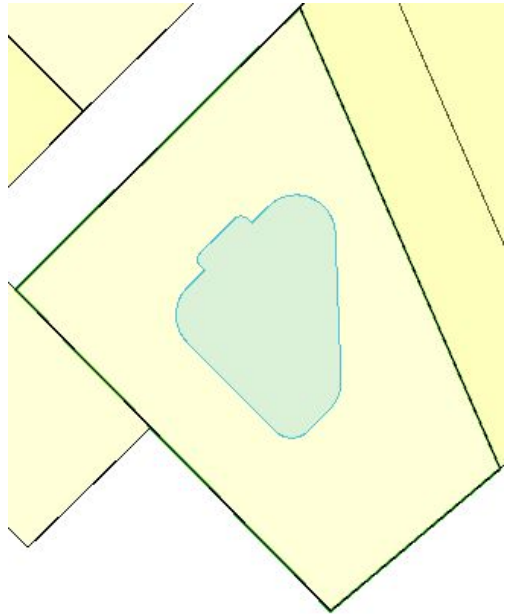


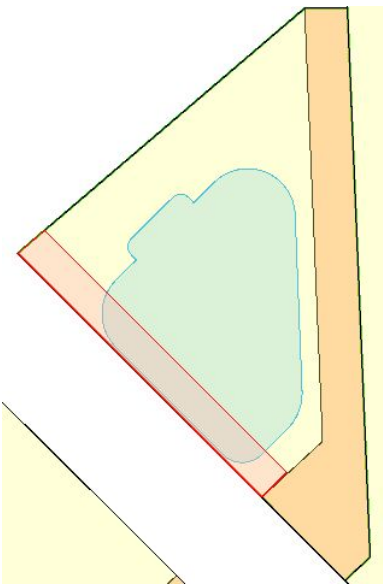
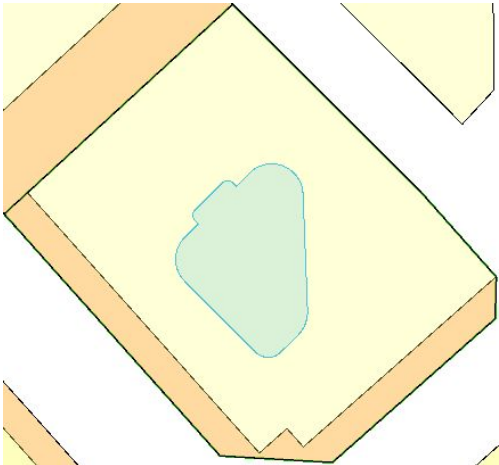
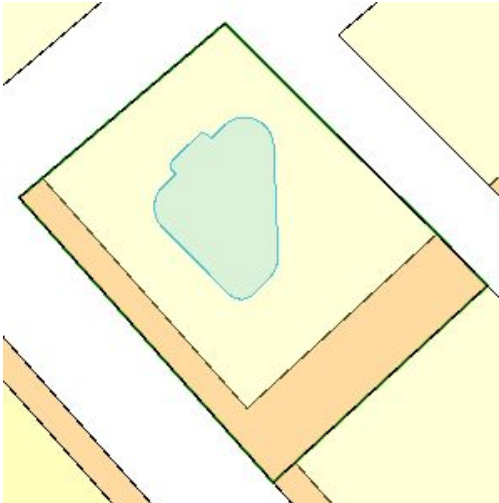
Building Location and Parking Availability Algorithm Testing for Karlstad Municipality

