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Influence of the thought Process on the Emotional Component of the Performing Activity of a Music Institution Student

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Abstract--- *At the present stage of development of music education, the integrity of the performance of a Music institution student is a science of educating and training a person in the unity of theory and practice, combining a special, intellectual, and emotional component. The relevance of correlation of intellectual-mental and emotional component in the study of the performance of a Music institution student is unquestionable, as the training of specialist music high school involves the formation and development of the competitive ability of the specialist to demonstrate their knowledge, skills and practice confirmed theory. The very mechanism of the human brain has long been considered the most difficult problem in science. In the last decade, because of scientific and technological progress, more and more complex human intellectual abilities have begun to manifest. Most studies of the relationship between intellectual-mental and emotional components are aimed at developing combinations of emotions and reason in the theoretical understanding of the human activity. Performing activities of a Music institution student expand this theoretical framework. Within the framework of performing activities, a Music institution student can learn, acquiring new knowledge and implementing it in practice. In the performance activity of a Music institution student, the composer's idea is realized in the interrelation of intellectual, mental and emotional relations. Thus, the synthesis of the musical aspects of performing, the personality of the student by her characteristics (ability, emotionality, temperament and character, mindset, motivation, etc.) and intellectual-mental processes and that promote the formation of objective criteria and indicators of the performance of a Music institution student as a whole.*

Keywords--- *Reflex, Student of a Music Institution, Performance, Intellectual and thought Process, Emotional Component, Frisson.*

I. INTRODUCTION

Preparation of a student for professional activity, especially if the future speciality involves performing or public performances, is a psychophysiological complex process, because of which both professional tasks of performance and reflex processes of the human body are carried out.

The implementation of the integrity of musical performance activities is facilitated by both knowledge, skills, and the information processing system, as a generator of a conscious combination of technological and emotional components that contribute to the achievement of the intended artistic result of the work, that is, the mind.

The activity of the individual has objective laws that regulate the entire life of the body. A person's conscious attitude to reality refers to a higher nervous activity, the roots of which lie at the basis of physiological processes.

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The main functions of the higher nervous activity of a person, that is, the life of the body, mental processes, his knowledge, professional skills, and life experience are associated with reflexes.

For the first time, the idea that all processes of the body are reflexes was expressed by I. M. Sechenov, the founder of the reflex theory in 1863, in the work "Reflexes of the brain". Experimentally, this hypothesis was confirmed in the research of academician I. P. Pavlov, as a unified psychophysiological functioning of the body [1].

Russian physiologist Ivan Petrovich Pavlov in his report at the XIV International Medical Congress in Madrid in 1903 outlined the basic principles of the physiology of higher nervous activity. A Russian scientist presented the fundamentals of the report in 1924 in the monograph "Twenty Years of Experience in Objective Study of the Higher Nervous Activity (Behaviour) of Animals" [3]. Many scientists of the world, including the outstanding philosopher and mathematician, Nobel Prize winner in literature Bertrand Russell [13], noticed the novelty, relevance and revolutionary nature of the tasks of this work.

The development of I. P. Pavlov was associated with certain effects (stimuli) on the organs of animals, causing a biological reaction and changes in the animal's body, which became known as conditioned reflexes. In experiments, the Russian scientist used two specific effects-food stimuli, which contributed to the release of saliva, and peripheral electrical stimulation, which caused a simple mechanical movement of the animal [3]. However, despite the use of only two stimuli in their experiments, the results of the research led I. P. Pavlov's hypothesis: any behaviour of both animals and humans can be explained by the formation and interaction of an infinite number of conditioned reflexes, thus, the so-called thought atoms were discovered [4]. This hypothesis, of course, is the work of intelligence, and of consciousness and occurrence of emotions, which is an integral part of the human higher nervous activity of the body contributes to the emergence of new conditioned reflexes, and is an important prerequisite for the process of learning a Music institution student as a whole.

II. Neural Pathways

The patterns of the formation of reflexes in humans (conditioned and unconditioned reflexes) belong to the first signalling system. The second signalling system, where the word replaces real phenomena and causes the same reaction of the body, distinguishes a person from an animal.

