GREENSPHERE USER MANUAL

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User Manual

Glossary

Acceptance Criteria (AC)	Specific conditions or requirements that must be met for a user story to be considered complete.
Agenda	A crucial mechanism for planning the week's work.
Asymptotic Behavior	The behavior of a function or algorithm as the input size approaches infinity or some other limit.
Boxplot	A statistical representation of data through quartiles, displaying the minimum, maximum, median, and outliers.
Collaborator	Employee that carries out design, construction, and/or maintenance tasks for green areas depending on their skills.
Coefficient of Skewness	A measure of the asymmetry of the probability distribution of a real-valued random variable about its mean.
Data Outliers	Values that significantly differ from the rest of the data, often indicating errors, anomalies, or unique conditions.
Development Environment	The integrated set of tools and processes used for software development, including editors, compilers, and debuggers.
Formulas (in LaTeX)	Mathematical expressions written using LaTeX formatting for clarity and consistency.
Garden	Garden space with or without trees with little or no equipment (may have a basic irrigation system or sitting benches).
Green Spaces	Areas managed by organizations, ranging from small gardens to large parks, with various amenities and facilities.
Green Spaces Manager (GSM)	Person responsible for managing the green spaces in charge of the organization.
Green Spaces User (GSU)	Person who uses the green spaces managed by the organization and can make comments or report faults in parks and gardens through the Portal.
Green Spaces User Portal	Part of the Software System where park and garden users can post comments and report faults/malfunctions of the system.
Human Resources Manager (HRM)	Person who manages human resources and defines teams based on the needs of ongoing projects and skills of the employees.
Histogram	A graphical representation of the distribution of numerical data, showing the frequencies of data within specified intervals.
Interquartile Range (IQR)	A measure of statistical dispersion, representing the range between the first and third quartiles of a dataset.
Job	Employee's main occupation.
Key Performance Indicator (KPI)	A measurable value that demonstrates how effectively an organization is achieving key business objectives.
Large-sized Park	Multi-function space with diverse garden areas, and woods,

	including varied equipment and services (ex: Parque da Cidade).
Maintenance	The process of preserving or upkeeping the condition of green spaces, equipment, or infrastructure to ensure their functionality and longevity
Medium-sized Park	A green space of moderate dimensions, often featuring wooded areas, toilets, drinking fountains, irrigation systems, lighting, and amenities like children's playgrounds.
Municipal Master Plans	Comprehensive urban planning documents outlining the development and management of municipal areas, including provisions for green spaces, infrastructure, and zoning regulations.
MusgoSublime (MS)	Organization specializing in the planning, construction, and maintenance of green spaces, encompassing various dimensions including plant material, urban furniture, irrigation systems, lighting systems, and rainwater management.
Numeric Answer Type	A type of answer that involves numerical values.
Pie Chart	A circular statistical graphic divided into slices to illustrate numerical proportions.
Plant Material	Living organisms such as flowers, shrubs, and trees, utilized in the design and maintenance of green spaces.
Primitive Operations	Basic computational operations that are fundamental to programming languages and algorithms.
Programming Language	A formal language used to instruct computers to perform specific tasks, such as Python.
Quality of Life	The overall well-being and satisfaction experienced by individuals or communities, influenced by factors such as access to green spaces, healthcare, education, and socioeconomic conditions.
Rainwater Conduction and Drainage Systems	Infrastructure designed to manage the flow of rainwater within green spaces, preventing flooding and soil erosion while promoting water conservation and sustainability.
Relative and Absolute Frequency Tables	Tabular representations of data showing the frequency of occurrence of values within specific ranges or categories.

Table of Contents

Introduction

Welcome to the official user manual for our Green Space Management application. This comprehensive guide is designed to assist you in maximizing the functionality and benefits of our project. Whether you are a new user seeking initial setup instructions or an experienced user looking for advanced features, this manual provides detailed information to support you at every step.

Our Green Space Management Application is a powerful tool tailored for MusgoSublime, an organization responsible for the upkeep and management of parks, gardens, landscapes, and other green spaces. This application will streamline your tasks and enhance your efficiency in maintaining beautiful and sustainable outdoor environments.