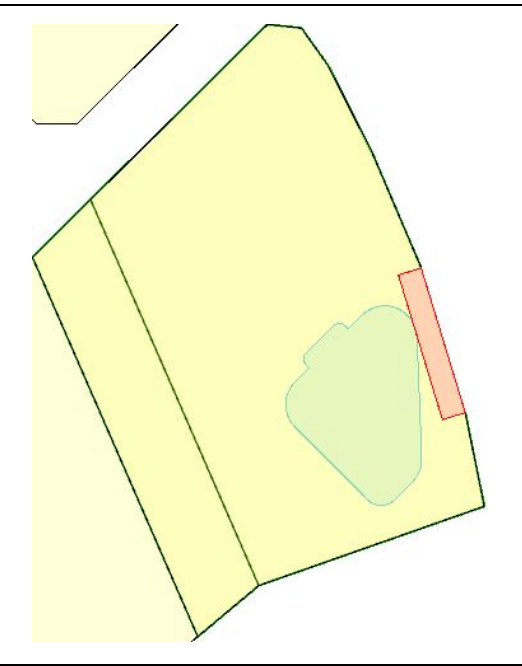
1. Building Placement

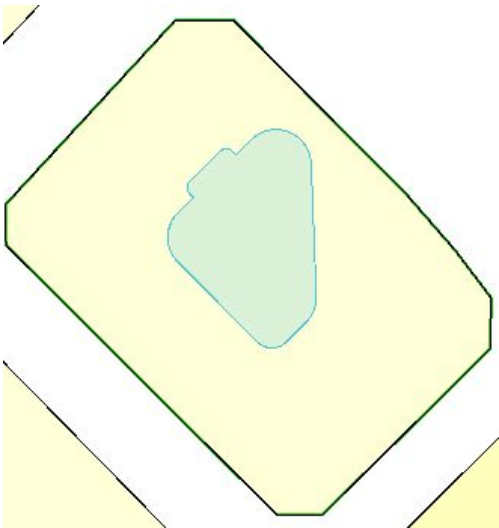
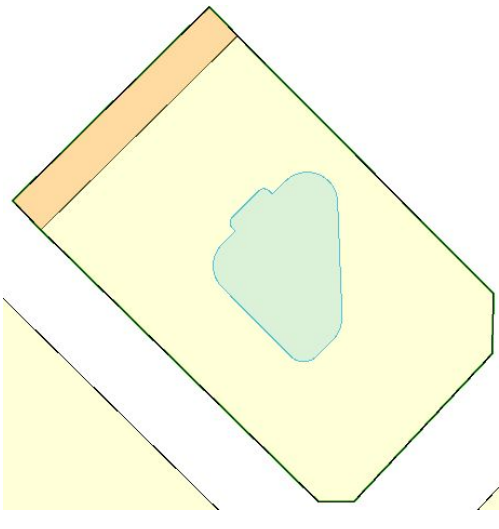
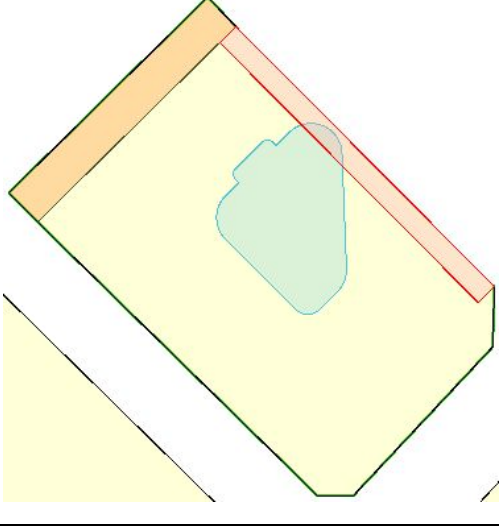
The minimum distance requirement used for this dataset is 4.5m. The algorithm tests if the house placement meets the minimum distance requirement. The algorithm breaks down the property into separate lines and color code the lines green if they meet the requirement and red if they do not meet the requirement. A red buffer of 4.5m is created to visually show which boundary the house is too close to. The algorithm also displays the distance to move in order for the house to meet the minimum distance requirement. ID numbers in Table 1 and Table 2 are correspondent.

