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## INVESTIGATION TECHNIQUE OF ROAD CRIMES

**Abstract:** Criminal violations of traffic rules are characterized by significant prevalence and increased public danger. Successful investigation of road traffic accidents (RTA), improvement of the activities of the preliminary investigation bodies largely depend on a clear understanding of the most typical conditions and circumstances in which violations of road safety rules most often occur. The forensic characteristics of road accidents resulting from criminal violations of safety rules can be of great help here. A road traffic accident is usually the result of many circumstances that form a set of causes and effects. Establishing the true reasons for the violation of safety rules that led to the accident, and the circumstances contributing to them, is not only one of the important tasks of solving a crime, but also an integral part of ensuring the safety of traffic and the operation of vehicles.

**Key words:** road traffic accidents, forensic characteristics of road accidents, safety, expert, pedestrian, methods of improving the investigation of road accidents.

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### Introduction

Since 2010, there has been a tendency for the growth of road accidents, most of which are caused by the fault of the owners of individual vehicles. Simultaneously, until 2014. There has been an annual increase in the number of deaths from traffic accidents. As for the victims, their number in 2014 compared to 2010 increased by 1.7 times. Killed in accidents on road and mobile roads - 1,022 people (2014), 985 people (2010) [1].

The most typical circumstances contributing to road crimes in a generalized form are: shortcomings in the organization of the movement of vehicles and pedestrians, in control over the technical condition of vehicles, roads and streets; lack of proper traffic supervision by the bodies of the Main Directorate for Road Safety of the Ministry of Internal Affairs of the Kyrgyz Republic ( GUOBDD of the Ministry of Internal Affairs of the Kyrgyz Republic ) [2], the public; shortcomings in the training of vehicle drivers, in the promotion of traffic rules among its participants.

A serious shortcoming is the low level of professional training of employees of the Department

of Internal Affairs, specializing in the disclosure and investigation of this type of crime; one of the reasons is also the lack of a sufficient amount of reference literature on the investigation of road accidents.

For the correct forensic characteristics, it is necessary to determine in what way the accident was committed.

Infliction of grievous bodily harm or death through negligence most often occurs in the following cases:

1) Collision is an accident in which moving vehicles collide with each other or with the rolling stock of railways. This type includes collisions with a suddenly stopped vehicle (in front of a traffic light, during a traffic jam or due to a technical malfunction) and collisions between railway rolling stock and a vehicle that has stopped (on the tracks).

2) Rollover is an incident in which a moving vehicle is overturned. This type does not include rollovers caused by another incident.

3) Collision with a stationary vehicle - an incident in which a moving vehicle ran into a stationary vehicle, as well as a trailer or semitrailer

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(collision with a suddenly stopped vehicle refers to a collision).

4) Collision with an obstacle - an incident in which a vehicle has run over or hit a stationary object (bridge support, pillar, tree, building materials, fence, etc.).

5) A collision with a pedestrian is an accident in which a vehicle has run over a person or he himself has bumped into a moving vehicle. This type also includes accidents in which pedestrians were injured by the cargo carried by the vehicle.

6) Collision with a cyclist - an incident in which a vehicle runs into a cyclist or he himself collides with a moving vehicle [3].

Hitting a horse-drawn vehicle and hitting animals, as types of road accidents, almost never entail the infliction of serious harm to human health or his death.

Among other incidents, the following can be singled out as the most dangerous: falling of the transported cargo on a person; collision with persons who are not participants in the movement; falling of passengers from a moving vehicle or in the cabin of a moving vehicle as a result of a sharp change in speed or trajectory.

The procedure for recording and registering road traffic accidents is determined by the Accounting Rules. They stipulate that the number of the dead includes people who not only died at the scene of the accident, but also died from their injuries within 7 days from the moment of the road traffic accident. The wounded include all those injured in the accident, who were seriously injured.

Each of the above ways of committing an accident is characterized by an individual set of traces (the mechanism of their formation at the scene), which distinguishes them from each other and from other types of crimes. But the overwhelming number of forensic experts identify the most general list of traces that are typical for almost all road traffic accidents.

A) Traces formed as a result of road accidents of this category and the mechanism of their formation.

