

The Use of GIS Application in Identifying Youth Recreational Area in Subang Jaya, Selangor

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1 ABSTRACT

The paper presents the use of GIS application in identifying the youth recreational area in Subang Jaya, Selangor. The main objective of this paper is to identify existing youth recreational area, its thresholds and amenities in Subang Jaya. Method used in this study is divided into two main parts. First is by using GIS application, all related recreational area, its thresholds and amenities are identified spatially. Then spatial analysis is carried out to match with the youth population in this township. In addition, the output is also matched against the government policies of providing such recreational area. Findings show that youth recreational area is not limited to outdoor area but also indoor area too. This is consistent with the high demand of land area development in urban areas. However, findings also show the difference between the government policies and plans against what is actually been implemented. It is also found that many recreational area is not easily accessible to the youth. As an example, there is a need for a safe bicycle lane/pedestrian walkway in connecting housing areas with schools and urban parks and public amenities. Furthermore, it is also found that the public amenities lack of police beat stations or neighbourhood patrols to ensure safety. In summary, the stakeholders of Subang Jaya should look into mechanism of turning the existing recreational area into more sustainable youth recreational area.

2 INTRODUCTION

2.1 Youth

Youths are valuable assets to all nations of the world. They are the future country leaders and provide workforce of the next generation. Therefore their well being needs to be looked at. According to the United Nations, there are two categories of youth whose age range are between 15 to 24 years old. First is teenagers and the other is early adolences (Youth and the United Nations, 2010). The former consists of youth age between 15 to 19 years old and the latter comprises of the ones aged 20 to 24 years old (Youth and the United Nations, 2010). Youths at teenage age are often subjected to act of delinquencies (Yayasan Dakwah Islamiah Malaysia, 2007). They are the target subjects in this study. These are due to several factors. Ample leisure time, lack of parental guidance and attention, peer group influence and lack of religious knowledge are some of the factors (Yayasan Dakwah Islamiah Malaysia, 2007). They feel unimportant. Therefore, the community and policy makers need to take proactive actions in curbing these situations. The youth should be given avenues for them to use their leisure time productively. In addition, the community should produce programs that will enable the youths to utilize their leisure time to build their skills and empower their minds with activities that can help them build their image and critical thinking abilities (Turner, 2004).

Turner (2004) outlines four domains that constitute healthy development for children and youth. They are physical, intellectual, psychological and emotional, and social. However, it is not necessary for an individual to posses assets in all the four domains. Instead, a combination of two should be sufficient. She provides an example in which a youth can have fun by joining a wrestling acitivites and at the same time keep himself fit (Turner, 2004).

2.2 Youth and Recreational Area

Youths have more leisure time as compared to other categories of people. They have their own way of doing things that they like most. Therefore, their leisure time should be filled with recreational activities. However, the programs designed for the youth are often one sided. It is mostly programs dealing with drug use or delinquency. This is where planning programs for the youth go wrong. The number of youth who are not at risk is higher than the ones at risk. Therefore, program provision should tackle the those youths whose hunger should be dealt immediately before the negative effects take control of the situation.

Leisure is free time filled with various beneficial activities (NCPAD, 2006). Since leisure is always associated with the youth, ample recreational areas should be provided to this group. This will provide a

platform for the youths to fill their their leisure time beneficial activities. Recreational areas can be divided into two main categories. One is outdoor and the other is indoor recreational areas (Buzzle.com, 2010). Outdoor recreational activities are carried out in playgrounds, community parks, football field, and others. On the other hand, indoor recreational activities take place in various types of buildings such as sports complexes and commercial buildings. Swimming pools, badminton courts, floorball courts and futsal courts are among the facilities provided in sports complexes. Whereas, cyber cafes, pool and snookers tables are located in commercial buildings.

2.2.1 Accessibility to Recreational Areas

Recreational areas should be easily accessible to everyone in a community. There are three types of access for the youth. First is provision of bicycle lanes and pedestrian walkway. These should be provided as to ensure safe journey to the recreational are by the youths. Due to commercial considerations and heavy personal car usage, the absence of bicycle and pedestrian walkway is normal in many townships in Malaysia. Second is access to parks within gated and guarded community. In several neighborhoods, parks are located in gated and guarded community. Gated and guarded communities is popular due to high incidence of crime in residential areas. This has resulted the parks being inaccessible to youths outside the gate eventhough they live within 5 kilometers around the parks. Finally, is the location of recreational areas at the urban fringe. These facilities can only be used by the youths if they are driven there.

