Code Solutions Across Various Sectors

Case Study 1: Business - Retail Inventory Management

A retail company faced challenges in managing inventory across multiple stores and warehouses. Using a low-code platform, they developed a custom inventory management system that provided real-time visibility into stock levels, automated reorder processes, and integrated with their existing ERP system. The solution improved inventory accuracy, reduced stockouts, and optimized warehouse operations.

Case Study 2: Healthcare - Telehealth Platform

A healthcare provider needed a telehealth solution to offer remote consultations and reduce the burden on physical clinics. They used a low-code platform to develop a telehealth application that integrated video conferencing, secure messaging, and electronic health records. The rapid development and deployment of this solution enabled the provider to continue offering high-quality care during the COVID-19 pandemic.

Case Study 3: Education - Virtual Classroom Platform

An educational institution wanted to enhance its remote learning capabilities. By leveraging a low-code platform, they created a virtual classroom application that included features such as video conferencing, assignment management, and real-time collaboration tools. The platform facilitated a seamless transition to online learning and improved student engagement and performance.

Case Study 4: Government - Public Service Portal

A local government agency aimed to improve communication with citizens and streamline service delivery. They used a low-code platform to develop a public service portal that allowed citizens to access services, submit requests, and

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track the status of their applications. The portal enhanced transparency, reduced response times, and improved citizen satisfaction.

Case Study 5: Finance - Fraud Detection System

A financial institution needed a solution to detect and prevent fraudulent transactions. Using a low-code platform, they developed a fraud detection system that leveraged machine learning algorithms to analyze transaction patterns and identify suspicious activities. The system integrated with their existing banking platform and provided real-time alerts, significantly reducing the incidence of fraud.

Exercise & Quiz: Sector-Specific Exercises to Conceptualize Low-Code Applications

Exercise

1. Business Sector Exercise:

- Scenario: A company wants to improve its customer service by developing a custom CRM system.
- Task: Form groups of 3-4 participants. Discuss and outline the key features and functionalities that the CRM system should include. Using a low-code platform, create a basic prototype of the CRM system focusing on one or two core features.

2. Healthcare Sector Exercise:

- Scenario: A healthcare provider needs a solution to manage patient appointments and reduce no-shows.
- Task: Form groups of 3-4 participants. Discuss and outline the key features and functionalities of the appointment management system. Using a low-code platform, create a basic prototype of the system focusing on automated reminders and real-time scheduling.

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3. Education Sector Exercise:

- Scenario: An educational institution wants to develop a learning management system to support remote education.
- Task: Form groups of 3-4 participants. Discuss and outline the key features and functionalities of the LMS. Using a low-code platform, create a basic prototype of the LMS focusing on course management and student collaboration tools.

Quiz: Various sectors

1. What is a key benefit of using low-code platforms in the business sector?

- A. They require extensive coding knowledge.
- B. They streamline operations and enhance customer engagement.
- C. They limit customization options.
- D. They slow down development processes.

Correct Answer: B

2. How do low-code platforms benefit healthcare providers?

- A. By making it difficult to integrate with existing systems.
- B. By enabling rapid development of tailored solutions.
- C. By requiring significant investment in IT infrastructure.
- D. By reducing the quality of patient care.

Correct Answer: B

3. In the education sector, what is one application of low-code platforms?

- A. Developing custom video games.
- B. Enhancing learning experiences through virtual classroom platforms.

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- C. Limiting access to educational resources.
- D. Reducing the need for remote education.

Correct Answer: B

4. Which of the following is a use case of low-code platforms in government?

- A. Developing a public service portal.
- B. Reducing the number of public services offered.
- C. Increasing the complexity of service delivery.
- D. Limiting communication with citizens.

Correct Answer: A

5. What advantage do low-code platforms offer in the finance sector?

- A. Slowing down the response to regulatory changes.
- B. Enhancing financial services and improving compliance.
- C. Increasing the risk of fraudulent transactions.
- D. Reducing customer satisfaction.