The second signalling system arose and developed based on the first signalling system and is in constant interaction with it. The continuity of the two signal systems is manifested in the formation and automation of the performance skills of a Music institution student, turning involuntary reactions and movements into arbitrary and meaningful ones. The second human signalling system not only improves the acquired specific skill but also facilitates the interaction of various skills among themselves. This becomes possible because of the formation of many neural connections - these are sensitive or motor specialized chains of neurons (nerve networks) that have terminal receptors for perceiving or transmitting information to the central nervous system and the muscle fibre [6].

In the active state, the neural network operates in this mode: neurons impulses inhibitory action are not excited, only those neurons that enter the current working state of particular action work. The work of action neurons proceeds in a wave that is, neighbouring neurons, which also assume action, are connected to the excitation process

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[12]. Neurons belonging to this particular action are excited repeatedly throughout the specific action.

Because of this process, it turns out, as it were, the continuous propagation of excitation along with the continuous wave-like motion of the entire neural network, during which the inhibitory neurons are turned off.

In this case, we are already talking about the formation of a neural network, which is formed under certain conditions of a relatively specific task of the human body. A certain neural network works until the moment of the end of the action or the solution of the task set by the body. Research by Timothy Lilicrap (T. P. Lillicrap) [9; 10] show that there are conditions under which the neural network itself can receive information that the task has not been completed and that it takes time to solve it.

It should be noted that the presence of a neural network in physiology, and its training in neural systems [11], at present, is one of the most relevant areas in studies of interdisciplinary fields of knowledge such as neurobiology, linguistics, medicine, psychology, chemistry, physics and others involved in the study of neural processes. Thus, in this case, we are already talking about the formation, work and management of Artificial Intelligence [14]. Among the developments in this direction, it is worth noting the achievements of Thomas Poggio (T. Poggio) [15], a series of works by Timothy Lilicrap (T. P. Lillicrap) [9; 10], Jeffrey Hinton [7], Yoshua Bengio (Y. Bengio) [8] and others.

III. Industrial Environment

The changes created by the gigantic information network and technological progress, communicating to the central nervous system about the processes. The phenomena of the external environment and inside the human body, the basis of which are the brain and spinal cord (due to the huge accumulation of nerve cells), are important components of the human environment, in which he constantly lives and works. The technogenic environment is artificial in origin; it is formed because of social, economic and other interactions and a conscious desire to change the outside world with the help of technical means, ensuring human life.

A characteristic feature of the technogenic environment is the violation of natural biogeochemical cycles, which are not comparable with the initial indicators. Despite this, technological progress and the human mind can create such conditions of existence in a technogenic environment that will bring humanity to a new standard of living. The technical equipment of knowledge, skills and abilities of a person contributes to progress in any activity, in the process of mastering performing activities by a Music institution student; one of the tools in this direction is a teacher.

IV. Science and Pedagogy

Teacher-musician is a complex profession that involves knowledge of the subject, both from performance and for theory, that is, science.

Thus, for example, a vocal teacher, in the process of teaching a student to sing, must rely not only on his performing experience and on the experience of previous generations, in particular, his teacher in the speciality, but he must also use the methodological terminology related to his subject. At the same time, the term should not remain

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just a letter combination that does not carry any information load. The methodological term for vocal training should be considered for performing activities, as a result of terminology in practice, and for science, that is, in the complex of knowledge on anatomy, physiology, psychology, medicine, physics and pedagogy. The loss of scientific guidelines in any sphere of human activity becomes a dangerous phenomenon, and especially in music pedagogy. Surely, stage experience cannot be replaced, as a demonstration component for performing activities of a Music institution student in the development of the musical material. However, for a complex implementation of the artistic side of the work (arias, romances, songs, etc.), there is the technological side of the issue, without which it is impossible to achieve the required quality, which is appreciated not only professional musicians but also the audience. A person present in the audience may not know the subtleties of the music profession, but they can evaluate the quality using the emotional component of their intelligence and consciousness. In the course of training, a student vocalist must acquire physiological knowledge about the structure and work of the entire body, at least within the necessary volume for singing. After all, the emotional component of the performance of a music student directly depends on the higher nervous activity of the body, that is, on the formation of conditioned reflexes. Teacher-musician is a complex profession that involves knowledge of the subject, both from performance and for theory, that is, science.