Recreational areas are inadequately distributed (Oh & Jeong, 2007). They are either located in the middle of a neighbourhood or at a remote area which is not easily accessible. Some are even located next to an expressway which is difficult for the youths to reach.

2.2.2 Safety

Recreational areas should be safe to users in many ways. Recreational facilities should be mended and maintained regularly to ensure users' safety. Broken seesaw could pose danger to the younger children. In addition, recreational areas are often used as a meeting point by the youths. They meet their friends regularly since these areas are big and they can move freely. However, not all youths use facilities in recreational areas decently. Some frequent the site to commit disorderly behaviour. Therefore, some sort of control need to be installed in these areas

However, according to Hilborn (2009), urban parks are difficult to be policed. Their boundaries are complex and they encompass big areas (Hilborn, 2009). It is difficult and costly to install CCTV. Therefore, these areas are prone to criminal activities. Hilborn (2009) suggests several guides in dealing with antisocial and criminal acts that usually take place in urban parks. They include disorderly youth, drug dealing, graffiti, illicit sexual activity and people with mental illness. On the other hand, a safe park is shown by having parents taking their children there, females and males are equally frequent users, workers having lunch or taking breaks here and finally they are visited by the elderly people regularly (Hilborn, 2009).

3 GEOGRAPHIC INFORMATION SYSTEMS (GIS) APPLICATION

3.1 The Use of Geographic Information System (GIS) Application

Geographic Information System or better known as GIS application is widely used in spatial analysing in various dispielines such as commercial, crime busting, identifying tourism reources and urban management (Arrowsmith, 2003; Bakker et al., 2008; Balram & Dragicevic, 2005; Batisani & Yarnal, 2009; Carsjens & Ligtenberg, 2007). The system's capabilities in considering geographic positions have enabled data to be analysed spatially and yielded more quality information (Alcoforado et al., 2009; Andrienko et al., 2003; Bahaire & Elliott-White, 1999).

GIS application in analysis recreational areas is widely used. It is used in measuring accessibility to neighbourhood facilities, in assessing spatial distribution of urban parks, (Lotfi & Koohsari, 2009; Oh & Jeong, 2007). Oh and Jeong (2006) uses GIS application with network analysis to determine the assessibility of urban parks.



4 METHOD

4.1 Study Area

This study is carried out in Subang Jaya, a well known township within the state of Selangor, which consists of areas known as SS12 to USJ21. Other areas such as Putra Heights, USJ Heights, Puchong and Seri Kembangan are not included in this study. Even though these areas are under the management of the same local authority, Majlis Perbandaran Subang Jaya, or Subang Jaya Municipal Council. They are omitted due to insufficient funding. Figure 1 shows the distribution of sections in the study area.

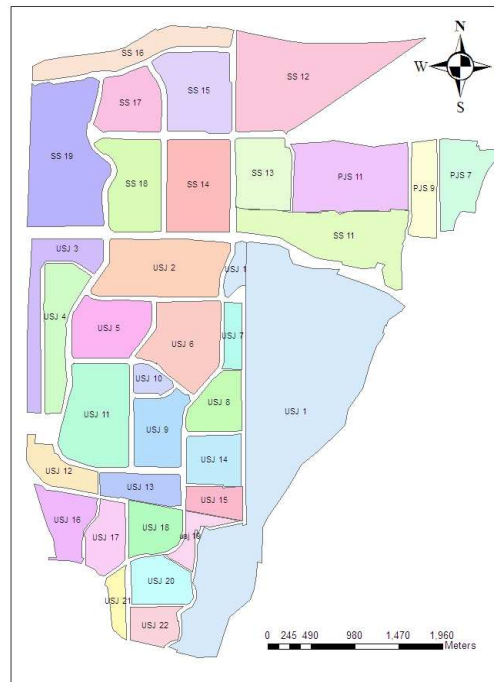


Fig. 1: Distribution of sections in Subang Jaya.