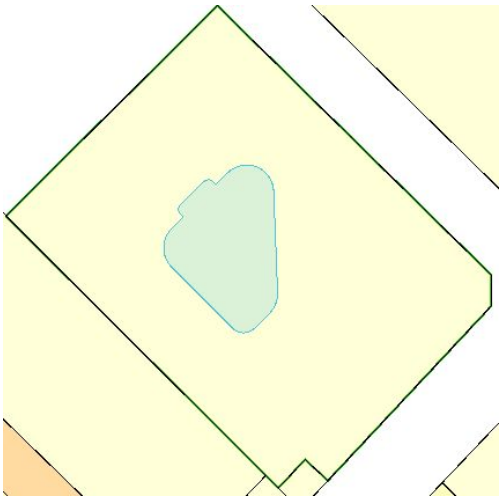

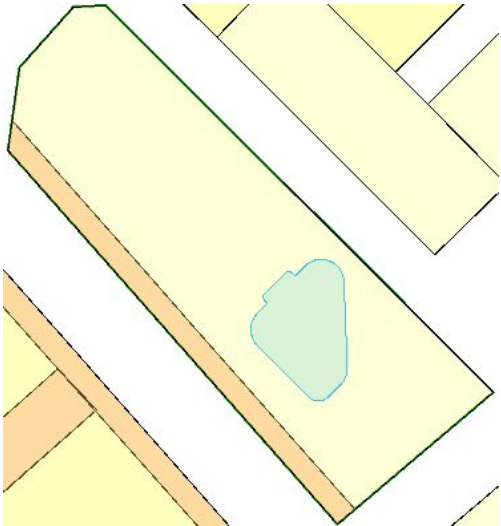
Table 1.Building Placement Testings

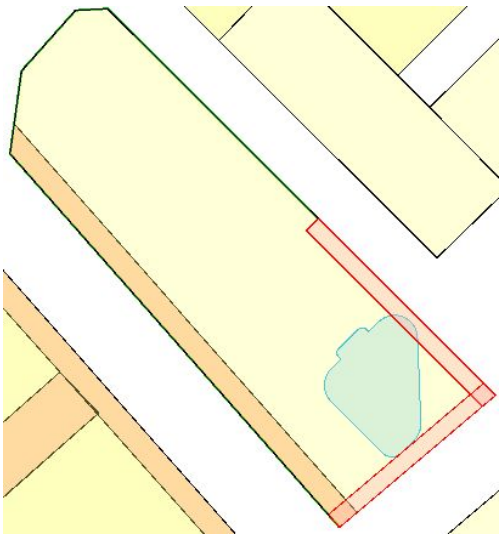
ID	X-Coord	Y-Coord	Measured distance	Distance to move	Results
1	415341	6582479	8.498	N/A	

2	415382	6582382	0.337	4.163	
3	415391	6582288	14.863	N/A	
4	415333	6582354	9.186	N/A	

5	415419	6582391	4.291	0.209	 A map showing a yellow polygon representing a land area. Inside the polygon is a green lake. A red rectangle is positioned vertically along the left edge of the polygon.
6	415408	6582499	4.348	0.152	 A map showing a yellow polygon representing a land area. Inside the polygon is a green lake. A red rectangle is positioned horizontally along the right edge of the polygon.

7	415342	6582600	6.312	N/A	
8	415274	6582668	7.485	N/A	
9	415275	6582676	1.138	3.362	

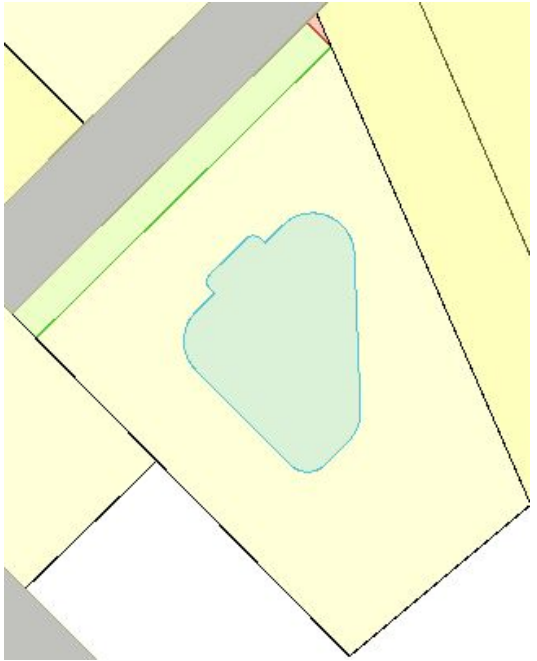
10	415211	6582616	18.160	N/A	
11	415238	6582595	1.224	3.276	
12	415269	6582423	5.651	N/A	