Correct Answer: B

Low-code platforms offer versatile solutions across various sectors, addressing unique challenges and streamlining development processes. By understanding the applications and benefits of low-code in different industries, organizations can leverage these platforms to innovate and enhance their operations.

FROM CONCEPT TO REALITY: THE PROCESS OF TURNING IDEAS INTO FUNCTIONAL APPLICATIONS USING LOW-CODE PLATFORMS

Low-code platforms provide a streamlined, efficient pathway from ideation to deployment, enabling businesses to transform ideas into functional applications with reduced complexity and faster development cycles. Here's a detailed look at the process:

1. Ideation and Requirements Gathering

Objective: Define the problem or opportunity and understand the needs and goals of the application.

- **Identify the Problem or Opportunity:** Determine the business problem or opportunity the application will address.
- **Engage Stakeholders:** Involve key stakeholders to gather input and ensure that all perspectives are considered.
- **Define Requirements:** Collect detailed requirements, including desired features, functionality, and user experience expectations.
- **Outline Objectives:** Clearly outline the objectives and scope of the application to provide a roadmap for development.

2. Design and Prototyping

Objective: Create visual representations and initial prototypes of the application.

- **Mockups:** Use visual design tools within the low-code platform to create mockups of the user interface.
- **Prototypes:** Develop a prototype using drag-and-drop components, enabling stakeholders to see a preliminary version of the application.

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- **Iterate:** Gather feedback from stakeholders and iterate on the design to refine the user interface and functionality.

3. Development

Objective: Build the application using the low-code platform's tools and features.

- **Workflows:** Define the business logic and workflows that the application will automate.
- **Develop Data Models:** Set up data models to store and manage the application's data.
- **Integrate Systems:** Use APIs and connectors to integrate the application with existing systems and data sources.
- **Add Custom Code:** If necessary, write custom code to extend the functionality of the low-code platform.

4. Testing and Quality Assurance

Objective: Ensure the application functions correctly and meets quality standards.

- **Functional Testing:** Test the application to ensure all features work as intended.
- **User Acceptance Testing (UAT):** Conduct UAT with a group of end-users to gather feedback and identify any issues.
- **Performance Testing:** Assess the application's performance to ensure it can handle the expected load.
- **Security Testing:** Conduct security assessments to identify and mitigate vulnerabilities.

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5. Deployment and Launch

Objective: Prepare the application for live use and deploy it to the production environment.

- **Prepare for Deployment:** Ensure all necessary preparations, such as data migration and user training, are complete.
- **Deploy:** Use the platform's deployment tools to launch the application in the production environment.
- **Train Users:** Provide training sessions and documentation to help users become familiar with the application.
- **Support:** Establish a support system to assist users during the initial rollout phase.

6. Maintenance and Iteration

Objective: Continuously improve the application based on user feedback and evolving needs.

- **Monitor Performance:** Continuously monitor the application's performance and usage.
- **Gather Feedback:** Regularly collect feedback from users to identify areas for improvement.
- **Implement Updates:** Make necessary updates and enhancements to improve functionality and user experience.
- **Plan for Future Enhancements:** Keep a backlog of potential features and improvements for future iterations.

Example: Step-by-Step Walkthrough of Developing a Real-World Application

Project: Employee Onboarding Application

1. Ideation and Requirements Gathering:

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- **Objective:** Streamline the employee onboarding process.
- **Stakeholders:** HR department, IT department, new hires.
- **Requirements:** Digital forms for new hires, task management for HR, document upload functionality, notifications, and reminders.

2. Design and Prototyping:

- **Mockups:** Create a visual design of the onboarding interface with forms, task lists, and upload sections.
- **Prototypes:** Use the low-code platform to build a prototype, including drag-and-drop form builders for the onboarding forms, and configure the layout.

3. Development:

- **Workflows:** Define workflows for the onboarding process, such as sending notifications to HR and new hires.
- **Data Models:** Create data models to store information about new hires, tasks, and documents.
- **Integration:** Integrate with existing HR systems to fetch necessary data and update records.

