



Primary Science and Technology Developmental Framework

The Science and Technology Curriculum aims to foster a love of learning and engage students from a young age. Students will be able to make links between why and how the world works in science to how to make things work in technology. They will develop problem-solving skills and will be able to apply their learning to real life contexts, providing opportunities to reinforce and build on prior learning. Pupils will also be given the opportunity to deepen their understanding through other curriculum areas and relating learning to their personal experiences.

Our pupils will develop a sense of belonging and responsibility through having a better understanding of the world, and by applying learning to real-life problems and contexts. They will be able to access the world around them as independently and safely as possible due to having a better awareness of the risks and hazards within their world.

Integral to the delivery of the Science and Technology Curriculum is allowing students regular opportunities to ask questions, make predictions, plan investigations and evaluate their results. They will then build on these skills in technology, allowing for creativity and exploration. These skills will support students' understanding and promote independence outside the classroom.

Science and Technology is taught every week throughout the school year. Our curriculum follows a three year cycle, allowing opportunities for pupils to access a breadth of study. The curriculum is differentiated according to the different stages of development of our pupils. These are described by the terms 'Encountering', 'Developing' and 'Enhancing'. Pupils learning at the 'Enhancing' stage are likely to be based in our partnership classes and access mainstream lessons for this curriculum area.

Cycle One					
Autumn 1			Autumn 2		
Animals Including Humans - Differences			Forces and Magnets		
Encountering	Developing	Enhancing	Encountering	Developing	Enhancing
<ul style="list-style-type: none"> To be able to identify common animals. To observe a skeleton and recognise that they have bones in their bodies. 	<ul style="list-style-type: none"> To identify and name a variety of animals. Describe and compare a variety of common animals. Identify and group animals with and without skeletons 	<ul style="list-style-type: none"> To investigate the role of the human skeleton and individual bones. To identify humans and that some other animals have skeletons and muscles for support, protection and movement. 	<ul style="list-style-type: none"> To observe a magnet being used to attract different materials. To use a magnet to suspend magnetic materials, with support. 	<ul style="list-style-type: none"> To compare how things move on different surfaces. To state that some forces need contact between two objects, but magnetic forces can act at a distance. 	<ul style="list-style-type: none"> To describe magnets as having two poles. To predict whether two magnets will attract or repel each other, depending on which poles are facing. To identify cause and effects linking to scientific enquiry.

	<p>using key terms - vertebrates and invertebrates.</p> <ul style="list-style-type: none"> • To compare and identify animal skeletons. • To state how the skull and ribs protect us. • • To observe changes in bones (chicken) in different liquids. 			<ul style="list-style-type: none"> • To know and use the terms attract and repel. • To predict which materials may be magnetic and carry out investigations to test their ideas. • • To record data and use this to inform their learning. • To communicate when they have 	
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				learnt using simple sentences.	
Spring 1			Spring 2		
Rocks			Plants and Growth: Life Cycle of a Plant		
Encountering	Developing	Enhancing	Encountering	Developing	Enhancing
<ul style="list-style-type: none"> To hold different types of rocks and describe using their own words/ match to images. To observe and explore rocks used in 	<ul style="list-style-type: none"> To observe, compare and group different rocks on the basis of their appearance and simple physical properties. To understand the 	<ul style="list-style-type: none"> To describe how fossils are formed when things that have lived are trapped within rock. To identify uses of rocks in the environment. 	<ul style="list-style-type: none"> To investigate and observe different flowers. To grow new plants, other than from seed. To taste fruit and vegetables and match which 	<ul style="list-style-type: none"> To identify wild and garden plants. To identify parts of a flower. To learn the life cycle of a plant. To be able to communicate learning 	<ul style="list-style-type: none"> To label different parts of a flower and understand the function of each part. To ask questions and make predictions about wildlife in our local area. To independently plan an investigation to test their ideas. To independently record their

