AG EDITOR

ORIGINAL

Information architecture for process management at the UCM Pinar del Río Student Residence

Arquitectura de información para la Gestión de los procesos en la Residencia Estudiantil de la UCM Pinar del Río

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ABSTRACT

Information management is key to knowledge management and innovation processes and extremely important for decision-making and process improvement, hence its importance in educational centres. As part of universities, university residences are centres that provide accommodation for university students. Their aim is to provide the university community with basic comfort and the necessary facilities to enhance their studies and work, playing an important role in the educational, political and ideological work of their members. This generates a large amount of information, the readability, security and maintenance of which is not always possible. Therefore, the objective is to develop the information architecture for process management in the UCM Pinar del Río Student Residence. The technological innovation research was carried out following the software development methodology for Extreme Programming and applying theoretical and empirical methods for the analysis, review and modelling of the processes to be computerised. As a result, all objects were designed with their respective attributes, which made it possible to bring together all the information handled in the residence. In general, a computer prototype was developed that will allow all information related to control in the student residence of the University of Medical Sciences to be grouped together, thus providing consultation services in a fast and efficient manner.

Keywords: Information Management; University; Student Residence.

RESUMEN

La gestión de la información es clave en los procesos de gestión del conocimiento e innovación y sumamente importante para tomar decisiones y mejorar los procesos, de ahí la importancia de su aplicación en los centros educacionales. Como parte de las Universidades, la residencia universitaria es el centro que proporciona alojamiento a los estudiantes universitarios, y tienen el objetivo de poner al servicio de la comunidad universitaria la comodidad básica y las facilidades pertinentes para incrementar los estudios y el trabajo, desempeñando un papel importante en la labor educativa, política e ideológica de sus integrantes, por lo que genera una alta cantidad de información cuya legibilidad, seguridad y mantenimiento, no siempre es posible. Por cual se propone como objetivo desarrollar la arquitectura de información para la Gestión de los procesos en la Residencia Estudiantil de la UCM Pinar del Río. La investigación de tipo Innovación Tecnológica se desarrolló siguiendo la metodología de desarrollo de software para Programación Extrema, y aplicando métodos teóricos y empíricos para el análisis, revisión y modelación de los procesos objeto de informatización. Como resultados se diseñaron todos los objetos con sus respectivos atributos, los cuales permitieron aglutinar toda la información que se maneja en la residencia. De forma general se elaboró un prototipo informático que permitirá agrupar toda la información referente al control en la residencia estudiantil de la Universidad de Ciencias Médicas, para de esta forma brindar servicios de consulta de una forma rápida y eficiente.

INTRODUCTION

A university is an academic institution of higher education and research that awards academic degrees in different disciplines, whose mission is to teach, research, think, generate and transmit culture, and professionalize.[1,2,3,4,5] Worldwide, higher education institutions are of great importance for the development of any country, not only because they contribute to its democratization by promoting social advancement through the training of qualified personnel but also because they generate knowledge in areas of strategic value and act as a catalyst for the university system.[6,7,8,9,10] It is essential to consider that these institutions are of strategic value to the country and promote equity.[11,12]

University residences are centers that provide accommodation for university students. These centers are usually located on or near campuses and offer students various services and accommodations.[13]

With the triumph of the Cuban Revolution, the need to universalize higher education and extend its reach to different regions of the country led to the construction of student residences in all centers of this type, an area of great importance in universities. All higher education institutions have their student residence buildings, which house a significant percentage of Cuban and international students enrolled in regular daytime courses.[11,14] For this reason, educational work, living conditions, care, and security for scholarship recipients are priorities for the administrations of these centers, which provide resident students with a favorable and adequate environment for their well-being. These facilities promote students' social, moral, and intellectual development, creating an atmosphere that encourages study and good human relations to achieve the student's academic goals, which contributes to cultural and educational enrichment.[15,16]

Currently, all universities in the country have a university residence nearby. They provide accommodation for all students and teachers whose distance from their homes is so long that it is difficult to comply with the school's teaching schedule. These facilities aim to provide the university community with basic comfort and the necessary facilities to enhance their studies and work. They play an essential role in the educational, political, and ideological work of their members.[17]

At the global and national levels, they have used different computer tools to support the daily work carried out in this area, especially regarding the educational work carried out with students. Several websites were developed to disseminate information about university residences, such as the University of Spain Foundation,[18] the SCBU University Welfare in Uruguay,[19] and the SAB: Computerized Management System for Grants and Scholarships in Spain.[20]

The literature consulted at the national level includes the automated information system for the university residence community of the University of Pinar del Río, the computer system for the management of scholarship students at the University of Ciego de Ávila, and an information management system for the University Residence of the University of Holguín "Oscar Lucero Moya." All these systems have emerged from the need to efficiently manage information on scholarship recipients in the community and their indicators to monitor them and quickly obtain the necessary queries and reports.[21,22]

The University of Medical Sciences of Pinar del Río has two student residences, one located at the main campus and the other in the Simón Bolívar teaching block, as well as two other decentralized areas in the municipalities of Consolación del Sur and Sandino. Several processes of vital importance for their proper functioning are carried out in these entities. All of these are carried out by people who deal with large volumes of information daily and perform a wide range of tasks in the enrollment and inventory process, which is carried out by the residence management. All information management in these centers is done manually by the professionals who work there.[23]

The use of the term "student residence" rather than "university residence" in our research reflects the characteristics of our center, where university education and technical education coexist.[24]

This research addresses the topic of information management and the practical actions of a university information center for the comprehensive training of the university student community. Upon concluding the research on the different systems that exist at the national and international levels, specifically on the topic of information management in student residences, it was concluded that the existing tools do not meet the needs of the Student Residence of the University of Medical Sciences of Pinar del Río, thus giving rise to the concerns that led to the realization of this study.[25]

Based on the above, we pose the following scientific problem: How can the information management of processes in the Student Residence of the UCM in Pinar del Río be improved?

