



VILNIUS UNIVERSITY  
FACULTY OF MATHEMATICS AND INFORMATICS  
INSTITUTE OF COMPUTER SCIENCE  
DEPARTMENT OF COMPUTATIONAL AND DATA MODELING

Software engineering | Information Technology 2nd year, 3rd group | Area 4

## **Requirements Specification**

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## **Project name:**

Wind pressure zones

## **Purpose:**

The purpose of this software is to calculate the pressure zones of solar panels on the roof, how the wind will affect them and which zones on the roof have the least and most amounts of pressure.

## **Project summary:**

Overview of wind pressure zones on the given roof face

## **High-level overview of the system:**

Our team is focusing on delivering precise calculations of the exact areas for each wind pressure zone on a given roof face. The high-level overview of the system is as follows: The wind pressure zones will be divided in 3 areas. Zone 3 - near corners of the roof that are exposed to the wind Zone 2 - along edges of the roof that are exposed to the wind Zone 1 - the remaining area in the interior of the roof The width of the wind zone will be calculated using the following formula:  $a = 0.4 * \text{mean roof height}$ , but not less than 3 feet. The calculations will be accessible for other teams

## **Functional Requirements:**

High Priority:

1. Measure the width of the wind zone which is calculated using formula:  $a = 0.4 * \text{mean roof height}$   $\leq 3$  ft.
2. Make the software determine the exact areas for each wind pressure zone on a given roof face.
3. Divide the roof face area into regions representing different relative wind strength.
4. Measure the width of the corner and edge wind zones. So the actual width of the wind pressure zones along the roof surface will differ depending on slope.

## **Non-functional Requirements:**

1. To accurately calculate wind pressure zones and determine which zones will have the least and most amounts of pressure.
2. Receive the necessary data from team 3 in order to develop our software.

## **Availability:**

Functionality of this program will be as an addition and a part of the main program, most likely available as a single tab or a separate option to choose in the main menu.

## **Usability:**

Functionality of this program will be simple. The user will enter the measurements of the roof and choose its type and the program will show how much wind pressure will a solar panel get on a particular section of the roof.

## **Compatibility:**

The program will be able to take data gathered by other teams.

## **Reliability:**

There will be little room for user error as if the user inputs incorrect measurements, there will be an error message saying that measurements might be incorrect.

## **Security:**

Only authorized users will be able to access the software.

## **Implementation**

Plan of action:

1. Analyze the pressure zones of solar panels on the roof out of given examples.
2. Communicate with Team No. 3 to obtain data for calculations
3. Create an algorithm that calculates and outputs all necessary data (Wind pressure zones along the roof surface) for Team No. 5
4. Request a review of the provided algorithm from Team No. 5 for possible upgrades, bug fixes, etc.
5. Present the final stage of the algorithm.

## **Job distribution:**

As there are 4 team members, thus the project is expected to be taken apart equally divided into 4 parts, making it 25% for every team member. Every work week the upcoming problems/bugs and hindrances are expected to be discussed with all team members to find a possible solution.