Teaching Case

The Course Registration App: A Low Code Development Scenario to Support Core IS Courses

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Abstract

This case provides a scenario and materials which may be used to improve student understanding of concepts across core information systems courses through lab activities. In addition, with this case there is a lab project to develop an academic course registration application which can be used by instructors in lab exercises to help students develop specific competencies chosen by the instructor in a real world environment. As low code development platforms continue to permeate the development market in industry, their use in academia to support instructional activities has similarly increased. Mendix has been used in over 80+ Universities to support courses such as systems analysis, database, IT project management, agile development, and low code development courses, to name just a few. The hands-on tutorials and activities, provide students with a better understanding of the development principles and a quick opportunity to build solutions. Within this case scenario, there are five modules which support specific learning outcomes in an MIS curriculum. Each module may be presented as a demonstration by the instructor, as a hands on lab exercise, or as part of a longer course exercise or project. The work provides all necessary information and data for instructors to conduct the each exercise module.

Keywords: Low Code, Mendix, IS Course Tools, Teaching Scenario, Low Code Case, System Analysis & Design, Web App Development, Mobile Development

1. INTRODUCTION

This teaching case reports on an effort to develop a scenario to be used with a low code development platform to provide hands on experience for students throughout a core management information systems (MIS) curriculum.

2. BACKGROUND

Low code development platforms generate working application software at a higher level of abstraction than traditional computer programming. This higher level of abstraction allows a broader group of practitioners to participate in the development process, since coding competence is not required. This also allows the development team to focus more heavily on meeting business requirements and results in faster application delivery. According to Gartner Report solutions like Mendix "avoid many of the traditional costs, risks and time scales of conventional pro-code application development approaches"

Resulting from previous generations of Rapid Application Development (RAD) and Computer Assisted Systems Engineering (CASE) tools, the new low code platforms finally offer the functionality to fulfill promises of 100 percent application generation.

As these tools gain momentum in the marketplace, a need exists to give students the competencies to use these tools to keep them relevant and competitive in the job market. Additionally, the high level of abstraction makes these tools excellent for demonstrating and enhancing student acquisition of traditional MIS concepts such as use cases, domain modeling, business processes and Agile methodologies.

In addition to being one of the more popular players in this fast growing industry sector, Mendix was chosen for these exercise because of the strong support for academia provided by the company. Instructor and student training, development environment, teaching cases and ongoing technical support are all provided free of charge to academic programs.

3. COMPETENCIES

This teaching case is designed to support student acquisition of competencies across a core MIS curriculum. Examples of competencies addressed by the case include:

Database
- Domain modeling
- Validation and state
- Object oriented concepts
- Relationships
- Data attributes

Systems Analysis
- Requirements collection
- Business process
- Use cases
- Business Logic
- Analysis process flow

User Interface Design
- Interaction
- Responsive VS device specific
- Layout
- Navigation
- Building

Project Management:
- Agile methodologies
- Team interaction
- Business processes
- Requirements collection

- Collaboration

Development:
- Object oriented attributes
- Logic implementation
- Data handling
- Process flow
- Security

Presentation
Each exercise can be presented in one of three ways, depending on the desired learning outcomes. The instructor may decide to simply conduct a demonstration of exercise activities in conjunction with a lecture or discussion on the subject. Secondly, the instructor may decide to provide a hands on experience by having the students complete the module activities either individually or in small groups. Finally, students may participate in an on-going lab exercise.
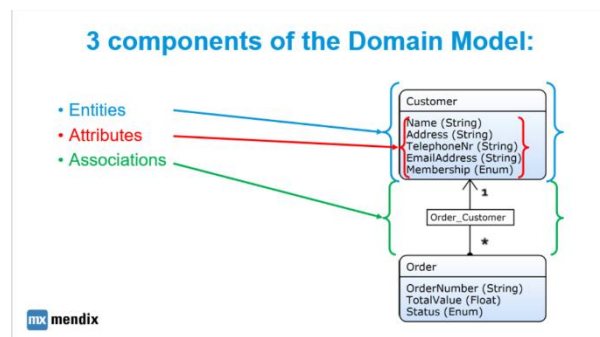
4. SCENARIO

The scenario for this exercise consists of a systems development task to develop a course registration application which allows users to view and register for courses in a simulated academic environment. The requirements include functionality such as keeping track of and validating seats available.
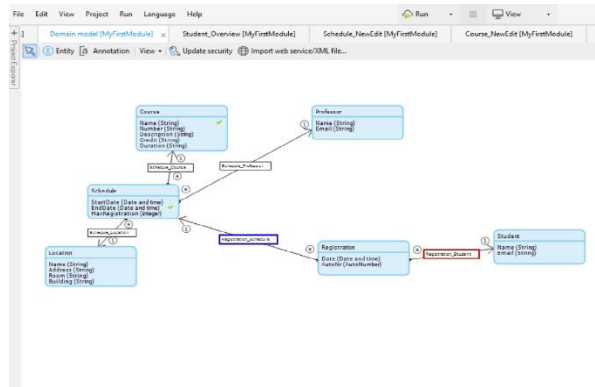
Scenario Conduct
The teaching case includes information for instructors and students on the scenario, as well as a Mendix project, information to be entered in spreadsheet format, and solution information.

Demonstration
If the instructor decides to use the case scenario as a demonstration, the slides covering the competence to be acquired are first presented. An example of this might be the slide in a domain model presentation depicted below:

Next, the instructor will demonstrate creation of a domain model as shown below:

Lab Exercise

If students are participating in a hands-on lab exercise, instructors may still provide the PowerPoint presentation and demonstration, but following that, students will enter their own domain models.

Course Project

If the scenario is used as a course project, students may build their domain models, preceded by user stories and followed by interface, business logic, microflows, etc., to have a working application by the end of the course.

Other Modules

The other modules may be used similarly to the domain model example shown above. All necessary tools and information required for instructors to use the scenario is available from the authors.

5. SUMMARY

This teaching case provides instructors with a tool which may be used across the traditional MIS curriculum in core courses such as:

- Project Management
- Database
- Systems Analysis
- Systems Development
- Security

The scenario is one that lends itself to the academic environment, as students are bound to be familiar with the registration process. The scenario consists of five modules:

Module 1: Process Management & User Stories
Module 2: User Stories and Domain Modeling
Module 3: User Interface and Experience
Module 4: Implementing Business logic
Module 5: Security and user roles

Following an introduction to the scenario, instructors may present the present each module in one of three modes:

- Demonstration
- Hands-on lab exercise
- Exercise in a continuing project

In instances where students are working on the exercises, they may do so individually or in groups. As pedagogy moves towards the experiential, flipped-classroom paradigm, this experience will enhance student learning.

7. REFERENCES

Vincent, P. et al (April 26 2018). Industry Report: Magic Quadrant for Enterprise High-Productivity Application Platform as a Service *ID G00331975*

For instructors who would like to use this scenario, all components, as well as tool support, may be obtained by contacting the authors at university@mendix.com