General Objective

To develop the information architecture for the management of processes in the Student Residence of the UCM in Pinar del Río.

METHOD

Classification of the research: Technological innovation project.

General aspects of the study: the research is a qualitative study that aims to develop the information architecture for process management at the UCM Student Residence in Pinar del Río based on a study of the current needs and shortcomings of these processes.

Methods to be used

This leads us to use the following scientific methods:

Theoretical

- Historical-Logical: (The historical aspect is related to studying the actual trajectory of phenomena and events during a stage or period. Logical refers to investigating the general laws governing the functioning and development of phenomena, studying their essence). This is used to conduct an exhaustive search on the management of processes at the UCM Student Residence in Pinar del Río.
- Analysis and Synthesis: (Method that uses decomposition and recomposition. Decomposition is called analysis, and recomposition is called Synthesis. Analysis is the intellectual operation that considers the parts of a whole separately; Synthesis brings together the parts of a separate whole and considers them as a unit.) It is used to group the most important elements of the literature consulted and the references related to the problem being addressed.
- Induction-deduction: (Deduction (infer): method of reasoning that goes from the general to the particular, from general statements to specific conclusions). It is used during all stages of the research to reveal the relationship between the general and the emergence of new technologies at the global level, focusing on the impact on Cuban society and specifically on the health sector.
- Systemic-structural: (A process by which isolated facts are related and a theory is formulated that unifies the various elements.) This method collects all information about the problem under study, forming a structured review.

Empirical

- Document review: used to collect the necessary information regarding the object of the research study.
- Interview: used to collect necessary information through dialogue with the population that uses the services and professionals in the sector, achieving positive results.

Scientific novelty

The scientific and theoretical relevance of the study lies in having started from an observed fact and taking reality into account to develop the information architecture for process management at the UCM Pinar del Río Student Residence, applying information and communication technologies based on theoretical and technical documentation provided by experts in the field, adapting it to the situation to be optimized so that the results and conclusions respond to the problem posed.

Expected results

With this research, we aim to ensure the proper functioning of a desktop application that allows the capture, collection, and analysis of data from processes in the student residence. This directly contributes to improving statistics and efficiency indicators to evaluate its quality. In addition, it will benefit scientific administration and health research, among other activities.

Practical contribution

The scientific relevance of the study consists of designing a prototype for managing information on processes in the UCM Pinar del Río Student Residence, based on an observed fact and taking into account the reality to develop a quality management design for the student residence applying information and communication technologies, based on the theoretical and technical documentation provided by experts in the field, adapting it to the situation to be optimized so that the results and conclusions respond to the problem posed.

Structure of the document

This research is organized into an introduction, two chapters that express the study's logic, conclusions, recommendations, bibliographical references, and a bibliography for better understanding. The chapters take into account:

Chapter I. Information management process in the UCM student residence area with the use of computer tools in the world and Cuba

This first chapter analyzes the structure and organization of the entity and the levels involved in the research.

It summarizes the main theoretical and practical elements related to the study of technologies and tools that effectively solve the problem posed. In addition, a description of the problem is provided, characterizing how the process is currently carried out in the UCM Student Residence. The technologies, methodologies, and tools used to obtain the information architecture are justified. The central automated systems linked to the research that helps support the proposed solution are characterized.

Chapter II. Design of the information management process carried out in the UCM student residence
This chapter addresses the Business Model and System, describes the actors and workers in the business and the system, specifies the Functional and Non-Functional Requirements, and develops the Product Functionality Diagrams, the business diagram, and the other diagrams corresponding to the system to be created. It also provides a textual description based on the User Stories and Programming Tasks.

RESULTS
Prototype of the information architecture for process management in the UCM Pinar del Río student residence
This chapter covers everything related to the business modeling process, describing how the business currently operates and detailing the main difficulties in this process. It establishes the business actors and workers, the rules of the business, and the activity diagrams related to this process. In addition to the functional and non-functional requirements, the user stories developed with the client during the prototype development stage are described.

Business Analysis
Through business analysis, the procedures, methods, and techniques for solving the problem that led us to carry out this research will be reflected, modeling the management process of the different requests in the student residence process with the approval of the relevant request by the entity interested in the management at the UCM in Pinar del Río, with the implementation of rules, functional and non-functional requirements, as well as textual descriptions and the actors and workers involved in the business processes carried out in the problem to be addressed.