System Requirements

To ensure the Green Space Management Application runs smoothly, please ensure your system meets the following requirements:

Hardware Requirements

- **Processor:** Dual-core CPU, 2.0 GHz or higher
- **Memory:** 4 GB RAM minimum (8 GB recommended)
- **Storage:** 20 GB available disk space
- **Display:** 1280 x 1024 resolution minimum

Software Requirements

- **Operating System:** Windows 10 or later, macOS 10.13 or later, or a Linux distribution with kernel 4.15+
- **Web Browser:** Latest version of Chrome, Firefox, Safari, or Edge
- **Database:** MySQL 5.7 or later / PostgreSQL 9.6 or later
- **Additional Software:** .NET Framework 4.7.2 or later, Java Runtime Environment (JRE) 8 or later

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System Overview

System Overall Description

The green spaces management system is designed to optimize the processes involved in planning, building, and maintaining public green spaces in urban areas. The prime objective is to help allocate resources more effectively, coordinate efforts, and monitor progress in the management of those spaces. The system will include features and options for employee, vehicle, equipment, task, and schedule management, with the end goal of supporting more productive and successful green space management.

Structure and Organization

This application has been divided into different modules responsible for different aspects of green space management. These modules are interconnected and dependent on each other. The modules used in the system include:

- **Employee Management** – This module incorporates employee registration and the aspects involved in the registration, detailing their accountabilities, skills, and their assignments to both duties and groups.
- **Vehicle and Equipment Management** – This module includes the current registration of the vehicles and equipment necessary for a specific task.
- **Task Management** – This module is used to create and assign tasks that need to be done while managing green spaces and track their performance.
- **Scheduling and Planning** – This module is used for scheduling activities that need to be done. It includes scheduling work and resource management to determine the best course of action.
- **Reporting and Analysis** – This module generates reports and analyses that help in improving the quality of the green spaces. Additionally, it helps the consumers to understand their performance, resource usage, and areas that need improvement.

Key Features

Discover the powerful features of GreenSphere:

- **Employee Registration and Management:** Streamline employee data management, facilitating efficient task assignment based on skills and qualifications.
- **Vehicle Registration and Management:** Easily track and manage vehicles, ensuring optimal maintenance and operational efficiency.
- **Team Proposal Generation:** Automatically generate optimal work team proposals based on required competencies.
- **Water Consumption Cost Analysis:** Analyze water consumption to identify inefficiencies and promote sustainability.
- **Optimal Route Determination:** Utilize advanced algorithms for efficient pipe installation planning.
- **Equipment Usage Analysis:** Track and analyze equipment usage to optimize maintenance and utilization.
- **User Portal Data Collection:** Gather valuable insights on park usage to tailor management strategies.

Features/Functions

1. **Register Skills for Collaborators (Human Resources Manager)**
- Efficiently add skills to collaborator profiles.
2. **Register Job for Collaborators (Human Resources Manager)**
- Assign jobs to collaborators with ease.
3. **Register Collaborator with Job and Characteristics (Human Resources Manager)**
- Register collaborators with job-related information and key characteristics.
4. **Assign Skills to an Employee (Human Resources Manager)**
- Assign skills to employees effortlessly.
5. **Generate a Team Proposal Automatically (Human Resources Manager)**
- Automatically generate optimal team proposals based on required skills.
6. **Register a Vehicle (Vehicle and Equipment Fleet Manager)**
- Efficiently register vehicles with various characteristics.
7. **Register a Vehicle's Check-up (Vehicle and Equipment Fleet Manager)**
- Record vehicle check-ups for maintenance tracking.
8. **List Vehicles Needing Check-up (Vehicle and Equipment Fleet Manager)**
- View a list of vehicles requiring check-ups for efficient maintenance planning.
9. **Analyze Water Consumption Costs (Green Space Manager)**
- Request statistical analysis of water consumption costs for specific green spaces.
10. **Analyze Equipment Usage (Green Space Manager)**

- Visualize equipment usage data in a pie chart for informed decision-making.

11. **Collect Data from User Portal (Green Space Manager)**
- Gather insights on park usage from the user portal for improved management strategies.

12. **Import Routes for Pipe Installation (Green Space Manager)**
- Import routes data from a CSV file for efficient pipe installation planning.

13. **Determine Optimal Routes for Pipe Installation (Green Space Manager)**
- Apply algorithms to determine optimal routes for laying pipes with minimal cost.

14. **Register a Green Space (Green Space Manager)**
- Register a green space (garden, medium-sized park, or large-sized park) and its respective area.

15. **Add a To-Do List Entry (Green Space Manager)**
- Add a new entry to the To-Do List.