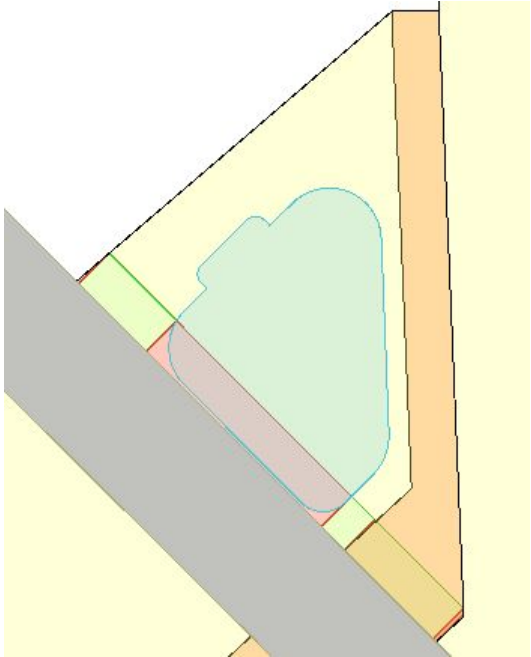
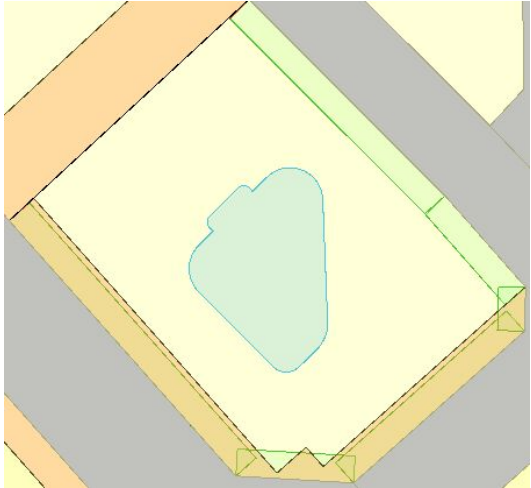
13	415288	6582409	4.445 2.111	0.055 2.398	
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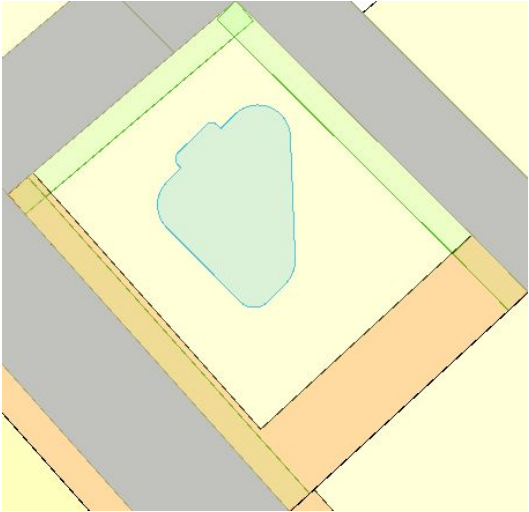
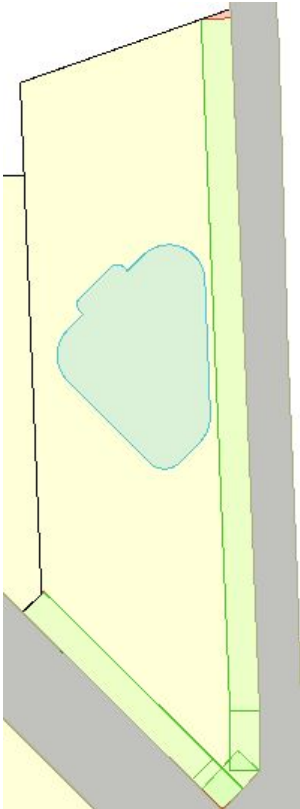
2. Parking Availability