Business user story diagram
It graphically represents business processes and their interaction with business actors. The business user story model describes how the business is used by users and partners.
The following is the business user story diagram used to obtain the requirements necessary for prototype development.
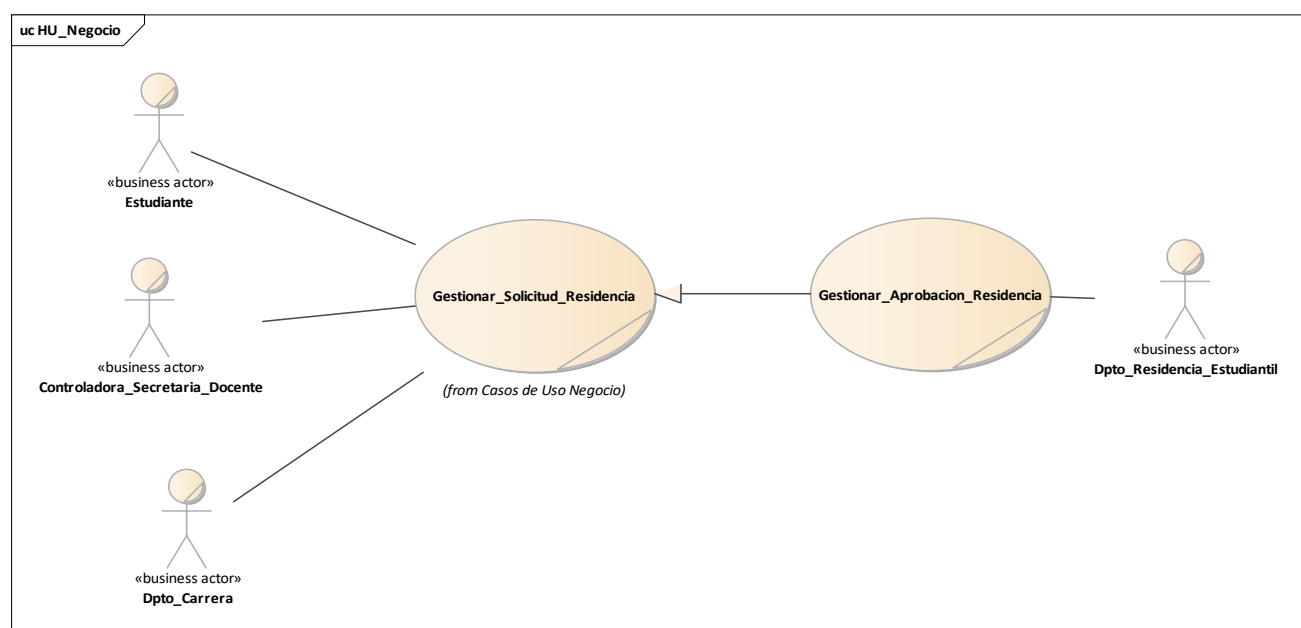

Figure 1. Business User Story Diagram

Current business model
Currently, the academic departments and vice-dean carry out the residence application process, where only the number of beds necessary for both females and males is provided, and students are admitted according to

a printed list. They are assigned a block, a tower, a room, and a bed, which is recorded in a notebook by the technical staff responsible for the student residence. This notebook, of which there is one per room, contains all the information about the student's life in the student's residence. Whenever information about scholarship students is needed, or they need to be located, all this documentation has to be reviewed manually, which causes deficiencies and delays in the processes.

Business User Stories
A business user story represents a business process corresponding to a sequence of actions that produce an observable result for certain business actors. The following business user stories were identified in the research:
- HU1: Manage Residence Application.
- HU2: Manage Residence Approval.

Business Actors and Workers

Table 1. Business Actors and Workers	
Actor	**Description**
StudentController Teaching SecretaryCareer Department	These are the people who submit applications to manage student accommodation at the medical university in Pinar del Río, using the student's general details, as well as their training model, academic year, degree program, and the relevant brigade according to their training.
Worker	Description
Student Residence Department	Staff working in the university's Student Residence department review the aforementioned application, approve or reject it, and, once approved, assign the requested accommodation.

A business actor is any individual, group, entity, organization, machine, or external information system with which the business interacts. The actor is the one who interacts with the business to benefit from its results (table 1).

A business worker is an abstraction of a human or software system that represents a role within the development of a business use case realization. They are immersed in the performance of actions or activities within business processes or use cases (table 1).

Business Worker Functions
- Controls matters relating to the activities of Cuban and foreign scholarship holders, ensures their training, and compliance with State regulations for the performance of this task at the level at which it operates.
- Determines the material and service needs of scholarship holders.
- Contributes to the comprehensive training of new generations by participating in and supervising activities related to student services in the Student Residence.
- Coordinates the development of training and evaluation activities for scholarship recipients in accordance with the concept of the new university.
- Carries out political and ideological work with students.
- Gives educational talks.
- Evaluate the rooms daily and report the scores obtained to the department.
- Ensure order and cleanliness throughout the area.
- Maintain strict control over possible illegal activities such as theft, illicit sales, entry of unauthorized persons, prohibited games, and consumption of alcoholic beverages.
- Activate and monitor fire prevention and occupational health and safety measures.
- Monitor the proper use of uniforms and the personal appearance of students.
- Do not allow smoking in the rooms or work areas.
- Do not allow unauthorized persons to remain on the premises or in the students' rooms.
- Maintain good personal appearance and treat visitors in a friendly and courteous manner, providing any information they may request.
- Welcome and guide students and convey any information sent by the institution's management.
- Maintain close working relationships with representatives of the residence council, the FEU council, and the UJC.
- Communicate carpentry, plumbing, and electrical needs to the maintenance team.