4. Testing and Quality Assurance:

- **Functional Testing:** Test each feature to ensure it works as expected.
- **User Acceptance Testing (UAT):** Have HR personnel and new hires test the application and provide feedback.
- **Adjustments:** Make necessary changes based on feedback.

5. Deployment and Launch:

- **Preparation:** Ensure all data privacy and security measures are in place.
- **Deployment:** Use the low-code platform's deployment tools to launch the application.

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- **Training:** Provide training sessions for HR staff and new hires.

6. Maintenance and Iteration:

- **Monitoring:** Continuously monitor the application's performance and user feedback.
- **Updates:** Implement updates and new features based on ongoing feedback and changing requirements.

By following this structured process, businesses can efficiently turn their ideas into functional applications that meet their specific needs and drive organizational success.

Exercise & Quiz: Group Project to Design and Prototype a Low-Code Application

Exercise: Step by step

Objective: Work in groups to design and prototype a low-code application for a specific use case.

Steps:

- **Form Groups:** Organize into small groups of 4-5 members.
- **Select a Use Case:** Each group chooses a use case (e.g., expense tracking, project management, customer feedback).
- **Requirements Gathering:** Gather and document requirements for the chosen use case.
- **Design:** Create mockups and a prototype of the application using a low-code platform.
- **Presentation:** Present the prototype to the class, explaining the design choices and functionality.

Quiz: Step by step

1. **What is the first step in turning an idea into a functional application using a low-code platform?**
 - a) Deployment
 - b) Testing
 - c) Ideation and Requirements Gathering
 - d) Maintenance
2. **Which phase involves creating mockups and prototypes?**
 - a) Development
 - b) Design and Prototyping
 - c) Maintenance
 - d) Deployment
3. **During which phase are workflows, business logic, and data models configured?**
 - a) Ideation
 - b) Development
 - c) Testing
 - d) Deployment
4. **True or False:** Integration with existing systems should be considered during the testing phase.
5. **True or False:** Maintenance and iteration involve continuously gathering user feedback and implementing improvements.

By understanding and applying these concepts, students will be equipped to turn their ideas into functional, impactful applications using low-code platforms. This process not only accelerates development but also fosters innovation and collaboration across the organization.

OVERCOMING CHALLENGES WITH LOW-CODE

Low-code platforms are transforming the way organizations approach software development by simplifying complex problems and streamlining development processes. Low-code platforms are designed to reduce the complexity inherent in traditional software development. They achieve this by providing pre-built components, visual development tools, and intuitive interfaces that allow users to focus on solving business problems rather than getting bogged down by technical details. Streamlining development processes is another significant advantage of low-code platforms. By reducing the complexity and providing efficient tools, low-code platforms enable faster development cycles, better collaboration, and more effective project management.

Example: Analysis of challenging projects simplified by low-code solutions.

To illustrate the power of low-code in overcoming challenges, let's examine a few real-world projects that were significantly simplified by using low-code solutions.

Case Study 1: Financial Services - Regulatory Compliance Application

A financial services company needed to develop an application to ensure compliance with evolving regulatory requirements. The complexity of the regulations and the need for frequent updates made traditional development methods impractical. Using a low-code platform, the company was able to rapidly prototype and deploy a compliance application that could be easily updated as regulations changed. The pre-built components and visual development tools simplified the integration of complex rules and workflows, ensuring the application remained compliant without extensive redevelopment.

Case Study 2: Healthcare Provider - Patient Management System

A healthcare provider faced challenges in managing patient information and streamlining appointment scheduling. The existing system was outdated and cumbersome, leading to inefficiencies and errors. By leveraging a low-code platform, the provider developed a new patient management system that integrated seamlessly with their existing electronic health records (EHR) system. The low-code solution allowed for the rapid development of customized features, such as automated appointment reminders and real-time patient data updates, significantly improving operational efficiency and patient satisfaction.