Subang Jaya is a satellite township developed to support the capital city of Kuala Lumpur. 30% of its development is mainly housing. With a size of 15.59 km² and a population of 132,334, Subang Jaya is continuously growing (Statistics, 2000). Moreover, 10,409 of its total population age 15 – 19 years old and 10,629 are between 10 – 14 years old (Statistics, 2000). Therefore almost 16% are young people. This does not include the ones below 10 years old. Table 1 shows the size of population according to repectives areas.

Area/Section	Land Size	Population (10 - 14 years old)	Population (15 - 19 years old)
SS 12 - 18	5.83 km ²	10,629	10,409
USJ 1 - 21	10.12 km ²		

Table 1: The details of population data according to their groups.

Subang Jaya has a wide range of recreational areas. Recreational areas in Subang Jaya can be divided into several categories. Firstly is park. This includes play lot, playground, neighbour hood park, local park, and urban park (Majlis Perbandaran Subang Jaya (MPSJ), 2003). The location of these facilities except urban park are mainly within the neighbour hood. Secondly is recreational complexes which house facilities such as table pool, badminton court, futsal court and floorball court. These complexes are located outside neighborhood areas. These recreational areas only occupy 14% of the total land area. Figure 2 shows the distributions of recreational parks in Subang Jaya.

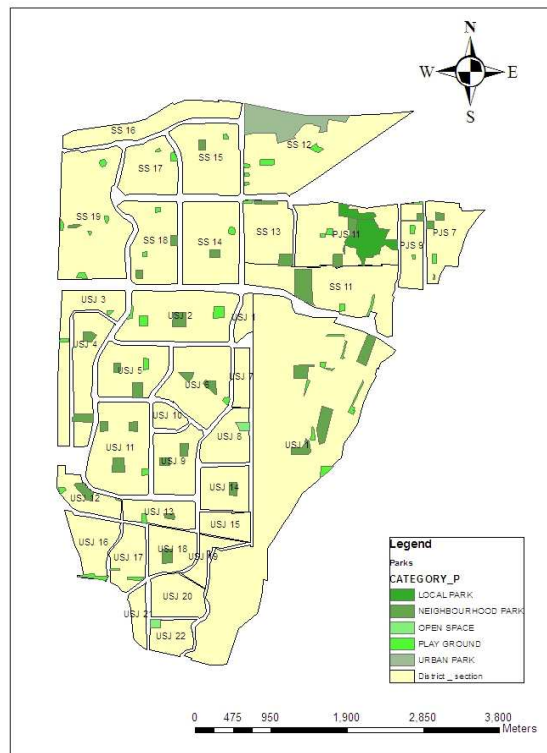


Fig. 2: Distribution of recreational parks according to categories in Subang Jaya.

In its draft local plan, Subang Jaya Municipal Council, listed the existing recreational areas in Subang Jaya as in 2003. The number has grown, however, no official document was updated or to rectify since official documents have yet to be released. Field observations carried out have proven that there are more recreational areas than that is stated here. Furthermore many of the playgrounds have been upgraded to be neighbourhood parks. These parks are managed by MPSJ. Table 2 shows the detail of recreational areas classification and the numbers in 2003.

Recreational Areas Classification	Existing Numbers as in 2003
Play lot	42
Playground	25
Neighbourhood park	4
Local park	1
Urban park	-
Sports complexes	1

Table 2: The details of recreational areas classifications.

4.2 Data Collections

This study uses only secondary data which consists of population and recreational areas of Subang Jaya.. Population data is obtained from the Department of Statistics (Statistics, 2001). This data contains demographic information of residents in Subang Jaya. On the other hand, recreational areas data are obtained from the local authority, Subang Jaya Municipal Council These data include urban parks, community parks and sports complexes which provide recreational facilities (Majlis Perbandaran Subang Jaya (MPSJ), 2003).

Each data is represented in a layer. Population data is stored in GIS database using regional are which are represented by polygons. Similarly, recreational areas are also represented by polygons. These layers are supported by respective fields to ease spatial analysis. Table 3 shows the fields associated with each layer.

Layer	Field 1	Field 2	Field 3	Field 4	Field 5
Population	Section's name	Total population	Area size of section	Population density	Youth population



Recreational areas	Name	Total areas	Gated and guarded	Park category
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Table 3: The details of fields in each layer.