<p>building, graves etc in the local environment.</p> <ul style="list-style-type: none"> • To explore soil through touch • To make their own fossils out of salt dough with adult support, developing understanding of how things can make a pattern after being squashed 	<p>different parts of soil.</p> <ul style="list-style-type: none"> • To use drawings and diagrams to reflect their findings. • To sequence how fossils are formed by objects being trapped within rock. • To make their own fossils out of salt dough, 		<p>plant they came from.</p> <ul style="list-style-type: none"> • To identify which fruit and vegetables they like/dislike . • To observe insects and plant interactions - in an environment/ video. 	<p>through drawings and labels.</p> <ul style="list-style-type: none"> • To predict the number of wildflowers in a particular area, carry out an investigation and record data. • To use their evidence to evaluate their findings. • To know the importance of insects in life cycle of as plant. 	<p>findings in an appropriate manner and use this evidence to communicate their learning.</p> <ul style="list-style-type: none"> • To research sexual and asexual reproduction in plants. • To describe ways plants can be pollinated.
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<p>into a rock.</p>	<p>understanding how things can get squashed into materials.</p> <ul style="list-style-type: none"> • To identify which objects are clearest when making fossils and why this might be. • To investigate what happens when rocks are rubbed together and the 			<ul style="list-style-type: none"> • • Pupils will research which plants would be most welcoming for bees. • Pupils will design a wildlife garden that would be good for bees. • Pupils will plant the garden and monitor the number of insects using the garden over the 	
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	changes that occur when they are placed in water.			coming term.	
Summer 1			Summer 2		
Living Things and Their Habitats – Identify living things			Everyday Materials – properties and changes of materials		
Designing and Making a Bug Hotel			Cooking with eggs		
Encountering	Developing	Enhancing	Encountering	Developing	Enhancing
<ul style="list-style-type: none"> • To observe living things. • To use the term 'alive'. • To identify 	<ul style="list-style-type: none"> • To identify things that are living and nonliving. • To start to give reasons why things may be alive. 	<ul style="list-style-type: none"> • To name the seven processes (MRS GREN) for support in identifying living things. • To use MRS GREN to identify if something is 	<ul style="list-style-type: none"> • To observe different solids mixed together. • To investigate how mixtures 	<ul style="list-style-type: none"> • To mix and separate solids. • To understand that some solids can dissolve in water. • To understand 	<ul style="list-style-type: none"> • To use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. • To independently ask questions, plan

<p>common animals.</p> <ul style="list-style-type: none"> • To explore animals and their features. • To make simple bug house with support. 	<ul style="list-style-type: none"> • To learn what we need to be alive. • To explore possible grouping of living things and give reason for group. • To explore and use a classification key to group and identify a variety of living things into animal (vertebrates/ invertebrates) 	<p>alive, dead or never alive.</p> <ul style="list-style-type: none"> • To give reasons for classifying plants and animals based on specific characteristics. • To describe how living things are classified into broad groups according to common observable characteristics and based on 	<p>can be separated.</p> <ul style="list-style-type: none"> • To cook eggs with support. 	<p>that some materials will dissolve in liquid to form a solution.</p> <ul style="list-style-type: none"> • To describe how to recover a substance from a solution. • To demonstrate that dissolving, mixing and changes of state are reversible changes. • To investigate suitable 	<p>investigations and collect data to test their ideas.</p> <ul style="list-style-type: none"> • To independently use the data to evaluate their learning.
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	<p>tes) and plants.</p> <ul style="list-style-type: none"> • To identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. • To use what they have learnt in science to design a bug hotel that will attract different 	<p>similarities and differences including microorganisms, plants and animals.</p>		<p>materials for keeping something cool.</p> <ul style="list-style-type: none"> • To understand that some materials go through irreversible changes. • To investigate different cooking methods of eggs and describe changes seen. 	
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	<p>bugs and insects.</p> <ul style="list-style-type: none">•• To choose one design out of a collection they have drawn, to build their hotel.• To select appropriate materials for making a bug hotel e.g. can we make it out of cardboard if it will be outside?				
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	<ul style="list-style-type: none">• To construct their bug hotels out of wood and sticks and evaluate their designs based on a set criteria.• To monitor the effectiveness of the bug hotel (has it attracted bugs and insects?) over time.				
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Cycle Two					
Autumn 1			Autumn 2		
Animals Including Humans – Reproduction and Changes			Sound and Light		
			Designing and Making a Musical Instrument		
Encountering	Developing	Enhancing	Encountering	Developing	Enhancing
<ul style="list-style-type: none"> • To begin to name and identify common animals. • To match pictures of animals. • To match animals to offspring. • To identify key features on their own bodies e.g. eyes, ears, arms, legs. 	<ul style="list-style-type: none"> • To use drawings and labels to record their ideas. • To identify, name, draw and label the basic parts of the human body. • To state which part of the body is associated with each 	<ul style="list-style-type: none"> • To identify similarities and differences between life cycles of different animals e.g. mammals and birds. • To construct a life cycle of named animals with named stages. 	<ul style="list-style-type: none"> • To observe different lights through sensory exploration. • To identify where the light source is. • To observe the difference between light and dark and 	<ul style="list-style-type: none"> • To know light is needed to see things. • To state how to protect eyes from bright lights. • To understand how a shadow is made through carrying out simple investigations and make predictions 	<ul style="list-style-type: none"> • To identify some parts of the eye. • To know that light travels in straight lines. • To answer questions on what we can see and why we can't see around corners. • To identify some parts of the ear.