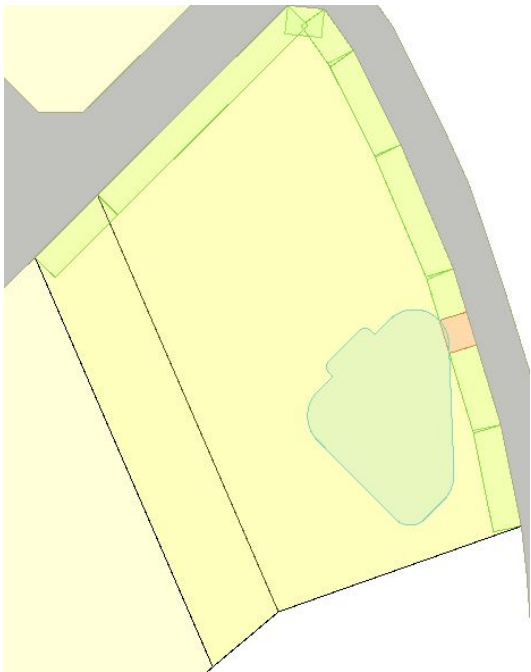
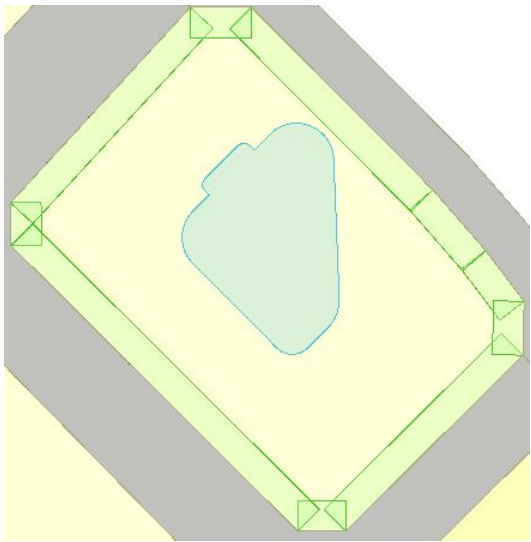
The provided dataset contains lots of excessive coordinates in a straight line which can hinder the results. In order to eliminate the extra points, a *Generalizer* is applied (Douglas Peucker algorithm) with a generalization tolerance of 0.005. The *Generalizer* is applied to both the property and the road data before they are fed into the algorithm. Areas that are suitable for parking are colored green and areas that are unsuitable for parking are colored red.

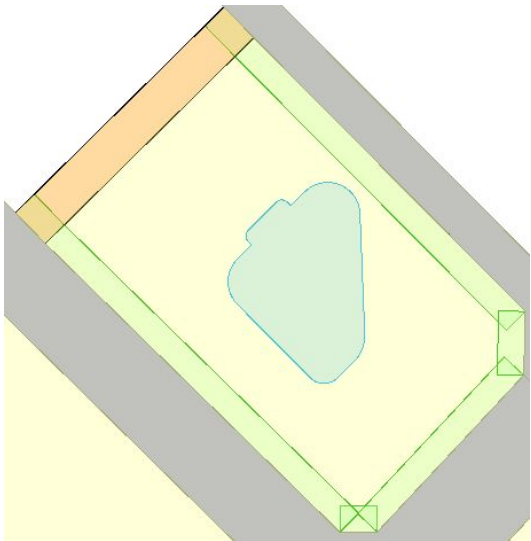
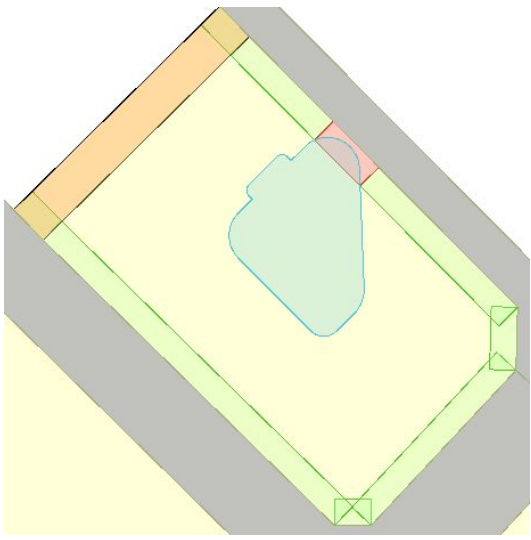
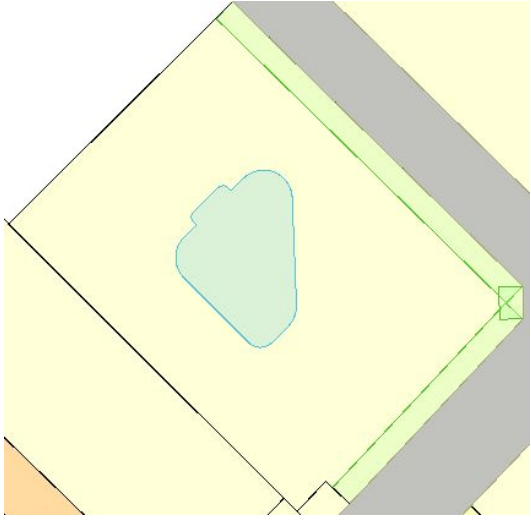
Table 2. Parking Availability Testings.