4.3 Planning Guidelines

Department of Town and Country Planning Peninsular Malaysia has outlined planning guidelines for recreational areas (JPBD, 2010). Subang Jaya Municipal Council has obligation to use these guidelines in its municipality. However, in its local plan, MPSJ only outlines outdoor recreational areas. Indoor recreational areas such as sports complexes are placed under other community amenities. Table 4 shows the detail of the guidelines in planning for recreational areas.

Type of Park	Size (hectares)	Number of Population	Service Area	Amenities
National park	Unlimited	Unlimited	Throughout the country	Environmental conservation area, accommodation, surau, parking lots, sundry shops and food stalls, public transportation and etc
State park	100 (≥ 250 acres)	Throughout a township	Within 1 hour travelling time	Camping area, open sports complex, hiking, jungle tracking, stalls and sundry shops, surau, public transportation, parking lots and etc
Urban park	40 – 100 (100 – 250 acres)	50,000	Within 0.5 km buffer	Food court, swimming pool, playground, adventure game, badminton court, street soccer court, jogging area, shaded rest area, public phone sports complex, driving range, public transportation and etc
Local park	8 – 40 (20 – 100 acres)	12,000	Within 3 km buffer	Food court, swimming pool, playground, adventure game, badminton court, street soccer court, jogging area, shaded rest area, public phone and etc
Neighbourhood park	1.2 (3 acres)	3,000	Within 1.5 km buffer	Playground, adventure game, badminton court, street soccer court, jogging area, shaded rest area, public phone and etc
Playground	0.6 (1.5 acres)	1,000	Within 1 km buffer	Adventure ground, car parks, public phone, shaded rest area, and etc.
Play lot	0.2 (0.5 acres)	300	Within 0.5 km buffer	Grass and sand area, shaded rest area and children's play set and etc.

Table 4: The details of planning guidelines for recreational areas.

4.4 Spatial Analysis

Spatial analysis is used to determine the size of the recreational areas. Simple buffer spatial analysis is created around each recreational area and used to calculate its threshold by using JPBD's guidelines. The outcome of the analysis is put in table form. Figure 3 shows the simple buffer analysis that is used to determine the carrying capacity of Subang Ria Park.

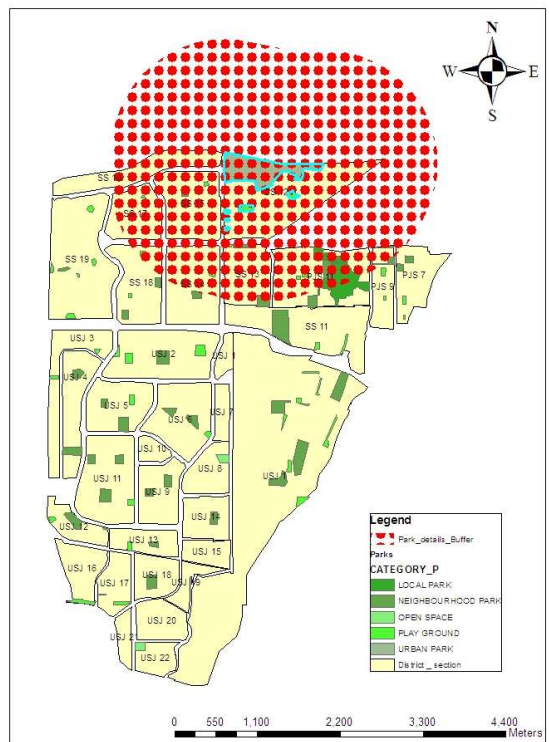


Fig. 3: Simple buffer analysis method used in determining the carrying capacity for Subang Ria Park in Subang Jaya.

5 ANALYSIS

By integrating the data collected from the related agencies, GIS application is used to carry out spatial analysis. As mentioned earlier, Subang Jaya is divided into several sections. Each section varies in size and has more than one recreational area. Analysis carried out for SS12 to SS19 shows that 5 out of 6 recreational areas are not able to support the current capacity. However, these recreational areas are easily accessible and safe to the youths and are located within their neighbourhood. Furthermore, these recreational areas are open to public since they are not located within guarded and gated community. Figure 4 shows the distribution of parks according to distribution of population density.