<ul style="list-style-type: none"> • To observe change in animals over periods of time (e.g. hatching and rearing of chicks). 	<p>sense.</p> <ul style="list-style-type: none"> • To order the stages of the life cycle of a mammal, bird, insect and amphibian. • To identify a wide range of animal offspring and their adult form. 		<p>begin to use the language for this.</p> <ul style="list-style-type: none"> • To explore different musical instruments and the sounds made by different sized objects. • To identify loud and quiet sounds. 	<p>and record results.</p> <ul style="list-style-type: none"> • To explain in simple terms how to make a shadow. • To state how a shadow can protect you in the sun through investigating temperatures in shade and sun. • To understand what a reflection is and predict which materials can make a good reflection and which cannot. 	<ul style="list-style-type: none"> • To explain how sound sources vibrate to make sounds. • To explain how we hear and interpret sounds. • To plan an investigation to find the best material for absorbing sounds. • To apply their understanding of how to strengthen, stiffen and reinforce structures.
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				<ul style="list-style-type: none">• To carry out investigations to test this and record data.• To understand how sound is made.• To investigate how the sound pitch can change.• To record results and use them to explain their ideas.• To use knowledge of sound and materials to design their own musical instruments.	
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				<ul style="list-style-type: none">• To choose one design from a selection to make.• To practise their skills in cutting, shaping and joining when making their instruments• To evaluate their ideas and design against a set criteria and consider their own and others' views of how to improve their work.	
Spring 1				Spring 2	

Living Things and Their Habitats: Food Chains, producers, predators and prey			Animals Including Humans: Animal nutrition, teeth, diet, exercise, circulatory system		
Make a sandwich			Design and make a healthy picnic		
Encountering	Developing	Enhancing	Encountering	Developing	Enhancing
<ul style="list-style-type: none"> • To observe different animals in their habitats. • To begin to observe animals in their habitats outside of the school grounds. • To begin to understand that all animals need to eat. • To make a healthy sandwich with support. 	<ul style="list-style-type: none"> • To recap different habitats and the animals that live in them. • To name animals that eat meat, eat plants or eat both. • To construct and interpret a variety of food chains, identifying producers, predators 	<ul style="list-style-type: none"> • To identify and name a variety of common animals that are carnivores, herbivores and omnivores. • To learn about the impact of the breaking of a food chain and the effect on living things. • To construct and 	<ul style="list-style-type: none"> • To identify edible items. • To try different foods and observe whether they like or dislike them. • To learn the difference between food and liquid and learn that we need both. • To observe our teeth 	<ul style="list-style-type: none"> • To investigate how animals and humans get nutrition from their food. • To understand the importance of nutrition in humans and animal • to recognise that animals get nutrition from food. • To identify the different teeth and their functions in 	<ul style="list-style-type: none"> • To recap common animals that are carnivores, herbivores and omnivores. • To understand the role of the digestive system. • To describe the ways in which nutrients and water are transported within animals, including humans. • To describe the