- Sweep the areas surrounding each of the three blocks on a weekly basis.
- Participate in the inspection of the student residence.
- Participate in meetings regarding the life of scholarship recipients.
- Participate in the dining hall duty, carrying out educational work with each of the students.

Business rules to consider
- When submitting the relevant application, please show your identification (ID card).
- Verify that the applicant is a student at the Pinar del Río University of Medical Sciences.
- Evaluate the student's behavior if they have previously stayed at the student residence.
- The applicant must have a permanent address in the municipalities that pay taxes to the residence, or that the residence is located in an area of the municipality of Pinar del Río that is difficult to access.

Activity Diagram

Activity diagram for the user story Manage Residence Application. The activity diagram for a business user story describes a process that explores the order of tasks or activities that achieve business objectives. It is similar to a state diagram in which all or most states are activity states and in which all or most transitions are triggered upon completion of actions in the preceding source states.

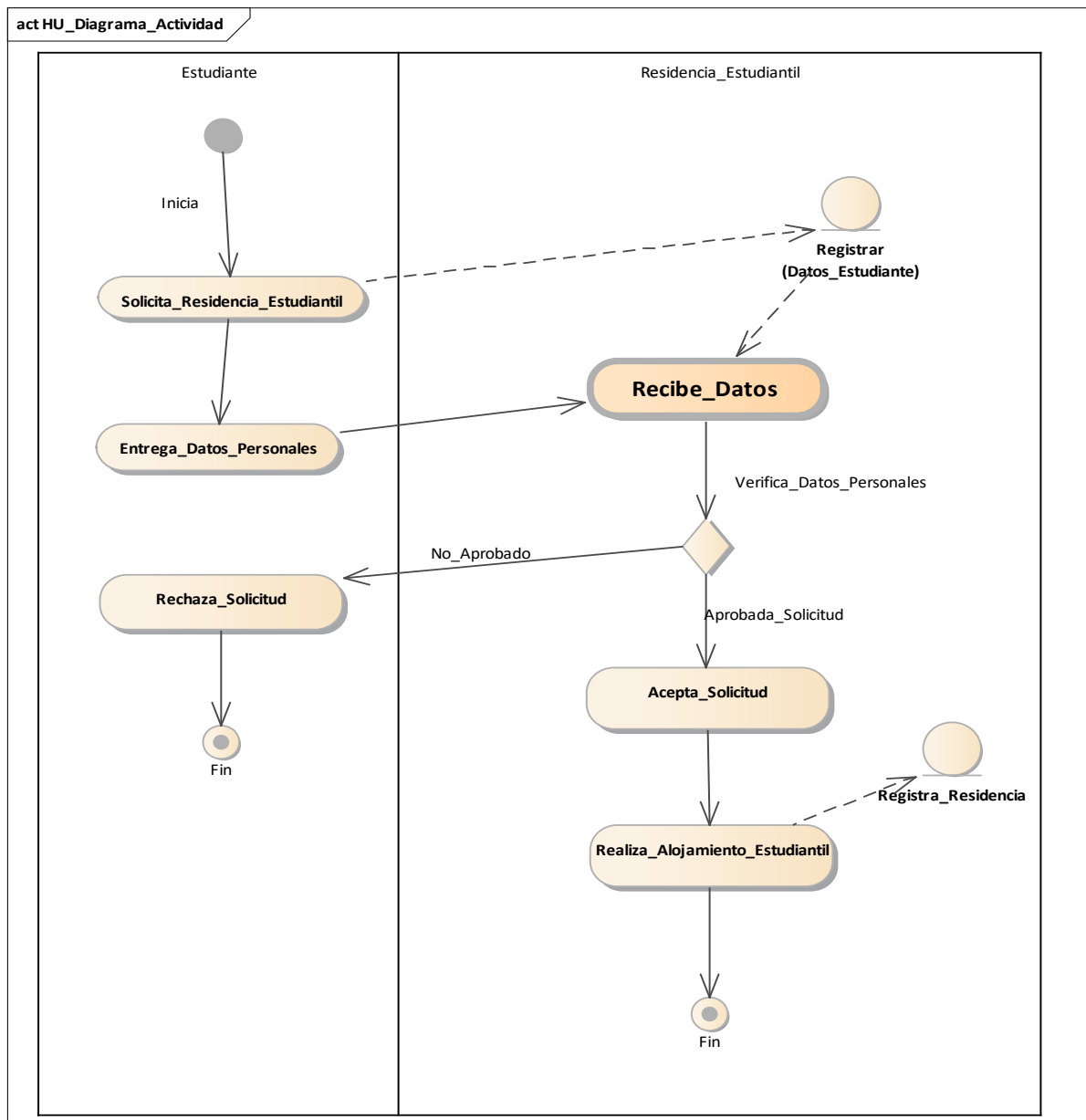The Activity Diagram for the User Story "Manage Residence Application" is shown in figure 2.