For road accidents that resulted in the infliction of grievous bodily harm or death through negligence, both ideal and material traces are characteristic [4].

Ideal traces of a crime are preserved in the memory of a person and are revealed, first of all, by interrogating all participants in a road traffic accident - drivers, pedestrians, eyewitnesses of an accident, other witnesses, the victim (if he survived and, for health reasons, he is able to testify).

Revealing ideal traces can be difficult. For example, the driver of a vehicle is not always, due to the transience of the incident, can recreate a picture of what happened. Realizing his guilt, the driver can distort information, create a false alibi for himself, declare that his car was allegedly stolen long ago.

The victim, due to his injuries and wounds, the unexpectedness of what happened, may not remember

anything at all. And in the event of the death of a person, one of his relatives can be recognized as a victim, who, in most cases, does not have any real information about the causes and conditions of the accident.

Persons who have any information about the crime may be questioned as witnesses. In this case, there may be several categories of witnesses. These are persons who directly observed the course of the accident, persons who were at the time of the crime in the immediate vicinity of the victim (for example, other pedestrians who crossed the street with the victim), persons who are in the vehicle together with the guilty driver or victim (if the data persons themselves are not recognized as victims).

Witnesses can also give distorted information. Witnesses can report: what vehicles were involved in an accident, about the relative position of vehicles and obstacles before and during the incident, about the approximate speed of vehicles, about the behavior of a pedestrian and the place where he was hit, what traces could have been left vehicle, how the drivers of vehicles explained the incident immediately after the accident, etc.

Some people, due to their psychophysiological state (old age, childhood, mental disorders, etc.), do not always adequately perceive the picture of what is happening and may be conscientiously mistaken in the veracity of their testimony. Other witnesses, on the contrary, deliberately give false testimony, in view of material interest (the material rewards promised to them by the guilty or the victim for the so-called "necessary" testimony), or due to the fact that they were at the time of the accident together with the guilty (including in a vehicle), or those who are related to it and other close relationships.

As witnesses, ambulance staff (about the state of the road traffic accident participants at the time of their arrival) or doctors of medical institutions where the people injured in the road accident were admitted (for example, in the case when the victim died in hospital) can be questioned as witnesses.

Eyewitnesses are persons who most often observe the consequences of an accident immediately after its commission (drivers, passing vehicles, as well as their passengers). These persons can explain, for example, how the vehicles were located after a collision or rollover, indicate the location of the corpse after the collision, or confirm that the guilty driver provided assistance to the victim, etc. Also, eyewitnesses can themselves participate in providing assistance to people who have been injured in an accident (they help to get out of the vehicle or take them to medical institutions).

This kind of information can be obtained, if necessary, and, during interrogation as witnesses, attesting witnesses who participated in the inspection of the scene or in the conduct of investigative experiments.

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Material traces of an accident are divided into traces [5]:

- undercarriage of vehicles,
- footprints are objects,
- traces of a substance,
- traces of damage on vehicles during an accident,
- traces of damage on the victim's body.

Material traces of an accident are located directly on the terrain (road, environment) and on various objects (vehicle, victim and his clothes, etc.) and can be found on the roadway, vehicle and obstacle (other vehicle, structure, person).

Material traces characterize the movement of the vehicle and the victim, the place of collision or collision [6].

B). Traces of the vehicle running gear - the traces of the vehicle movement left on the trace-receiving surface (road surface, soil, etc.) as a result of the translational-rotational movement of the wheel. These can be: superficial and volumetric traces, traces of braking, traces of sliding (skidding).

Surface marks are classified into two subtypes: layering marks and delamination marks.

Layering traces most often remain on the asphalt pavement from the wheels of a vehicle that has driven off a country road. In this case, soil particles are transferred by the tire tread to the road surface. Peeling marks are formed by the tread of a rotating wheel on the surface of the carriageway by pulling off particles of the road surface.

Volumetric traces are formed on a soft surface (snowy, country, dirt road, etc.). The tire tread pushes through the soft layer of the roadway, leaving a display in which each protrusion corresponds to a wheel depression and each indentation corresponds to an elevation of the wheel. Surface and volumetric tracks convey the characteristics of the tire with great accuracy, which in some cases allows the identification of a specific tire.