Case Study 3: Manufacturing Company - Inventory Management

A manufacturing company struggled with tracking inventory across multiple locations and ensuring accurate stock levels. Traditional solutions were either too expensive or too rigid to adapt to their specific needs. Using a low-code platform, the company created a custom inventory management system that provided real-time visibility into stock levels, automated reordering processes, and integrated with their existing ERP system. The flexibility and ease of use of the low-code platform allowed the company to develop a solution tailored to their unique requirements, improving inventory accuracy and reducing operational costs.

Exercise & Quiz: Problem-solving exercises focusing on complex scenarios

Exercise:

1. Scenario Analysis:

- Form groups of 3-4 participants.
- Each group will be given a complex scenario to address using a low-code platform (e.g., developing a crisis management application for a large organization).

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- Spend 30 minutes analyzing the scenario and identifying key challenges that need to be addressed.
- Propose a solution using the capabilities of a low-code platform, detailing how you would leverage its features to overcome the challenges.

2. **Prototype Development:**

- Using a low-code platform, create a basic prototype of the proposed solution.
- Focus on implementing key features identified during the scenario analysis.
- Prepare a short presentation (5-10 minutes) to showcase your prototype and explain how it addresses the given scenario.

Quiz:

1. **What is one of the main advantages of using pre-built templates in low-code platforms?**

- A. They eliminate the need for user customization.
- B. They provide a foundation that accelerates development.
- C. They ensure all applications look the same.
- D. They replace the need for user input.

Correct Answer: B

2. **How do low-code platforms automate repetitive tasks?**

- A. By using artificial intelligence to write code.
- B. By providing automation features that handle mundane tasks.
- C. By requiring extensive manual input.
- D. By limiting the functionality of applications.

Correct Answer: B

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3. Which feature of low-code platforms enhances project management?

- A. Lack of collaboration tools
- B. Integrated project management tools
- C. Isolated development environments
- D. Complex coding requirements

Correct Answer: B

4. What benefit do faster development cycles offer in a business environment?

- A. They reduce the need for collaboration.
- B. They allow for quick adaptation and deployment of new solutions.
- C. They ensure all projects are completed without errors.
- D. They increase the complexity of applications.

Correct Answer: B

5. In the context of low-code development, what is a key outcome of integrating with existing systems?

- A. Enhanced functionality without extensive reengineering.
- B. Increased development time and costs.
- C. Reduced flexibility in application design.
- D. Limited scalability of the application.

Correct Answer: A

By leveraging low-code platforms, organizations can overcome complex challenges and streamline their development processes, resulting in more efficient and effective solutions. The combination of simplified complexity, streamlined processes, and practical examples demonstrates the transformative potential of low-code development.

INNOVATION AND CREATIVITY IN LOW-CODE

The rise of low-code platforms has dramatically reshaped the landscape of software development, democratizing the creation of applications by lowering the technical barriers. It is important to explore how low-code platforms foster innovation and creativity by offering a flexible environment that empowers users to think outside the box and push the boundaries of what's possible. Low-code platforms are designed with flexibility at their core. They provide an environment where users can rapidly prototype, test, and iterate on ideas with minimal coding knowledge. This flexibility encourages a culture of experimentation, where new and innovative solutions can be developed quickly and efficiently.

Example: Innovative projects that pushed the boundaries of low-code capabilities.

To illustrate the innovative potential of low-code platforms, let's explore some real-world examples where organizations have used these tools to create groundbreaking solutions.

Case Study 1: HealthTech Startup - Telehealth Platform

A HealthTech startup utilized a low-code platform to develop a telehealth application that connects patients with healthcare providers remotely. The flexibility of the low-code environment allowed the team to integrate video conferencing, secure messaging, and electronic health records seamlessly. By leveraging low-code, they could rapidly iterate based on user feedback, ensuring the platform met the evolving needs of both patients and providers.