Figure 2. System Activity Diagram

System design

System actors

Actors can represent roles played by human users, external hardware, or other subjects. An actor does not necessarily represent a specific physical entity, but simply a particular facet (i.e., a "role") of some activity that is relevant to the specification of its associated use cases. Thus, a single physical instance can play the role of many different actors, and likewise, a given actor can be played by multiple different instances (table 2).

Actors are not part of the system; they only interact with it. Therefore, an actor may:

- Only provide input information to the system.
- Only receive information from the system.
- Enter and receive information to and from the system.

Actors are generally found in the problem statement and through interviews with customers and experts.

Table 2. System actors	
Actor	**Role**
Special feature: Student Residence	This person is responsible for managing all information in the application, i.e., inserting, modifying, and deleting data, changing passwords, and accessing all query and search options provided by the system and obtaining reports.

Main features of the system

The computer prototype is designed to meet the requirements for process management at the UCM Pinar del Río Student Residence. After an in-depth analysis of the information handled and how it is used at the university residence, the main problems and needs were identified. All objects were designed with their respective attributes, which made it possible to combine all the information handled in the residence.

The tool manages information regarding students who apply for scholarships at the university residence for a required period of stay in weeks, evaluating everything related to their stay once approved, allowing for the breakdown of elements during their stay there. When they submit their application to the Student Residence department, providing all their general information on the required date. Once this application is received, it is analyzed by the relevant people, who evaluate the student's behavior and their specific needs. This management process allows for the insertion, modification, and deletion of records and queries and searches for any registered information.

The main objective of the computer tool is to group all the information related to control in the student residence of the University of Medical Sciences in order to provide consultation services quickly and efficiently. For this reason, the prototype is aimed at users who have minimal experience using computers; hence, the consistency achieved in its interfaces allows the user to feel guided and oriented during its use.

System Requirements Specification

A functional requirement defines the internal behavior of the software, calculations, technical details, data handling, and other specific functionalities that show how use cases will be implemented. These are complemented by non-functional requirements, which focus instead on design or implementation. As defined in requirements engineering, functional requirements establish the system's behaviors.

The functional requirements that the prototype must meet are nothing more than the product's capabilities to satisfy both the customer and the end users.

Functional Requirements

R1. Authenticate User
R2. Change Password
R3. Manage Residence Application
R3.1. Insert Application Data
R3.2. Modify Application Data
R3.3. Delete Application Data
R4. Manage Residence Approval
R5. Display Reports
R5.1. List of Scholarship Students
R5.2. List of Students by Degree Program
R5.3. List of Students by Block
R5.4. List of Students by Tower
R5.5. List of Students by Floor
R5.6. List of Students by Academic Year

R6. Perform Searches
R6.1. Searches by Students
R6.2. Searches by Training Model
R6.3. Searches by Degree Program
R6.4. Searches by Brigade
R6.5. Searches by Year
R6.6. Searches by Application Date
R6.7. Searches by Approval Date
R6.8. Searches by Year and Degree Program
R7. Consult Help.

Non-functional requirements

In systems engineering and software engineering, a non-functional requirement or quality attribute specifies criteria that can be used to judge the operation of a system rather than its specific behaviors, which correspond to functional requirements. Therefore, they refer to all requirements that neither describe information to be stored nor functions to be performed.

The most common non-functional requirements are stability, portability, and cost. These properties should be considered characteristics that make the product attractive, usable, fast, or reliable. They are known as quality characteristics that must be considered when designing and implementing a computer application.

Non-functional requirements

External Interface: the system has a simple, readable, easy-to-navigate, user-friendly interface with a design that uses pleasant colors and readable text to facilitate user interaction.

Usability: the system is intended for users with basic computer skills. However, it should not be too difficult to understand for users with no previous experience, who should feel guided and oriented in its use. This requires interface consistency, which will facilitate its use and understanding.

Performance: fast processing and response times will be guaranteed by the rapid processing of database queries.

Confidentiality: users will access the application according to their privileges or access levels.

Reliability: the information handled by the system will be carefully protected against inconsistent data states (integrity). Protection will be guaranteed by providing a secure tool based on exception handling and validation of user input.

Security: user levels have been defined to distribute system responsibilities. Only the system administrator can modify the information.

Help: icons will represent the system's functionalities and identify the application's basic elements. A help module will include all aspects of the system's operation.
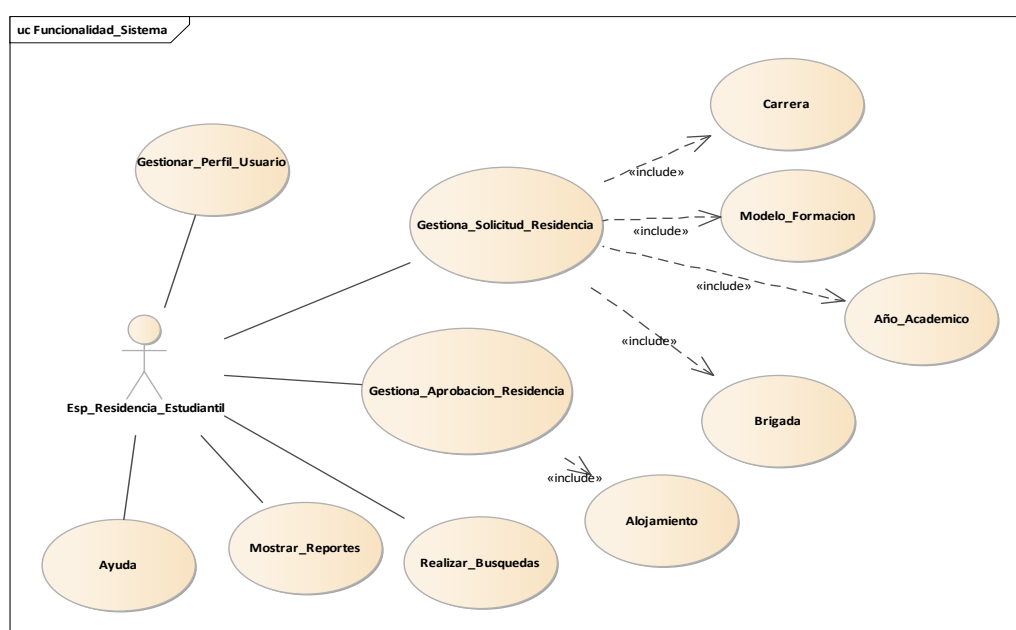
Functionality diagram