	<p>and prey.</p> <ul style="list-style-type: none"> • To describe how animals obtain their food from plants and other animals. • To identify different sources of food. • To design a sandwich, taking into account different dietary habits e.g. vegetarian. • To make the sandwich 	<p>interpret a variety of food webs.</p> <ul style="list-style-type: none"> • To clearly communicate their learning using diagrams and the correct vocabulary. • To explore the human impact on food chains/webs 	<p>using mirrors.</p> <ul style="list-style-type: none"> • To contribute towards making items for a picnic e.g. by mixing biscuit mixture, making a fruit salad with pre-chopped fruit or buttering bread. 	<p>humans and animals</p> <ul style="list-style-type: none"> • To know what a balanced diet is and why this is important for our bodies. • To identify the main body organs of a human body. • To use their knowledge of a healthy meal to identify foods and design a healthy picnic. • To understand where food comes from identifying the plant from 	<p>functions of the heart, blood vessels and blood.</p> <ul style="list-style-type: none"> • To recognise the impact of diet, drugs and lifestyle on the way the body functions. • To state how to keep bodies healthy and how it can be damaged by what we put into it.
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	<p>and evaluate it against a set of criteria.</p> <ul style="list-style-type: none"> • To learn to chop fruit and mix in a fruit salad. 			<p>which a fruit or vegetable has grown in a picture or in the environment or by identifying the main ingredients in a processed food such as bread.</p> <ul style="list-style-type: none"> • To select from a range of designs, their picnic menu and make items for a picnic. • To create a set criteria linked to the purpose of their picnic and evaluate their design 	
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				using this criteria.	
Summer 1			Summer 2		
Electricity: Appliances and safety, Circuits and Conductors, Investigating circuits			States of Matter: Solids, Liquids and Gases and Reversible and Irreversible changes		
Decorating biscuits					
Encountering	Developing	Enhancing	Encountering	Developing	Enhancing
<ul style="list-style-type: none"> • To observe what happens when wires touch light bulb. • To observe when a light is turned off and on. • To explore through play how different electrical appliances are used. 	<ul style="list-style-type: none"> • To understand that many everyday appliances require electricity. • To understand the dangers of electricity • to generate electricity and safe use of electricity. 	<ul style="list-style-type: none"> • To make predictions then test their ideas around which materials are conductors of electricity. • • To independently record results and use them to 	<ul style="list-style-type: none"> • To observe and explore different solid and liquids. • To smell different scents and begin to understand that the scent is there but cannot be seen. 	<ul style="list-style-type: none"> • To explore the difference between a solid, liquid and a gas by using simple descriptors for the states of matter. • To compare and group materials according to whether they 	<ul style="list-style-type: none"> • To identify the part played by evaporation and condensation in the water cycle. • To investigate the rate of evaporation with temperature to help with drying clothes.