Vocal technique, as a science that synthesizes the developments of world scientists in pedagogy, vocal methodology, phoniatrics, etc., was formed in the second half of the XX century and is taught in Russian music universities based on L. B. Dmitriev's written work “Fundamentals of vocal technique” [1]. Currently, the development of scientific and methodological knowledge of students-vocalists, used in performing activities, requires adjustment and expansion. Thus, it is not enough to say that you do not need to pay attention to consonant sounds while singing. Surely, the sounds of the vowels are sung and based on their evaluated quality characteristics of the vocal sound. However, the sound is consonant it is the exhalation that is required for the operation of the phonetic laws of any language in the vocals, and if this point is not to be ignored, it is about understanding the content of text works, however. The melody of the singer's speech should captivate the listener, otherwise, the meaning of the content will be intermittent, that is, arise and disappear, arise and disappear, and this is at best. Moreover, on complex parts of the work may disappear altogether, since the performer's attention will focus only on the musical and technical component of the work, and this may reduce the quality of performance in General.

The thought process is a reflection of objective reality in concepts, judgments, and conclusions [1]. Intellectual and thinking competence is an important component of the thinking process of Music institution students in performing activities. To confirm the validity of our assumption, we will conduct a study of the level of intellectual and mental competence of vocal students. The study involved students-vocalists of music universities in Moscow, the total number of which was 101 people. The students were divided into control and experimental groups, the experimental group (EG) of students consisted of 50 people, the control group (CG) of students of 51 people. At the ascertaining stage of the study, to measure the impact of scientific and methodological knowledge on the performance of students-vocalists, 7 test tasks were proposed in the questionnaire “Methods for diagnosing the motivation of performing activities of students-vocalists of the musical University of K. Zamfir (modified by A. A. Rean)” (table 1).

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Based on the assessment for each task, the overall quantitative and qualitative assessment of the intellectual and thinking competence of the student-vocalist was derived:

- 15 points – high level of performing competence;
- 8-14 points – average level;
- 0-5 points – low level.

Table 1: Questionnaire "Methodology for Diagnosing the Motivation of Performing Activities of Students-vocalists of the Musical University of K. Zamfir (Modified by A. A. Rean)"

	1	2	3	4	5
	Minimally	Slightly	Medium	Significatly	Maximally
1. The use of scientific and methodological knowledge in performing activities					
2. The desire to get a party in the opera class of the university					
3. The desire to avoid criticism from the teachers of the department					
4. The desire to avoid possible punishments					
5. The need for respect from other university students					
6. Satisfaction with the work process					
7. The possibility of maximum self-realization in vocal performance					

The data for each group are presented in Table 2.

Table 2: Level of Intellectual and Cognitive Competence of Vocal Students at the Ascertaining Stage of Research (EG and CG)

Level	High		Average		Low	
Goup	EG	CG	EG	CG	EG	CG
Number of students	3	2	8	9	39	40
% of the total	2,97	1,98	7,92	8,91	38,61	39,61

It should be noted that at the ascertaining stage of the study, not only the low level of intellectual-cognitive competence prevails in both groups, but also the average level of intellectual-cognitive competence is also insufficient.

The ascertaining stage of the research allowed us to make sure that intellectual and thinking competence, because of applying scientific and methodological knowledge in the performance activities of vocal students, is at a low level in both experimental and control groups. This suggests the need for purposeful work to improve the level of intellectual and thinking competence of vocal students in the process of their preparation for professional activities.

An analysis of the experimental data obtained at an ascertaining stage of the study led to the conclusion. At the present stage of music education, there is a need to introduce scientific and methodological knowledge that ensures the effectiveness of preparing vocal students for professional activity, which could improve the motivation indicators of vocal students for professional activity and increase the level of intellectual and cognitive competence of each student to the maximum possible.