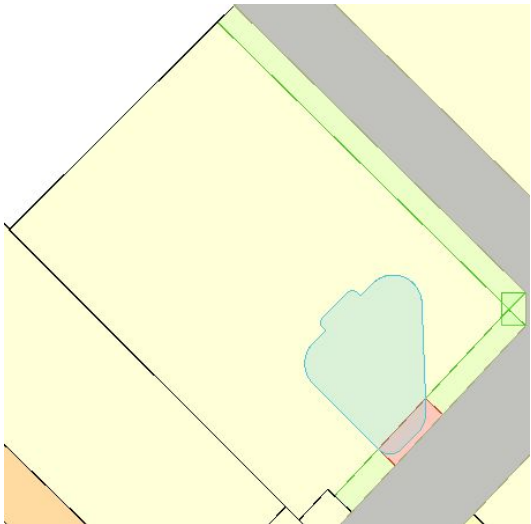
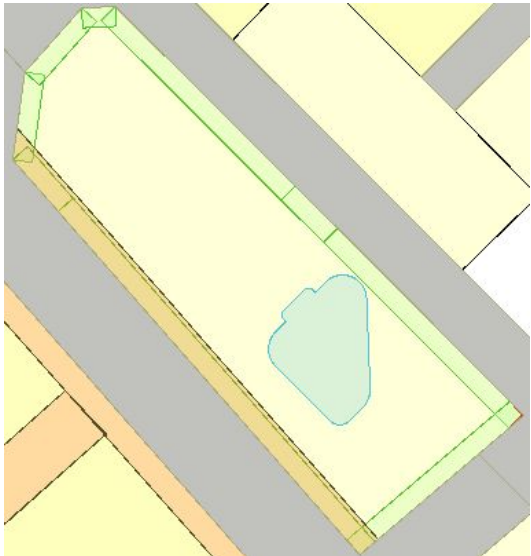
ID	X-coordinates	Y-Coordinates	Rotation	Results
1	415341	6582479	N/A	

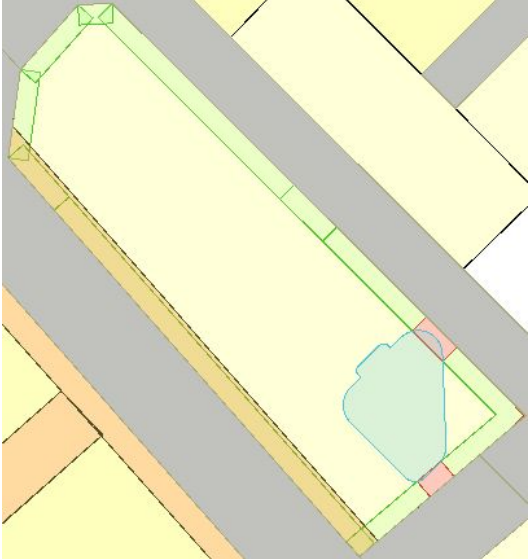
2	415382	6582382	N/A	
3	415391	6582288	N/A	

4	415333	6582354	N/A	
5	415419	6582391	N/A	

6	415408	6582499	N/A	 An aerial photograph showing a yellow rectangular area, possibly a field or a specific land use zone. A green pond is located in the lower right portion of the yellow area. A small orange rectangle is situated on the right edge of the yellow area, adjacent to a grey area. The yellow area is bordered by grey areas on the top, left, and right sides.
7	415342	6582600	N/A	 An aerial photograph showing a yellow diamond-shaped area, possibly a field or a specific land use zone. A green pond is located in the center of the yellow area. The yellow area is bordered by grey areas on the top, left, and right sides. There are four green corner markers, each consisting of a small square with an 'X' inside, located at the corners of the yellow area.

8	415274	6582668	N/A	
9	415275	6582676	N/A	
10	415211	6582616	N/A	

11	415238	6582595	N/A	
12	415269	6582423	N/A	

13	415288	6582409	N/A	
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