<ul style="list-style-type: none"> • To name common electrical appliances. 	<ul style="list-style-type: none"> • To understand what makes a complete circuit. • To investigate conductors of electricity • To demonstrate independent scientific thinking • • 	<p>explain their learning.</p> <ul style="list-style-type: none"> • To use recognised symbols when representing simple circuit diagrams. • To investigate questions on how to make bulb brighter, buzzers louder etc. 	<ul style="list-style-type: none"> • To observe solids changing state and explore what they can do following the change of state e.g. chocolate can be used to decorate biscuits. • To be safe with hot items with support. 	<p>are a solid, liquid or gas.</p> <ul style="list-style-type: none"> • To understand how a gas is formed. • To understand how solids, liquids and gases change state. • To make predictions to what would happen to material when it is heated/cooled • • To know what happens during evaporation. 	
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				<ul style="list-style-type: none"> To know that materials can be changed through melting and cooling and consider the impact of this on our picnic food choices. 	
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Cycle Three					
Autumn 1			Autumn 2		
Evolution and Inheritance Design and make a sculpture of a dinosaur			Properties and Changes of Materials Design a canopy		
Encountering	Developing	Enhancing	Encountering	Developing	Enhancing
<ul style="list-style-type: none"> To explore and observe the differences between different fossils 	<ul style="list-style-type: none"> To recognise that living things have changed over time. 	<ul style="list-style-type: none"> To identify how animals and plants are adapted to 	<ul style="list-style-type: none"> To observe and explore different materials and be able 	<ul style="list-style-type: none"> To name a variety of common materials and their 	<ul style="list-style-type: none"> To give reasons, based on evidence from comparative and fair tests, for the uses of everyday

<p>through sensory activities.</p> <ul style="list-style-type: none"> • To explore and observe the differences in different textures of animal fur and plants. • To explore similarities between parents and children (their family). 	<ul style="list-style-type: none"> • To learn how dinosaurs are both similar to and different from, reptiles we see today. • To learn the key characteristics of different dinosaurs. • To state what a fossil is and what it can tell us about living things millions of years ago. • To ask questions. • To observe differences between parents and 	<p>suit their environment.</p> <ul style="list-style-type: none"> • To learn about the three main types of dinosaurs - the sauropods, ornithischians and the theropods and that modern birds evolved from a group of theropods that included the t-rex and velociraptor. • To be able to explain 	<p>to use key words to describe them e.g. soft, cold, wet, hard.</p> <ul style="list-style-type: none"> • To experiment with the effectiveness of different materials when out in the rain. 	<p>uses.</p> <ul style="list-style-type: none"> • To compare and group together everyday materials based on evidence from comparative and fair tests, including their hardness, solubility, transparency, conductivity (electrical and thermal) and response to magnets. • To identify the different 	<p>materials, including metals, wood and plastic.</p> <ul style="list-style-type: none"> • To apply their knowledge of materials to their designs of a canopy, explaining why they have chosen a particular design. • To make their canopy using a selection of tools as independently as possible. • To evaluate their design against a set criteria.
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	<p>children.</p> <ul style="list-style-type: none"> • To recognise that living things create offspring of the same kind, but not identical and that offspring may vary • and make predictions. • To recognise that characteristics are passed from parents to offspring. • To observe outcomes of crossing different breeds of dogs. 	<p>their answers using evidence.</p> <ul style="list-style-type: none"> • To set up their own investigation and make predictions about the results. • To record data accurately and evaluate their findings. 		<p>properties of materials</p> <ul style="list-style-type: none"> • To investigate a suitable material to keep us dry on our picnic. • To design a canopy for keeping dry under a picnic. • To make a miniature canopy for keeping dry using their designs. • To develop skills in cutting, shaping and 	
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	<ul style="list-style-type: none"> • To identify how animals/plants adapt to suit their environment and that may lead to evolution. • To design a sculpture of a dinosaur with its main characteristics, using their knowledge of dinosaurs learnt in humanities and science. • To practise a range of skills in cutting, joining, shaping and strengthening 			<p>joining when making their canopy.</p> <ul style="list-style-type: none"> • To evaluate the effectiveness of their canopy based on a given criteria. • To begin to be able to suggest improvements to their designs. 	
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	<p>materials to suit their design.</p> <ul style="list-style-type: none"> To evaluate their design following a set criteria and consider ways in which they can improve their design. 				
Spring 1			Spring 2		
Living Things and their Habitats - Habitats			Plants and Growth		
Encountering	Developing	Enhancing	Encountering	Developing	Enhancing
<ul style="list-style-type: none"> To identify different habitats around them within the school grounds. To identify different living 	<ul style="list-style-type: none"> To understand the meaning of the term habitat. To explore plants and animals within 	<ul style="list-style-type: none"> To give reasons for their conclusions and explain what they have found out, 	<ul style="list-style-type: none"> To observe and compare different plants and flowers - smell, touch, taste (herbs) 	<ul style="list-style-type: none"> To investigate what plants need to stay alive. To make predictions 	<ul style="list-style-type: none"> To plan an investigation around finding out what plants need to grow and begin to ask questions e.g. how much water is needed?