Figure 3. System Functionality Diagram

System User Stories

A user story describes the steps or activities that must be performed to carry out a process. Actors are the characters or entities that will participate in a use case. In the context of software engineering, a use case is a sequence of interactions that will take place between a system and its actors in response to an event initiated by a leading actor on the system itself.

User story diagrams specify the communication and behavior of a system through its interaction with users and/or other systems. In other words, a diagram showing the relationship between actors and use cases in a system. Use case diagrams to illustrate system requirements by showing how the system reacts to events in its environment or within itself.

The user stories for the proposed system are as follows:

US1. Authenticate user.
US2. Change password.
US3. Manage residence application.
US4. Manage residence approval.
US5. Display reports.
US6. Perform searches.
US7. Consult help.

Table 3. Description of System User Stories

User History	
Name History: Authentication	
Number: 1	User: Esp. Student Residence
Business Priority: Medium	Developing risk: Medium
Estimated Points: 1	Assigned iteration: 1
Description: To access the system, users must log in using the authentication form with their respective username and password.	
Comments: The user enters their name and password in the corresponding text boxes and clicks the Enter button. If the user is not recognized, the application displays an error message "Incorrect username and/or password" warning the user that the username and password they have entered are incorrect and that they do not have rights to access the management of the processes being carried out.	
Conversation: Once the user enters the interface, they type their username and password in the respective text boxes, granting them access to the system. Then click on the enter button to access the next form. If the username and password are correct, you will enter the application's functionality management. Otherwise, the system will send an error message indicating that the username and/or password are incorrect.	
Interface Prototype:	
Confirmation: Scenario 1 - Banner: When you log in to the system using your username and password in the respective text box and press the enter button, you will access the application's features.	
User History	
Name History: System Features	
Number: 1	User: Esp. Student Residence
Business Priority: Medium	Developing risk: Medium

Estimated Points: 1   Assigned iteration: 1

Description: Once authenticated in the system, the application form for the application's features will open. This provides management of students who apply for a scholarship at the university. recording their general information, as well as their degree program, training model, and requested period of stay for the internship. Once this information has been evaluated by the Student Residence Department, the application is approved or denied, and the student is registered in the system with all information related to university housing. The system also allows access to reports and searches for relevant data.

Comments: To access each of the screens and forms, the system provides the path to follow for solving each problem.

Conversation:
To access the student residence application management system, you can enter your general information, as well as the date of application, the application number, and the training application details.
The application also allows you to click on the "manage residence approval" button, which takes you to a new form where you can search for student applications by entering their general information and enter the accommodation details of each student receiving a scholarship into the application, as well as monitor their behavior.
The system provides reports, which are presented in a form with the reports provided by the application, allowing dynamic access to them.
In addition to providing the ability to search the application for information managed in the various forms and screens.
Once the user accessing the application requires help with any step, they can click on the help button, which guides them through each step to be taken in the system.
In addition to the possibility of periodically changing the password as a security measure for the application.
The prototype features buttons to exit the application and return to the start of the application.

Interface Prototype:

Confirmation:
Scenario 1 - Banner: When the user is logged in and clicks the logout button to close the session and return to the previous authentication view.
Scenario 2 - System Functions: The system allows access by clicking on each button to manage each of the processes carried out by the student residence specialist who is the subject of the study.

User History

Name History: Manage Residence Application

Number: 1   User: Esp. Student Residence

Business Priority: Medium   Developing risk: Medium

Estimated Points: 1   Assigned iteration: 1

Description: to access residence application management, click on the link that takes you to a form with all the features you need to enter and store each item that needs to be controlled, such as the application number, date of application, student's personal details (ID number, first and last names, age, gender, race, full home address, city and state, as well as contact phone numbers and email address).

Comments: to carry out each of the processes mentioned above, the system provides new form windows that allow the entry of data related to the activity to be performed.

Conversation:

The Student Residence Specialist enters the data related to the student's scholarship application into the system by clicking on the corresponding button and filling in each text box with the required information.

Similarly, the system allows new students who apply for student residence to be added, as well as saving all the information related to them in the database.

The application also includes buttons to modify and delete any information related to the student in question, if necessary, or to delete any data that is not included in the record.