Braking traces ("skid"). Traces of braking are one of the most important objects of analysis in a road traffic accident that resulted in the infliction of grievous bodily harm or death by negligence. Following the traces of braking, the following are determined: the direction of movement and the speed of the vehicle, the stopping distance, the place of collision (collision), the mechanism of approach of vehicles, the path of the pedestrian to the place of collision and other circumstances.

Braking traces are different. These are tread prints, wheel skid marks, or a combination of both.

Braking marks characterize the movement of the car, its technical condition, as well as the actions of the driver. Thus, curvilinear traces of tread marks may indicate that the driver is trying to avoid an accident by maneuvering before braking. The presence of only traces of sliding is a sign of sudden danger or panic action by the driver. The same sign in long tracks may

indicate a high speed of the car, which the driver tried to extinguish by hard braking.

The braking mark looks like a solid black stripe, but sometimes each wheel can leave two narrow stripes. This is because the pressure with which the tire is applied to the road changes in the lateral direction of the contact area between the tire and the road. The side of the tire has a higher pressure than the middle. As a result, the side parts of the tire are worn more and the slide tire leaves two narrow stripes. These tracks are typical for braking a car moving at low speed (up to 40 km / h) [7].

Skid marks (skid marks) can also form when trying to brake on a slippery surface (asphalt wet after rain, icy road surface, etc.).

Dragging marks. Traces of dragging on the road are formed at the moment of hitting the victim by the transport, grabbing clothes by machine parts and dragging it. The place of collision is determined by the traces of slipping of the victim's shoes. In some cases, they make a conclusion about the position of the victim at the time of the collision. So, when walking, a person alternately transfers the weight of the body from one leg to another. At the moment of a collision, pressed against the road by the gravity of the body, the sole of the shoe slides, leaving marks on the road. These tracks are most often in the form of one (less often two) sliding strips 20 - 40 cm long, located parallel to the braking tracks. The severity of shoe slip marks depends on many factors: the condition and type of road surface, the speed of the car, the weight of the victim, the material of the sole of the shoe.

When the clothes are seized by the details of the front and side parts of the car, the victim falls onto the road, and traces of the body being pulled through are formed on it. These traces can be easily traced on a dirt road or on a road surface that has layers.

The body of the victim, thrown away after the collision, leaves extensive traces of dragging, formed due to the disturbance of the layers on the carriageway. They look like wide stripes (up to the size of the victim). Sometimes blood is found in such traces. Dragging marks indicate the direction of movement of vehicles.

The forensic value of the traces of movement lies in the fact that their study makes it possible to establish the type of vehicle (car, truck, tractor) and its brand. Of particular value are the traces left by the tread of the tire, which has characteristic features - damage, wear, objects embedded in the tread pattern, etc. Such traces are of great importance, for example, for tracing a driver who fled from the scene [8].

The study of the tracks allows you to establish the direction of movement of the vehicle.

When determining the direction of movement of a vehicle, one should keep in mind:

- in the tracks of off-road tires, the tops of the corners of the pattern are directed, as a rule, in the direction opposite to the direction of travel,

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- splashes of water and liquid mud (when moving over puddles), are thrown in the direction of the wheel forward and to the side,

- dust entrained in the air flow is placed along the track in a fan, opened in the direction opposite to the direction of movement of the vehicle,

- when the wheels of the vehicle run over rods, straws, and other similar objects, they break or bend at an angle open in the direction of movement,

- in the volumetric trace on its side walls, arcuate stripes are formed, going from the bottom upward along the corners facing in the direction of movement,

- drops of oil, blood and water falling from the vehicle will be located along the road in spots narrowing in the direction of travel,

- the bottom of the track sometimes consists of ledges, the gentle sides of which are turned towards the direction of movement,

- pieces of soil are moved by wheels in the direction opposite to the direction of movement,

- the grass is smoothed by the skid wheels in the direction opposite to the direction of travel, a gap is formed on the side opposite to the direction of travel near the stone pressed into the ground by the vehicle.