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At the formative stage of the research, a course of lectures on vocal techniques and the introduction of the obtained scientific and methodological knowledge into the performance activities of vocal students was given.

Because of the study, the level of intellectual and thinking competence of vocal students was retested, the data of which are shown in tables 3 and 4, respectively, for the experimental and control groups.

Table 3: The Levels of Intellectual and Cognitive Competence of Students after Conducting the Formative Stage of the Study (EG)

Level of competence	High	Average	Low
Number of students	19	31	0
% of the total	18,81	30,69	0

Table 4: The Levels of Intellectual and Cognitive Competence of Students after Conducting the Formative Stage of the Study (CG)

Level of competence	High	Average	Low
Number of students	6	11	34
% of the total	6	11	34

Compare the results with those that were before the formation stage (Table 5).

Table 5: The Levels of Intellectual and Cognitive Competence of Students before and after the Formative Stage of the Study (CG and EG)

Levels	Before experiment			After expirement		
	High	Average	Low	High	Average	Low
EG	2,97	7,92	38,61	18,81	30,69	0
CG	1,98	8,91	39,61	6	11	34

As we can see, the level of intellectual and cognitive competence in the experimental group has changed after lectures on the vocal technique. A large percentage was the average level (30.69%). This is more than half of all vocal students of the group. The amount of 18.81% of vocal students have a high level of intellectual and cognitive competence, and a low level is not at all.

In the control group, the results also changed, but very slightly. The amount of 6% of students showed a high level of intellectual and cognitive competence, 11% - medium. At 34%, the level of intellectual and cognitive competence remained low. Based on these indicators, we can conclude that the course of lectures on the vocal technique had a positive effect on increasing the level of students' intellectual and cognitive competence.

Thus, intellectual and thinking competence is an important component of the thinking process of Music institution students in performing activities in General, which depends on the implementation of scientific and methodological knowledge in the learning process and affects the emotional component of performing activities. After all, a musical work of the composer is a form of practical implementation of the relationship of intellectual and mental, special and emotional components of the performance of a Music institution student, which complement each other and equally combine abilities, perception, imagination, memory, emotions and feelings, reason and will.

Abilities Imagination Memory

Human characteristics, which are conditions for the successful implementation of any activity, are called

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abilities. Student abilities are manifested in the dynamics of the acquisition of knowledge, skills. The speed of deep and lasting mastery of knowledge, skills, is measured by the ability level of a Music institution student.

The development of abilities presupposes the existence of stable special interests in any area of human activity that develop into the need to engage in this activity professionally.

For successful musical activities, a University student must have specific abilities, i.e. musical hearing, sense of rhythm, musical memory, ability to experience (react) to the content of music, etc. The Reaction to musical performance is stated by perception, imagination, emotions, feelings, will and thinking, that is, the formation of new wave-like chains of neurons.

Perception is the reflection by the human senses of an object or phenomenon according to the totality of its properties. A characteristic feature of perception is the knowledge and experience of the perceiver.

Musical perception is built in this way: listening to the performance, the musician and the audience differentiate the sound stream into separate musical parts, and the whole is correlated with its parts, and the parts with the whole work, according to the emotional-figurative content and metrorhythmic pattern of harmony laid by the composer. Emotional, sensory, motor-motor, temporal, spatial, social and other spheres of human life become a kind of foundation for understanding and understanding the music performed by a University student. These spheres are also transmitted to the audience of this music using a new neural network.

Imagination is an active search for a student to create new and unknown features of musical images in the content of a work.

The basis of the process of preservation and subsequent reproduction of perceived phenomena or information is the memorization of information by the student, which must meet certain requirements.

It is necessary that memorization occurs, as in the laws of physiology, and is aimed at perception, that is, a student at a Music institution must be able to perceive and absorb moving sound material. When memorizing music, a student-musician must pay special attention to all similar, equivalent or, on the contrary, dissimilar, different moments of sounding, since the memory brings the performer most often in such cases. This is since the continuous propagation of the excitation of the neural network of memorization ceases due to the shutdown of inhibitory neurons of the process.

Memory, in turn, is divided into the motor, imaginative, emotional, verbal and logical [1].