At the top left, the back button returns to the previous position in the application.

Interface Prototype:

Confirmation:

Scenario 1- When the specialist carries out the different processes of entering into the system all the information concerning the student applying for a scholarship at the university's student residence.

Scenario 2 – At the bottom are the buttons to add a new student, as well as the functions to save to the database, modify, and delete.

Scenario 3- The button to return to the system functions form and close the interface.

User History

Name History: Manage Residence Approval

Number: 1	User: Esp. Student Residence
Business Priority: Medium	Developing risk: Medium
Estimated Points: 1	Assigned iteration: 1

Description: to access Residence Approval Management, click on the link that takes you to a form with all the features of the residence approval register. Once the student is registered in the system, search for the student whose scholarship is to be approved using the form itself, entering the date of the scholarship and the accommodation assigned to the student, and evaluating the student's behavior during their stay on the scholarship.

Comments: to carry out each of the processes mentioned above, the system provides new form windows that allow the entry of data related to the activity to be performed.

Conversation:

The student residence specialist enters the student's data into the system once their application has been reviewed, filling in each text box with the required information.

The system displays a search engine on the form itself. When the student is searched for by clicking on the corresponding button, their first and last names appear by default in the next position on the interface.

It also has buttons that allow you to scroll through each record with the data of each student entered in the system, moving forward and backward, as well as delete a selected record.

At the top left, the back button takes you to the previous position in the application.

Interface Prototype:

Confirmation:

Scenario 1- When the specialist carries out the various processes of entering all information relating to the approval of the residence application into the system.

Scenario 2 – At the bottom are the buttons to scroll to a new student previously inserted, as well as the function to delete a specific record from the database.

Scenario 3 – The back button takes you to the system functions form and the exit button takes you out of the interface.

User History

Name History: Show Reports

Number: 1	User: Esp. Student Residence
Business Priority: Medium	Developing risk: Medium
Estimated Points: 1	Assigned iteration: 1

Description: the Show Report form allows you to view various reports generated by the system, such as reports listing scholarship students, students by brigade, by block, by tower, and by floor, as well as generating a list of students subject to disciplinary measures for further analysis and follow-up.

Comments: the users defined by the system itself are authorized to review the reports displayed by the system.

Conversation:
Once the user accesses the Show Reports tab provided by the system, they click on each of the headings shown on the form, which directs them to another window to view the software outputs.
When the user selects the Generate Report button from the list of scholarship recipients, they are taken to a new window where the system provides a list of all students who applied for a student scholarship and their accommodation in the residence.
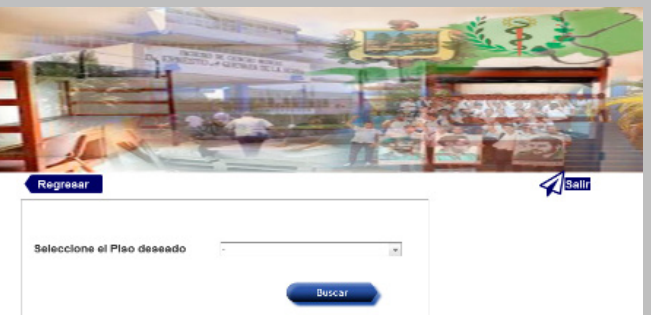Similarly, the system generates a list of scholarship recipients by tower, floor, brigade, and block by clicking on the corresponding button, allowing the information to be displayed with all the headings it contains and enabling printing with the established data.

Interface Prototype:

Listado de Estudiantes Becados en Residencia

No. Solicitud	Fecha Solicitud	Carne Identidad	Nombre y Apellidos	Edad	Sexo	Raza	Dirección Particular	Carrera	Modelo Formación	Año Académico	Brigada	Bloque	Piso	Torre	Cuarto	Comportamiento	Medidas Disciplinarias
01	14/03/2022	000000000	Juan Miguel Santaya Labrador	25	M	B	Maximo Gomez	Medicina	Medicina	1er Año	B-2	2	1	1	3	Bueno	No
02	15/03/2022	111111111	Pedro Pablo Salazar	30	M	B	Colon No. 52	Medicina	Medicina	2do Año	B-1	1	3	1	6	Bueno	No
03	16/03/2022	222222222	Sandra Suarez	28	F	B	Rafael Ferro	Estomatologia	Medicina	1er Año	B-4	1	3	1	4	Bueno	No
04	21/03/2022	333333333	Monica Diaz	22	F	M	Llamazares	Medicina	Medicina	2do Año	B-2	2	3	1	1	Bueno	No
05	24/03/2022	444444444	Laura Maria Rodriguez	21	F	N	Capo No. 16	Estomatologia	Medicina	3er Año	B-3	2	3	1	4	Bueno	No
06	24/03/2022	55555555	Veronica Peña Perojo	21	F	B	Consolacion del Sur	Tecnologia	Medicina	1er Año	B-2	2	1	1	2	Bueno	No
07	25/03/2022	66666666	Irina Lazo Valdes	19	F	B	Rosario 59	Estomatologia	Medicina	3er Año	B-1	2	3	1	4	Bueno	No
08	26/03/2022	777777	Adrian Gutierrez Martinez	18	M	B	Ormani Arenado	Tecnologia	Medicina	1er Año	B-3	3	3	1	3	Bueno	No