2. Traces-objects are detached parts and parts of a vehicle as a result of an accident, found at the scene of the accident, which are used to search for the vehicle, its identification, as well as to determine the area of collision, collision.

Objects remaining at the scene can be grouped as follows [9]:

fragments of headlight glass, organic glass and other glass components of the vehicle,

soil crumbled from parts of the vehicle,

wreckage of vehicle parts.

Shards of glass. At the scene of the accident, fragments of glass broken on the car may be found: headlight diffusers, sidelights, bulbs, windshield and side windows.

When investigating collisions, it is important to study the glass fragments of a broken headlight lens. By their location on the road, you can determine the speed of the car, the headlight reflector device, the conditions of the collision and other circumstances. The analysis of the location of the glass shards detection should be considered in two aspects - depending on whether the collision occurred at the beginning or at the end of braking.

When hitting the victim at the beginning of braking, when the speed of the car is still high enough, the glass of the headlamp lens breaks. The car gives the victim's body an acceleration, as a result of which the body "sticks" to the headlight. At this time, the bulk of the fragments is pressed inward. The action of the braking system slows down the movement of the vehicle. The human body, maintaining the acceleration given to it, moves forward by inertia and releases the headlight. Pieces of glass from the

headlight are ejected from the lens by centrifugal forces.

If a collision occurs at the end of braking, when the speed of the vehicle is low, fragments of the headlight glass crumble at the place of its damage, some of the small ones remain in its body, on the clothes and body of the victim, and most of the large ones are scattered on the road.

The windshield is damaged when the victim is hit by the front of the car.

Side windows are damaged if the victim hits the side of the vehicle. In this case, there may be other traces on the glass and its parts: fingerprints, lipstick, blood and other biological substances.

In collisions, at high speeds, fragments of headlight diffusers fly out onto the roadway, and when vehicles are thrown, they can be detected at a certain distance from the collision site.

Fragments of windshield or side windows can crumble, both inside the car's interior and onto the roadway. When a vehicle rolls over, glass shards can be detected at a considerable distance from the collision site.

Sometimes fragments of windshields, side windows, and interior lighting remain in open wounds, on clothes, on the bodies of persons who were in the vehicle at the time of the accident.

As a result of an accident, soil particles may crumble from the bottom and other parts of the vehicle. It can be dust, dry and wet dirt, soil with vegetation elements, wet snow, etc. The crumbling soil particles can be used to determine the place of collision of vehicles or their initial location, in case of a change in the situation at the scene of the accident. Also, soil particles can be found on a corpse or on the body and clothing of the victim.

As the wreckage of vehicle parts found at the scene of the accident, most often those parts that are attached to the outside of the car appear:

- side mirrors;
- antenna;
- additional side headlight;
- door handle (protruding);
- decorative radiator grill;
- spoiler, bumper fang;
- bumper and other details.

Finding them at the scene is of great importance. According to the shape, design and purpose of the part, its type is determined and, depending on this, the model (brand) of the car to which this part belongs is determined in the future. For example, in a collision, it is extremely important to determine from which of the colliding vehicles this or that part has separated.

Traces - substances found at the scene of an accident are: the traces of blood, traces of fuels and lubricants, pieces of paintwork.

Traces of blood. When analyzing traces of blood, it should be borne in mind that they are formed on the road behind the collision site.

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The formation of traces of blood depends on whether the victim is hit in a vertical or horizontal position. In the first case, blood is rarely concentrated in one place. In its footsteps, one can trace the place of the initial fall of the body, its movement in the process of throwing it off, and the place of its final stop. Traces of blood, as a rule, disintegrate in the form of separate drops of various frequencies at the site of the initial fall and extensive spots at the site of the final stop of the body after movement. In the second case, due to the significant damage to the body and the abundant outflow of blood, extensive puddles are formed with drips towards the slope of the roadway [10]. When the body is moved again, these puddles have traces of fan-shaped splashing.

Taking into account the shape, size and mutual arrangement of blood traces, the question is being resolved in what position (standing, sitting, lying) the victim was at the moment of the collision.

In the event of a collision of vehicles or an obstacle, traces of blood can be found inside the car (on the seats, dashboard, steering wheel), on the clothes of people in the cabin, on the obstacle.

