**Problem Analysis**

**Functional requirements:**

1. Generate a list with the mini rooms available
2. Rent a mini room
3. Show a map of the data center
4. Simulate the turning ON of all the mini rooms
5. Simulate turning OFF system.
6. Cancel a rental.

**Requirement # 1:**

|  |  |  |  |
| --- | --- | --- | --- |
| Name or identifier | R1: Generate a list with the mini rooms available | | |
| Abstract | The system must show the user a list with all the mini rooms available to be rented. | | |
| Inputs | Input name | datatype | Selection or repeat condition |
| N/A | N/A | N/A |
| General activities necessary to obtain the results | 1. User: select from the menu (Check available mini rooms). 2. System: search the rooms that are available and generate a list. 3. System: show to the user the list. | | |
| Result or postcondition | Print list on screen | | |
| Outputs | Output name | datatype | Selection or repeat condition |
| List of available mini rooms | String | The list will be empty if there is not any mini room available |

**Requirement # 2:**

|  |  |  |  |
| --- | --- | --- | --- |
| Name or identifier | R2: Rent a mini room | | |
| Abstract | The system must allow renting a mini room either for a private company or a research project | | |
| Inputs | Input name | datatype | Selection or repeat condition |
| Corridor number | int | The value must be entered again if not corresponding to the number of corridors in the building |
| Column number | int | The value must be entered again if not corresponding to the number of columns in the building |
| Day | int | N/A |
| Month | Int | N/A |
| Year | Int | N/A |
| Company name | String | This data must be entered if the user wants to rent the mini room to a company |
| Company nit | String | This data must be entered if the user wants to rent the mini room to a company |
| Project registration number |  | This data must be entered if the user wants to rent the mini room to a project investigation |
| Number of servers | int | N/A |
| Cache memory | double | N/A |
| Number of processors | Int | N/A |
| Processor brand | Int | Processor brand = 1 “AMD”  Processor brand = 2 “INTEL” |
| RAM | double | N/A |
| Number of disks | Int | N/A |
| Disk capacity | Int | N/A |
| General activities necessary to obtain the results | 1. User: select from the menu (Rent a mini room). 2. System: Ask for the corridor number and column number of the mini room that the user wants to rent 3. System: read corridor number and column number. 4. System: validate that corridor number and column number. 5. System: ask for day, month and year that the room will be rented. 6. System: read day, month and year. 7. System: ask if the user wants to rent the mini room to a company or to an investigation project. 8. System: ask the answer. 9. System: ask for the information of the user if the mini room will be rented to a company. 10. System: ask for the project number registration if the mini room will be rented to an investigation project. 11. System: read the information. 12. System: ask for the number of servers that should the mini room have. 13. System: read the number of servers. 14. System: ask for the information of the servers. 15. System: calculate the price of the rental. | | |
| Result or postcondition | Mini room rental registration in the system | | |
| Outputs | Output name | datatype | Selection or repeat condition |
| successful process message | String | If the mini room has been successfully rented. |

**Requirement # 3:**

|  |  |  |  |
| --- | --- | --- | --- |
| Name or identifier | R3: Show a map of the data center | | |
| Abstract | The system must allow the user to see a map with the mini rooms on and off | | |
| Inputs | Input name | datatype | Selection or repeat condition |
| N/A | N/A | N/A |
| General activities necessary to obtain the results | 1. User: select from the menu (Show a map of the data center). 2. System: Show the map. | | |
| Result or postcondition | Printing the map on the screen. | | |
| Outputs | Output name | datatype | Selection or repeat condition |
| Map of the data center | String | N/A |

**Requirement # 4:**

|  |  |  |  |
| --- | --- | --- | --- |
| Name or identifier | R4: Simulate the turning ON of all the mini rooms | | |
| Abstract | The system must allow the user to use the option of turning on all the mini rooms to prove the turning off options. | | |
| Inputs | Input name | datatype | Selection or repeat condition |
| N/A | N/A | N/A |
| General activities necessary to obtain the results | 1. User: select from the menu (Simulate turning the rooms OFF). 2. System: Show the map of the data center with all the mini rooms ON. | | |
| Result or postcondition | Printing the map with the changes on the screen | | |
| Outputs | Output name | datatype | Selection or repeat condition |
| Map of de data center with the changes | String | N/A |

**Requirement # 5:**

|  |  |  |  |
| --- | --- | --- | --- |
| Name or identifier | R5: Simulate turning OFF system | | |
| Abstract | The system should allow the user to simulate all turning off protocols | | |
| Inputs | Input name | datatype | Selection or repeat condition |
| N/A | N/A | N/A |
| General activities necessary to obtain the results | 1. User: select from the menu (Simulate turning the rooms ON). 2. System: Show to the user the new map with all the mini rooms ON. 3. System: read the letter corresponding to the turning off option that the user wants to use. 4. System: execute the turning off option corresponding to the letter. 5. System: show the map with the new changes. 6. System: fix the changes generated by the simulation. | | |
| Result or postcondition | Print the new map on the screen | | |
| Outputs | Output name | datatype | Selection or repeat condition |
| New map with the changes | String | if the letter entered by the user is valid |

**Requirement # 6:**

|  |  |  |  |
| --- | --- | --- | --- |
| Name or identifier | R6: Cancel a rental. | | |
| Abstract | The system must allow the user to cancel the rent of a mini room and all the mini rooms rented by a company | | |
| Inputs | Input name | datatype | Selection or repeat condition |
| Corridor number | Int | If the data does not correspond to the number of corridors, an error message will be displayed |
| Colum number | Int | If the data does not correspond to the number of columns, an error message will be displayed |
| Company name | String | If the company does not have any rented room, show a message |
| General activities necessary to obtain the results | 1. User: select from the menu (Cancel a rental). 2. System: Show to the user the cancel a rental a Menu. 3. System: read the cancellation option that the user wants to use. 4. System: if the user decides to cancel a single mini room, ask for the corridor and column number. 5. System: read the corridor and column number. 6. System: show to the user the capacity of the servers in the mini room. 7. System: ask the user if they want to cancel the rental of the mini room. 8. System: if the user decided to cancel the rental, then save the new changes. 9. System: if the user decides to cancel all the mini rooms of a company, ask for the name of the company. 10. System: read the company name. 11. System: show to the user the location of the mini rooms and the total capacity of the servers in the mini rooms. 12. System: ask the user if they want to cancel the rental of all the mini room of a company. 13. System: ask the user if they want to cancel the rental of the mini room. 14. System: if the user decided to cancel the rental, then save the new changes. | | |
| Result or postcondition | Changing the status of the mini rooms to available | | |
| Outputs | Output name | datatype | Selection or repeat condition |
| Message | String | If the cancellation of the rental has been made successfully |