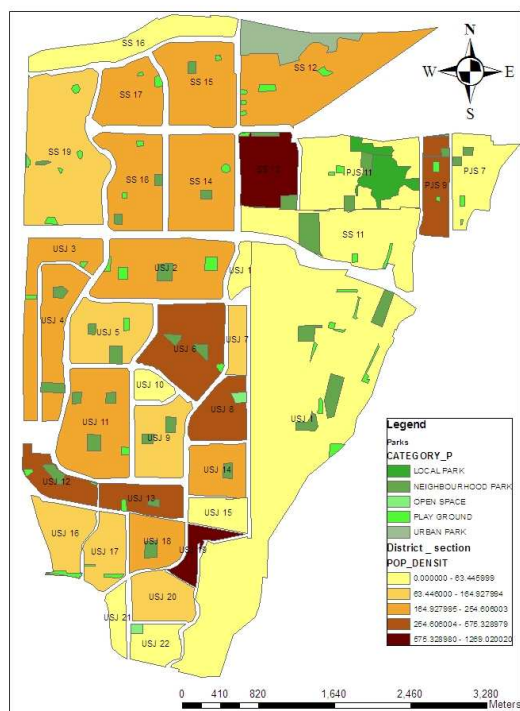


Fig. 4: Distribution of urban parks categories according to population density areas in Subang Jaya.

SS16 for example does not have any outdoor recreational areas even though it is a mixed development area. In addition, Subang Ria Park is a controversial park. Being the only district park in Subang Jaya, it is still pending court decision of being developed by Sime Darby Property Bhd since MPSJ refusal to approve its proposal to subdivide the park (Babulal, 2011). The residents are against the development. In addition, there is no mobile police booth available at any of these locations. Table 5 shows the analysis of the recreational areas for SS12 to SS19.

Section	Park Category	Park Area Coverage (acres)	Carrying capacity	Total Population within section	Total Population within buffer zone	Within Capacity	Gated and Guarded	Access to Public	Easily accessible to youth
Subang Ria Park in SS12	Local park	41.81	12,000	3,620	9,100	Yes	No	Yes	No
SS13	Playground	5.51	1,000	1,884	8,999	No	No	Yes	Yes
SS14	Neighbourhood park	93.43	3,000	7,115	7,115	No	No	Yes	Yes
SS15	Neighbourhood park	55.35	3,000	5,202	5,202	No	No	Yes	Yes
SS16	NA	NA	NA	278	NA	NA	No	Yes	Yes
SS17	Neighbourhood park	64.45	3,000	5,073	5,073	No	No	Yes	Yes
SS18	Neighbourhood park	90.86	3,000	7,298	7,298	No	No	Yes	Yes
SS19	Neighbourhood park	NA	3,000	12,352	NA	NA	No	Yes	Yes

Table 5: Analysis of recreational areas for SS12 to SS19.

Similar analysis is carried out for USJ 1 to USJ 20. Recreational areas are located in several locations within a neighbourhood. For example, in USJ 4, there are two parks. In this analysis both parks are combined to represent recreational area in an area. Therefore the calculation shown in the total area is a combination of more than one park. Analysis carried out for USJ1 to USJ20 shows that 16 out of 18 recreational areas are not able to support the current capacity. In addition, 7 of them are located within guarded and gated neighbourhoods. This condition prevents youths from accessing the parks. Figure 5 shows the distribution of parks within and outside guarded and gated neighbourhood according to youth population distribution.

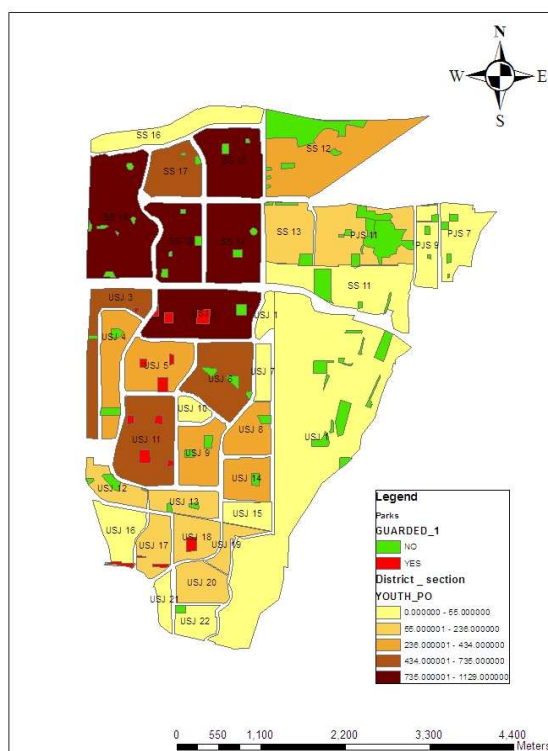


Fig. 5: Distribution of parks within and outside guarded and gated neighbourhoods according to youth population distribution in Subang Jaya.