Also, in such accidents, traces of brain matter can be detected.

Traces of fuels and lubricants (gasoline, oil, coolant, lubricants, etc.) are formed directly at the point of collision with another vehicle or obstacle. They are in the form of puddles or tracks when the vehicle changes its original position in a collision. In the case when the vehicle has disappeared, the direction of its movement is determined by the direction of the tracks or the shapes of droplets of fuels and lubricants. Drops of liquid falling during movement have a pear-shaped shape, their narrow end is directed towards the direction of movement.

Also, traces of fuels and lubricants remain on the body and clothing of the victim.

Pieces of paintwork (paint or varnish on a vehicle or its parts) can be found:

- on the carriageway of the road surface when a vehicle rolls over;
- on another vehicle, in a collision;
- on clothes, the body of the victim and the corpse;
- on poles and fences when hitting an obstacle, etc.

#### 4. Traces of damage on vehicles.

1. Damage to the vehicle in collision and rollover [11].

Vehicle collisions can be classified into oncoming, sideways and passing vehicles.

The practical significance of the classification of the collision marks is that on its basis, with the help of trace information when examining the scene of the accident, it is possible to determine the situation of a collision of vehicles.

Oncoming (frontal) collisions occur in two-way traffic and are the most dangerous, since vehicles are

moving towards them, as a rule, at high speed. It is this type of road traffic accident that has a high mortality rate.

Head-on collisions occur mainly when overtaking, when, due to an incorrect assessment of the road situation, the driver enters the oncoming lane and vehicles are hit by their front parts (in whole or in part). In this case, the deformation of parts occurs: a rupture of the body metal, a break in the fastening of various components (engine, wheel suspensions). These collisions are characterized by the direction of damage along the longitudinal axis from the front to the rear of the vehicle.

Some parts (headlights, sidelights, body parts made of aluminum and other brittle alloys and glass) are destroyed and scattered on the roadway. At the same time, under the influence of deformation, dirt (snow) crumbles from under the wings of the car. The combined analysis of these tracks allows you to determine the location of the collision of vehicles.

The second type of tracks is transverse collisions, which are divided into cross and oblique.

In cross-collisions, vehicles are positioned so that their longitudinal axes make up a right angle or close to it. They arise in a collision, as a rule, at intersections, when exiting courtyards, etc. Collisions often occur at high speed, in places with limited visibility: "closed" intersections, insufficient visibility. This type of collision is unexpected for the driver, who enjoys the priority right of way, as he believes that other participants in good faith comply with the Rules of the Road [12].

Primary impact marks are located on the front of one and on the side of another vehicle. In this case, their repeated collision is possible, because from the impact they rotate around the center of gravity. However, there is less damage from the second collision.

Damaged vehicle parts can leave scratches on the road surface, which determine the movement of vehicles during a collision.

Oblique collisions occur when maneuvering (turning, turning), when one vehicle is moving in a straight line, and the second maneuvers and crosses the path of the first at an angle. The collision angle is generally less than the straight one with respect to the longitudinal axes of the vehicles. Therefore, the damage is located according to the movement of transport (on a vehicle moving in a straight line - on the front corners of the body: on the maneuvering - on the side).

The third group is made up of incidental collisions. They are less hazardous and usually leave only damage to the vehicle.

When overturning, deformation of the roof, pillars, front of the car occurs, transverse breaking of the body, etc.

2. Damage to the vehicle due to collision with a pedestrian or other obstacle [13].

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When hitting a pedestrian, the following damage to the vehicle is typical:

- broken headlight diffusers;
- damage to the bumper (dents, scratches) or its absence;
- broken windshield or side windows;
- damage or absence of outside rear-view mirrors;
- damage to body parts (pillars, doors, fenders, hood, etc.).

Also, particles of the victim's clothing or particles of the obstacle substance remain on the vehicle.

5. Traces on the corpse, clothes and shoes of the victim. The corpse, his clothes and shoes are described in detail during the inspection of the scene. Bodily injuries are described in detail by nature, condition. Open wounds are subject to examination in order to detect foreign bodies in them. In this regard, wounds on areas of the body unprotected by clothing are of great importance, in which there may be particles of paint peeling from the car, which make it possible to identify the car.