Listado de Estudiantes Becados con Medidas Disciplinarias

No. Solicitud	Carne Identidad	Nombre y Apellidos	Edad	Sexo	Raza	Dirección Particular	Carrera
01	000000000	Juan Miguel Santaya Labrador	25	M	B	Maximo Gomez	Medicina
02	111111111	Pedro Pablo Salazar	30	M	B	Colon No. 52	Medicina
03	222222222	Sandra Suarez	28	F	B	Rafael Ferro	Estomatologia
04	333333333	Monica Diaz	22	F	M	Llamazares	Medicina
05	444444444	Laura Maria Rodriguez	21	F	N	Capo No. 16	Estomatologia
06	55555555	Veronica Peña Perojo	21	F	B	Consolacion del Sur	Tecnologia
07	66666666	Irina Lazo Valdes	19	F	B	Rosario 59	Estomatologia
08	777777	Adrian Gutierrez Martinez	18	M	B	Ormani Arenado	Tecnologia

Listado de Estudiantes Becados por Brigada

No. Solicitud	Carne Identidad	Nombre y Apellidos	Edad	Sexo	Raza	Dirección Particular	Carrera	Modelo Formación	Año Académico	Brigada
01	000000000	Juan Miguel Santaya Labrador	25	M	B	Maximo Gomez	Medicina	Medicina	1er Año	B-2
02	111111111	Pedro Pablo Salazar	30	M	B	Colon No. 52	Medicina	Medicina	2do Año	B-2
03	222222222	Sandra Suarez	28	F	B	Rafael Ferro	Estomatologia	Medicina	1er Año	B-2
04	333333333	Monica Diaz	22	F	M	Llamazares	Medicina	Medicina	2do Año	B-2
05	444444444	Laura Maria Rodriguez	21	F	N	Capo No. 16	Estomatologia	Medicina	3er Año	B-2
06	55555555	Veronica Peña Perojo	21	F	B	Consolacion del Sur	Tecnologia	Medicina	1er Año	B-2
07	66666666	Irina Lazo Valdes	19	F	B	Rosario 59	Estomatologia	Medicina	3er Año	B-2
08	777777	Adrian Gutierrez Martinez	18	M	B	Ormani Arenado	Tecnologia	Medicina	1er Año	B-2

Confirmation:

Scenario 1 - Banner: When the user is blogging and clicks the exit button to log out, in addition to the (Back) button to return to the system features view.

User History

Name History: Perform Searches

Number: 1

User: Esp. Student Residence

Business Priority: Medium

Developing risk: Medium

Estimated Points: 1

Assigned iteration: 1

Description: the Perform Searches form allows you to view various searches that are output by the system, such as searches by student, search by training model, degree program, brigade, academic year, application date, and approval date related to the information entered into the proposed system.

Comments: for the display of searches in the proposed application enabled by the system, users defined by the system itself have permission to review them.

Conversation:

The system allows you to click on the "Search by student" button, which redirects you to a new window where you are asked to enter the ID number of the desired student. You will then receive a confirmation message with all the relevant information about the student.

Similarly, to search for patients by application date, click on the corresponding button and the system will display a message asking you to select the date you wish to review. Once selected, click on the "Accept" button and the system will return the desired report.

To find students with a specific training model, click on the button and the system will display a message where you must select the model. Once selected, click on the "Accept" button and the system will return the desired report.

To find out which students have been notified for analysis or review by degree program, click on the button and the system will display a message where you must select the degree program. Once selected, click on the Accept button, and the system will return the desired report.

The computer tool allows the user to find out which students are registered for each academic year according to the notification record. Clicking on the button takes you to a new window where the system displays a message asking you to select the academic year, after which it returns the desired report.

If the user needs to know the students by brigade, click on the button and the system will display a message where you must enter the desired brigade, returning the report with the required data.

Interface Prototype:

Confirmation:
Scenario 1 - Banner: When the user is logged in and the logout button is clicked to close the session, in addition to the (Back) button to return to the system features view.

The prototype information architecture for process management at the UCM Pinar del Río student residence was designed based on the business modeling process, the business actors and workers, the business rules, and the use case diagrams and activities related to this process were established; in addition, to the functional and non-functional requirements. The user stories developed with the client during the prototype development stage were also described.

CONCLUSIONS
Throughout the research, an information architecture was developed for managing processes at the UCM Pinar del Río student residence. This architecture increases the effectiveness and efficiency of managing processes related to the university residence, motivating the need to streamline, refine, adapt, socialize, and reduce process costs and facilitating greater control over student mobility at our university.

RECOMMENDATIONS
- Develop a web application as a means of implementing the results achieved.
- Present the results to the business sector, as part of the university-business link, for implementation and subsequent deployment at the University of Medical Sciences.

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FINANCING
None.

CONFLICT OF INTEREST
None.

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Data curation: Juan Miguel Santaya Labrador, Olga Lidia Perojo López.
Formal analysis: Juan Miguel Santaya Labrador, Olga Lidia Perojo López.
Research: Juan Miguel Santaya Labrador, Olga Lidia Perojo López.
Methodology: Juan Miguel Santaya Labrador, Olga Lidia Perojo López.
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