Some of the parks are located in the middle of the neighbourhood. This has enabled youths to walk or cycle to the parks eventhough no pedestrian walkway or bicycle lane is provided. Table 6 shows the analysis of recreational areas for USJ1 to USJ20.

Section	Park Category	Park Area Coverage (acres)	Carrying capacity	Total Population within section	Total Population within buffer zone	Within Capacity	Gated and Guarded	Access to Public	Easily accessible to youth
USJ1	Play lot	127.29	300	445	445	Yes	No	Yes	Yes
USJ2	Neighbourhood park	109.71	3,000	11,304	11,304	No	Yes partially	Partial	Yes
USJ3	Neighbourhood park	116.49	3,000	8,607	14,395	No	Yes partially	Partial	Yes
USJ4	Neighbourhood park	68.49	3,000	5,788	18,303	No	No	Yes	Yes
USJ5	Neighbourhood park	77.09	3,000	3,908	3,908	No	Yes	No	Yes
USJ6	Neighbourhood park	88.43	3,000	12,374	12,374	No	No	Yes	Yes
USJ7	Play lot	12.08	300	498	498	No	No	Yes	Yes
USJ8	Neighbourhood park	24.16	3,000	5,625	9,865	No	No	Yes	Yes
USJ9	Neighbourhood park	66.03	3,000	4,240	4,240	No	No	Yes	Yes
USJ10	NA	NA	NA	614	NA	NA	No	Yes	Yes
USJ11	Neighbourhood park	130.98	3,000	11,693	17,481	No	Yes	No	Yes
USJ12	Neighbourhood	30.02	3,000	4,073	12,680	No	No	Yes	Yes



	park								
USJ13	Neighbourhood park	28.56	3,000	3,967	8,040	No	No	Yes	Yes
USJ14	Neighbourhood park	60.66	3,000	5,607	5,607	No	No	Yes	Yes
USJ15	NA	22.58	NA	NA	NA	NA	NA	NA	NA
USJ16	Playground	44.32	1,000	1,570	5652	No	Yes	No	Yes
USJ17	Playground	35.33	1,000	1,752	4,082	No	Yes	No	Yes
USJ18	Playground	29.80	1,000	2,330	2,330	No	Yes	No	Yes
USJ19	Neighbourhood park	8.25	3,000	4,236	4,236	No	No	Yes	Yes
USJ20	Playground	40.29	1,000	2,689	2,689	No	No	Yes	Yes

Table 6: Analysis of recreational areas for USJ1 to USJ20.

6 CONCLUSION

Findings show that the urban recreational areas are not sufficiently and evenly distributed. Therefore, these conditions have pressured youths to carry out their recreational activities elsewhere. Some opt to sports complexes and the other might join negative activities. The only indoor sports facilities available in Subang Jaya is Kompleks 3K. It is located in SS13. However, it is not easily accessible to the youth due to its location which is next to an expressway. Parents need to take them there by using motor vehicle. In addition, there are also futsal courts and bowling alleys which are privately operated. Eventhough the fees charged are minimal, the youths are still burdened by the cost. These facilities too are not easily accessible to the youths since they are located beyond 5km of residential areas. Furthermore, no direct bus services are provided from one section to another. Some of youths need to take two buses to commute from their houses to these places. Therefore, efforts should be taken in planning ease access to youths to reach this centre. In addition, these recreational areas are not equipped with any control such as CCTV or mobile police booth. Only in areas that are gated and guarded where some control are present. Therefore, it is not 100 percent safe in these areas that are open. Based on this findings, it is a good time for the community and MPSJ to work together to plan efficiently to provide youth friendly recreational areas sufficiently.

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