Case Study 2: Non-Profit Organization - Disaster Relief Coordination

A non-profit organization working in disaster relief needed a solution to coordinate efforts across various teams and locations quickly. Using a low-code

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platform, they developed an application that allowed for real-time tracking of resources, volunteer coordination, and communication with affected communities. The platform's integration capabilities enabled them to pull data from weather services and other relevant APIs, providing a comprehensive tool for managing disaster response effectively.

Case Study 3: Retail Company - Personalized Shopping Experience

A retail company sought to enhance customer engagement by creating a personalized shopping experience. They used a low-code platform to develop a mobile application that leverages machine learning algorithms to recommend products based on user preferences and behavior. The visual development tools allowed the team to experiment with different user interface designs and features, resulting in an application that significantly improved customer satisfaction and sales.

By understanding and utilizing the flexibility of low-code platforms, organizations can unlock new levels of innovation and creativity, developing solutions that meet complex and evolving needs. The combination of rapid prototyping, visual development, collaborative tools, and integration capabilities makes low-code a powerful ally in the quest for innovation.

CONCLUDING INSIGHTS

Low-code platforms have emerged as a revolutionary force in the realm of application development, offering an unparalleled combination of speed, agility, and accessibility. The insights gleaned from exploring the wide spectrum of applications these platforms support underscore their transformative potential across various industries and use cases.

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Low-code platforms empower a diverse range of users, including those without formal coding skills, to actively participate in the application development process. This **democratization of development** fosters a culture of innovation and collaboration within organizations, enabling business users to directly contribute to creating solutions that address their specific needs and challenges. By lowering the barrier to entry, low-code platforms harness the collective creativity and expertise of the entire workforce.

In today's world, **accelerating time-to-market** based on the rapid prototyping and iterative development capabilities of low-code platforms significantly reduce the time required to bring applications from concept to reality. This acceleration enables businesses to respond swiftly to market changes, emerging opportunities, and evolving customer needs. Whether developing simple mobile apps or complex business solutions, the agility provided by low-code platforms is a critical competitive advantage in today's fast-paced digital landscape.

Also, **enhancing versatility and scalability** with low-code platforms that are remarkably versatile, capable of supporting a broad array of applications across different domains. From streamlining internal workflows and automating routine tasks to developing sophisticated enterprise systems and customer-facing applications, low-code platforms offer the flexibility to address a wide range of business requirements. Additionally, their scalability ensures that applications can grow and evolve alongside the organization, adapting to changing demands and increasing complexities.

By minimizing the need for extensive hand-coding and specialized development skills, low-code platforms reduce the overall cost of application development and maintenance. This **cost efficiency** allows organizations to allocate resources more strategically, investing in innovation and growth initiatives rather than being bogged down by high development costs. The economic

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benefits of low-code platforms make them an attractive option for businesses of all sizes, from startups to large enterprises.

Low-code platforms seamlessly **integrate with emerging technologies** such as artificial intelligence, machine learning, and the Internet of Things (IoT). This integration capability enables organizations to leverage advanced technologies in innovative ways, enhancing the functionality and value of their applications. By bridging the gap between traditional development and cutting-edge technology, low-code platforms position businesses at the forefront of digital transformation.

Throughout this chapter, we have examined **real-world examples** that illustrate the diverse applications and tangible benefits of low-code platforms. These success stories highlight how organizations across various industries have effectively utilized low-code technology to solve specific problems, improve operational efficiency, and drive business growth. The practical insights gained from these examples provide a compelling testament to the transformative potential of low-code platforms. The diverse potential of low-code platforms in application development is profound and far-reaching.

Low-code is not just a technical trend but a paradigm shift in how digital solutions are conceived, created, and deployed. From simple forms and dashboards to enterprise-scale applications, low-code empowers a wider range of individuals to contribute to digital transformation. For students, understanding this approach is essential to becoming adaptive professionals in a rapidly evolving technological landscape.

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Additional resources:

<https://www.browserstack.com/>

<https://duplocloud.com/>

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<https://www.holycode.com/low-code-development/>

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