Damage to the corpse and the victim is divided into: received inside the passenger compartment of the vehicle, collision damage.

Damage received inside the vehicle interior can be in the form of:

- open and closed craniocerebral trauma, cerebral hemorrhage,
- bruised wounds and fractures of the frontal part of the head, bones of the nose, jaws, bruises on the face, blunt injuries and fractures of the chest, fractures of the femur and lumbar spine, due to impact on the steering wheel, dashboard, front seats,
- abrasions and tears of facial tissues, cuts from broken glass,
- crushing and tearing of abdominal tissues of internal organs, hemorrhages in body tissues and internal organs.

Collision injuries can also be fractures of all types of bones, tears and crushing of tissues and organs, tears of body parts.

It is extremely important to study the traces formed on the victim's clothes, which makes it possible to find out the behavior of the victim at the time of the collision or collision of vehicles, and to resolve the issue of the border of the territory to be inspected.

The great importance of marks on clothes is due to the fact that it is she who is the object that first comes into contact with the car and the road surface. The marks on the clothes and on the victim's body are interconnected. The location of the marks on the clothes corresponds to the injuries on the corpse.

Damage to clothing occurs as a result of a direct and sliding impact by the front wheels of the vehicle and sliding of the body along the roadway. Impacts with parts with flat surfaces at right angles (direct

contact) entail crushing the threads, sometimes transferring the shape of the trail-forming surface.

The sliding impact causes individual strands to break or significant fabric tears from sharp-angled details. The shape of the break depends on the nature of the interlacing of the warp threads. With a sliding impact of a car moving at high speed, particles of pile tissue can be found on its parts.

When clothes are moved by the wheels of transport, both the tearing of the threads and their crushing occur.

By the nature of the damage to the clothes, the surface of the car that was in contact with the clothes, the mechanism for the formation of marks, is determined. So, when the victim's body slides on the carriageway, extensive traces are characteristic in the form of folds of worn tissue, which alternate with its intact sections. The folds are smoothed in the opposite direction to the sliding of the body.

Pieces of car paint, shards of glass, dust often fall on the victim's clothes. These particles can be found on the surface of clothing fabric, in folds, seams, pockets. So, traces of paint layering appear, as a rule, with a sliding impact. The mechanism of their formation is explained by the fact that upon impact, due to friction of clothing and painted parts of the machine, the paint heats up, and its particles are transferred to the clothing. Layers of paint on clothes are pronounced or subtle in the form of transverse, parallel stripes.

Clothing may have traces of "metallization" formed when it comes into contact with the chrome parts of the vehicle.

The victim's footwear retains traces of interaction with the road surface. The study of these tracks is necessary to understand the collision mechanism. Traces in the form of tears and scratches are usually formed on the victim's shoes. When the vehicle wheel hits the foot, the shoe head is crushed and rough tears occur. Deformation of the shoe occurs in the direction of movement of the vehicle. Characteristic marks are also formed on its sole in the form of parallel rectilinear or arcuate scratches. The study of these traces allows you to determine the nature of the victim's movement, as well as the direction of movement of the car at the time of the collision.

Great forensic value have traces that have arisen on objects that were with the victim: a bag, a briefcase, a suitcase, etc. They are formed as a result of contact of these objects with parts of the vehicle and have the character of surface damage or destruction. In turn, the objects of the victim leave traces of layers, dents, scratches on the vehicle [14].

The forensic value of the traces formed as a result of the interaction of the victim's objects with vehicles is that with their help it is possible to establish the fact of a collision with a person, determine which part of the blow was struck, the position of the victim

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ESJI (KZ) = 9.035  
SJIF (Morocco) = 7.184

ICV (Poland) = 6.630  
PIF (India) = 1.940  
IBI (India) = 4.260  
OAJI (USA) = 0.350

at the time of the collision, and also explain the nature and mechanism bodily harm.

Knowledge of the mechanism of the formation of tracks as a result of a road traffic accident allows you to correctly simulate the incident and collect the

largest amount of information useful for the investigation. This classification of ways of committing an accident that can lead to serious harm to health or death through negligence is highlighted by all criminologists.

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