Memorization should be inextricably linked with the analysis and synthesis of the perceived sound, musical language, which is a whole complex of elements, i.e. melody, rhythm, harmony, polyphony, form, etc.an Important role in the implementation of such mental activity is played by the inner ear of the musician, the ability to store in memory what is already sounded.

The long-term memory of the musician depends on the degree of mobility of the formation of neural connections in the process of emotional filling and the features of the nervous processes of the student's life.

The strength of the listener's memory depends on the awareness of the content of the musical material and the performer's interest.

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V. EMOTIONS AND FEELINGS

Emotions and feelings are some manifestations of the student's spiritual life, which represent his positive or negative attitude to reality [1; 2].

Feelings - this is the person's ability to accept diverse sensations (irritations) and translate them into consciousness, where, when processed, they are expressed as a reaction to sensations. This reaction is emotion. Emotions are innate; they are fleeting and can be controlled. Feelings are formed based on emotional experience, the reason for the awareness of feelings is not clear, feelings cannot be controlled and stretch in the soul of a person until they are replaced by other sensations that have the power to replace them.

The activity of a student-musician is closely connected with the emotional and sensory sphere, performing art requires a Music institution student to thoroughly comprehend the composer's idea of the work and convey its emotional and imaginative content. The musical performance also conveys the most subtle emotions, feelings and mood of the player, thus bringing its emotional colouring to the music being played. If the performance is impassive and not colourful, it leaves the audience indifferent or causes them to feel dissatisfied.

Improving the sensual and emotional sphere to a Music institution student allows him to spiritualize and increase the aesthetic impact on the audience. Actions aimed at consciously controlling emotions or achieving a goal, regardless of the number of external and internal obstacles along the way are called the will.

Will

To turn a performance idea into a real sound embodiment, it is necessary to coordinate the work of breathing, specific actions of the student performer and hearing; this requires the active participation of consciousness and will [1]. A great display of will is associated with the need for daily classes of a Music institution student, overcoming difficulties, demonstrating perseverance and patience in the process of achieving certain goals.

An unusually active and purposeful manifestation of the will requires a Music institution student solo concert performance. Sometimes even the most experienced and qualified musicians performing in the process of performing experience an excessively strong excitement, and because of this, cannot demonstrate all their performing abilities. The performer has a feeling of insecurity to overcome inner excitement, bordering on a sense of fear; he must actively use his willful qualities and, above all, determination, perseverance, independence and self-control, endurance. The will, in the end, becomes the sublimation of the neural network activity of all the physiological and performing components of a Music institution student.

The persistent performer is capable of prolonged energy exertion during all systematic studies and to steady progress towards the intended goal, despite the difficulties that arise.

The independence of the performer is manifested in the quick and accurate solution of various tasks at the time of high emotional stress. A valuable volitional quality of the performer is self-control, or endurance, i.e. the ability to fully control yourself in various situations that arise during the performance.

The work of a University student on a piece of music proceeds in three stages, each of which requires a specific thought process.

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In the first stage of the work, the student is using visual, auditory and emotional sensations and perceptions create a preliminary, a complete image of a work that reflects its main features, i.e. the style and character of the music, the main thematic material, tonal plan, rhythm features, typical technical challenges, etc. At this stage of the work, the contractor comes up with his General conception of the product without specifying the particulars and details.

At the second stage, the student begins to actively get used to his plan, the concretization of the performance plan is carried out concerning sound, metrorhythm, tempo, dynamics, phrasing and other components.

The third stage begins from the moment when getting used to the details and rough work give way to a holistic perception of the work.

Sensation

The reaction to musical performance is recorded by the main human sensations: auditory, visual, tactile, musculoskeletal, and pain.

Auditory sensations provide an opportunity during the performance to navigate in a complex stream of musical information, i.e. determine the pitch, volume, timbre, duration, intonation and other properties of musical sounds [5].

With the help of visual sensations, a student-musician perceives a musical text with all the designations contained in it, perceives conducting gestures, determines the shape and colour of surrounding objects, is oriented in space, etc. The listener perceives the sound of a musical work through facial expressions, plastic and visualized reactions of the performer of the work.