<p>things and begin to identify where they may live.</p> <ul style="list-style-type: none"> • To match common animals and their habitats including humans with house. 	<p>microhabitats.</p> <ul style="list-style-type: none"> • To identify native habitats and their living things within the UK (Grassland, farmland, woodland, river, sea). • To identify habitats around the world (rainforest, polar, desert, ocean). • To understand how living things survive in their habitat. • To record data 	<p>supporting their conclusions with evidence.</p> <ul style="list-style-type: none"> • To state how environments have changed and the changes posed to living things through human impact (both positive and negative). 	<p>and begin to use the language of comparison eg big, small, like, dislike.</p> <ul style="list-style-type: none"> • To observe and take part in caring for plants by growing, planting bulbs, weeding and watering plants. • To begin to identify what plants and humans need to stay alive. 	<p>on what plants need.</p> <ul style="list-style-type: none"> • To measure plants growing and collect and record data. • To say in simple terms what a plant needs to stay alive. • To label the parts of a plant and begin to understand their purpose. 	<ul style="list-style-type: none"> • To independently collect data and use this to explain their findings. • To learn the parts of a plant and explain the purpose of each part.
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	about living things in different habitats and say simply what they have found out e.g. species count (woodlice).				
Summer 1			Summer 2		
Seasons and Change & Earth and Space			Forces		
Design solar system			Design boat		
Encountering	Developing	Enhancing	Encountering	Developing	Enhancing

<ul style="list-style-type: none"> • To observe changes across four seasons. • To make observations about the weather. • To match clothes to most appropriate weather. • To identify the sun. • To identify that the sun is hot. • To identify stars and that we see them at night time. 	<ul style="list-style-type: none"> • To name and identify the seasons – differences between each. • To identify the different planets and simple differences. • To make observations of the moon phases and make recordings of their observations. • To understand how day and night happen due to the 	<ul style="list-style-type: none"> • To research and be able to communicate their learning about the solar system and begin to understand how scientists learn about the planets. 	<ul style="list-style-type: none"> • To explore air resistance – running and matching words to the feel of wind on faces. • To investigate blowing and releasing air from balloons/ bubbles. • To observe dropping different materials and objects and explore what happens. 	<ul style="list-style-type: none"> • To ask questions, make predictions and set up investigations to test ideas around wind resistance, floating and water resistance, gravity and friction e.g. Making parachutes, planes and boats. • To ask questions, make predictions and set up investigation 	<ul style="list-style-type: none"> • To plan their own investigations and collect data. • To use evidence to support their evaluations.
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<ul style="list-style-type: none"> • To compare and use the terms day and night. 	<p>Earth's rotation.</p> <ul style="list-style-type: none"> • To learn how to make papier mâché. • To design a solar system that can be made out of papier mâché. • To make their own papier mâché planets following their designs. • To evaluate their designs based on agreed criteria - are they the 		<ul style="list-style-type: none"> • To explore what happens to different objects in water and whether they float or sink. 	<p>s to test ideas around the effect of different levers, pulleys and gears.</p> <ul style="list-style-type: none"> • To say simply what they have found out. • To use their knowledge of floating to design their own boats that will carry a small load. • To select materials from household 	
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	correct size, shape and proportion?			objects to make their boats. <ul style="list-style-type: none">• To choose from a selection of designs which design they will make and will evaluate their design following it being made.	
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