16. **Add an Agenda Entry (Green Space Manager)**
- Add a new entry in the Agenda.

17. **Assign a Team to an Agenda Entry (Green Space Manager)**
- Assign a team to an entry in the Agenda.

18. **Postpone or Cancel Agenda Entries (Green Space Manager)**
- Postpone an entry in the Agenda to a specific future date. Cancel an entry in the Agenda.

19. **Assign Vehicles to Agenda Entries (Green Space Manager)**
- Assign one or more vehicles to an entry in the Agenda.

20. **List Managed Green Spaces (Green Space Manager)**
- List all green spaces managed by the GSM.

21. **Collaborator Functions**
22. **Consult Assigned Tasks** - Consult tasks assigned between two dates.
23. **Record Task Completion** - Record the completion of a task.

Frequently Asked Questions (FAQ)

1. What is the Green Space Management Application?

The Green Space Management Application is a comprehensive software solution designed to streamline the planning, maintenance, and management of public green spaces in urban areas. It offers a range of features including employee management, vehicle and equipment tracking, task scheduling, and reporting to ensure efficient and sustainable management of green spaces.

2. Who can benefit from using the Green Space Management Application?

The application is beneficial for organizations responsible for the upkeep and management of parks, gardens, landscapes, and other public green spaces. This

includes municipal authorities, landscape management companies, and organizations involved in environmental conservation efforts.

3. What are the key features of the Green Space Management Application?

Some key features of the application include employee registration and management, vehicle and equipment tracking, task scheduling, water consumption analysis,

optimal route determination for pipe installation, and detailed reporting and analysis tools.

4. How can I register a new employee in the system?

To register a new employee, navigate to the Employee Management module, select the option to add a new employee, and enter the required information such as name, job title, skills, and contact details. Save the information to complete the registration process.

5. How do I assign a vehicle to a task?

To assign a vehicle to a task, go to the Vehicle and Equipment Management module, select the task you wish to assign the vehicle to, and choose the appropriate vehicle from the list. Ensure the vehicle details are correct and save the assignment.

6. Can I analyze water consumption costs for different green spaces?

Yes, the application allows you to analyze water consumption costs for different green spaces. Navigate to the Reporting and Analysis module, select the green space you want to analyze, and request the statistical analysis to view detailed reports on water consumption costs.

7. How can I import routes for pipe installation?

To import routes for pipe installation, go to the Scheduling and Planning module, select the option to import routes, and upload the CSV file containing the route data. Ensure the file is in the correct format and follow the prompts to complete the import process.

8. What should I do if I encounter an error message?

If you encounter an error message, try restarting the application. If the issue persists, refer to the Troubleshooting section of this manual for potential solutions. If you still cannot resolve the issue, contact technical support with the error details for further assistance.

Troubleshooting

Common Issues and Solutions

Issue: Unable to log in.

- **Possible Cause:** Incorrect username or password.
- **Solution:** Verify login credentials. If forgotten, use the password recovery option.

Issue: Cannot run the program.

- **Possible Cause:** JavaFX not installed.
- **Solution:** Ensure JavaFX is installed and properly configured on your system.

Issue: Graphs are not displaying.

- **Possible Cause:** Graphviz not installed.
- **Solution:** Install Graphviz and ensure it is correctly added to your system's PATH.

Issue: Application is running slow.

- **Possible Cause:** Insufficient system resources.
- **Solution:** Close unnecessary applications and background processes. Ensure your system meets the minimum hardware requirements.

Issue: Features not loading properly.

- **Possible Cause:** Browser compatibility issues.
- **Solution:** Ensure you are using a supported browser. Clear your browser cache and cookies.

Issue: Error messages during operations.

- **Possible Cause:** Software bugs or data corruption.
- **Solution:** Restart the application. If the issue persists, contact technical support with the error details.

Issue: Unable to import CSV files.

- **Possible Cause:** Incorrect file format or corrupted file.
- **Solution:** Ensure the CSV file is in the correct format and not corrupted. Validate the file structure before import.

Conclusion

We hope this user manual assists you in effectively utilizing the Green Space Management Application. By leveraging its comprehensive features, you can maintain beautiful and sustainable outdoor environments with increased efficiency and ease. Should you encounter any issues or have further questions, please refer to the troubleshooting section or contact our support team for assistance. Thank you for choosing our Green Space Management Application to enhance your green space management efforts.