Tactile sensations are touch sensations that allow the student-performer to establish the necessary tactile contact with his instrument, and the listener, using the second signal system of the body, to cause the body's reaction to the musical work through a complex sensation of sound breathing vibrations.

Muscular-motor sensations help the student and teacher-musician to control the timeliness and accuracy of various performing movements in the process of activity, i.e. coordinated work of the body and limbs, the muscles of the respiratory system, the muscles of the articulation apparatus and fine motor skills. Muscular-motor sensations allow the listener to scan the degree of tension in the body of the performer, and thereby unconsciously and passively reproduce the muscular work of the performer.

Pain sensations are a specific type of muscle sensitivity that perform a special protective function in the body, signalling with their appearance about overstraining of certain muscle groups.

Frisson

In practice, with the help of his feelings, a Music institution student receives the necessary information about various aspects of the performance process and can coordinate his performance, thereby improving the quality of the process, and the teacher, with the help of his feelings, controls the implementation.

It happens that in the process of monitoring the implementation of the performance of a certain melody or in the process of listening to the sound of an instrument or a person's voice, the skin is covered with goosebumps, this

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indicates the unique feature of the human body to respond to musical performance, which is stated by the sensation. This phenomenon is called frisson from the French word frisson (shiver) and means "aesthetic chill" [16; 17].

This phenomenon occurs when listening to emotionally-sensual and exciting music, which is perceived as waves of pleasure running through the skin of the human body.

The stronger the thought process, recorded by auditory, visual, tactile, musculoskeletal sensations, as a result of which a person involves himself in listening to a piece of music, the more likely it is to respond to performance, frisson, as a synthesis of intelligence with perception, imagination, emotions, and feelings. A person who experiences this synthesis has an unusually active imagination, values beauty, loves nature, thinks about their own and other people's feelings, values the diversity of life, such a person is open to new experiences [16].

Studies in this direction indicate that the probability of frisson, as an organism's reaction to music, depends on both the emotional and intellectual aspects of the person at the moment when a person tries to imagine, imagining how the musical composition will develop further, that is, it is trying to visualize music in your mind. Moreover, the integration of consciously acquired knowledge and an emotional component can help a Music institution student to comprehensively apply the necessary performing skills by their characteristics, their inner world, and the peculiarities of upbringing in their future professional activities.

Thus, for neuroscience, frisson in the activity of a Music institution student is an emotional-mental, subtle interconnection of sensory and motor specialized chains of neurons. Besides, frisson is a continuous distribution of excitation along with the continuous wave-like movement of all neural networks of the performer and listener, which is complex, specific and the highest indicator of the quality of performance of a Music institution student.

VI. CONCLUSION

Thus, the influence of the thought process, including an emotional component, on the result is an important component of the performance of a Music institution student, as a complex scientific fact of the formation of neural connections of the process. Moreover, for the most performing activities of Music institution students, it is necessary to acquire conditioned reflexes that contribute to the learning process. This ensures, on the one hand, the perception of the real sound, according to the acquired knowledge, skills and abilities, and on the other hand, the implementation of perception, imagination, thinking, will, etc., which anticipate the sound at a given time and make it possible to ensure the relationship of the components of performing activity constantly. Such an active, purposeful and consistent process is necessary for a Music institution student to get the highest quality result of their performing activities.

Based on the foregoing, we can conclude that the result of the performance of a Music institution student depends on:

- General and specific knowledge, skills of a Music institution student;
- Individual abilities of a Music institution student;
- The specifics of the thought process of a Music institution student;
- Emotions or emotional component of a Music institution student in the process of performing activities;

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- The relationship of the intellectual, cognitive and tactile component in the process of performing activities of a Music institution student;
- Intellectual and mental management of performance by a Music institution student;
- From the personality and professionalism of the teacher.

Since the educational process of a Music institution student takes place in a technogenic environment, it is necessary to introduce scientific and methodological knowledge and neuroscience achievements into the educational process as a whole to preserve historical traditions and achieve the highest artistic and technical skills of performing activities of a Music institution student.

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