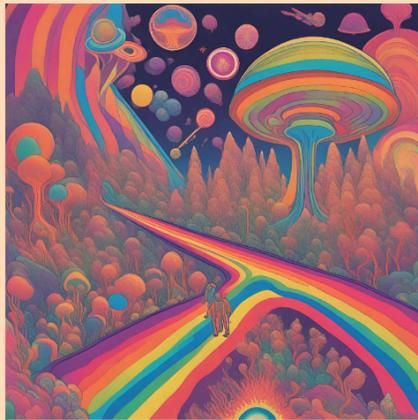


Level 1

CODING GUIDEBOOK AND WORKSHEET



SCRATCH

Generate 6-Digits OTP

195799
918521
451682

remix n share

<https://panchatantraprogramming.com/>

 Panchatantra
Programming

Exploration 2 - Your first Coding Project and you generate a One Time Password, popularly known as OTP

1. OBJECTIVE

The overall objective is to lay a foundation for coding proficiency, logical thinking, and creativity while emphasizing the practical application of coding concepts in everyday scenarios.

Hands-On Coding Experience: Enable learners to learn and develop coding skills through hands-on practice, creating a OTP generation system.

Introduction to Algorithmic thinking: Algorithmic thinking involves breaking down complex problems into logical steps and designing efficient solutions, forming the foundation of computer science and problem-solving. It emphasizes the ability to approach challenges with a structured and algorithmic mindset, fostering systematic and creative problem-solving skills.

Coding Concepts: Introduction to Events: Introduce the "when this sprite clicked" event as the starting point for the OTP generation, helping learners understand how events trigger specific actions in their programs.

A complete project: Introduce the concept of randomness in coding using the "pick random" block, helping learners understand how to use this element in their projects to create a first fully functional project.

Understanding Practical Use: Connect coding concepts to their practical use by discussing scenarios where OTPs are commonly used for enhanced security, helping learners see the real-world relevance of their coding skills.

Logical thinking and problem solving: Incorporating various OTP patterns adds complexity to the project, making it a valuable exercise in problem-solving and decision-making within the coding context. For example, creating a OTP with only odd numbers or within a specific range.

2. INTRODUCTION ACTIVITY

10 mins

Question 1 - What is OTP?

1. Any password that is generated online
2. A dynamic and temporary code for secure authentication, valid for a single use
3. A number lock used to lock our mobiles
4. Any numeric code received on mobile

Question 2 - What is the primary purpose of using OTP (One-Time Password) in online security?

1. To always use the same password
2. To change our password every day
3. To have a permanent password
4. To make sure only the right person gets in

Question 3 - What is the usual format for OTP (One-Time Password) used in online transactions?

1. A series of random numbers
2. A 8 letter word with some meaning
3. Name of the website
4. User's birthdate

3. INTRODUCTION

10 mins

This first Scratch project is going to be about One Time Password.

In the online world, when you want to do something important, like accessing your favorite game or sending secret messages, you need a special code called an OTP. It's like a magical key that's sent to your special device, and it's different every time.

This keeps your online stuff safe because even if someone tries to sneak in, they can't use the same key again.

So, remember, OTP is like a magical key that appears just when you need it, and it keeps your online adventures super safe and secure!

Now imagine you coding your first project to generate very own OTPs. As you have understood, you will be generating random numbers. Do you think this is going to be easy to do in Scratch?

You may be surprised to know that generating random numbers is a very common need for various tasks needed in programming. So this is provided by most programming languages as a ready-to-use capability.

This should be a big relief to you, and you will discover how Scratch provides an easy mechanism to generate random numbers within any range you desire. Your first coding project is bound to be super exciting as you explore the fun and creative possibilities of randomization in Scratch!

4. GUIDING INSTRUCTIONS

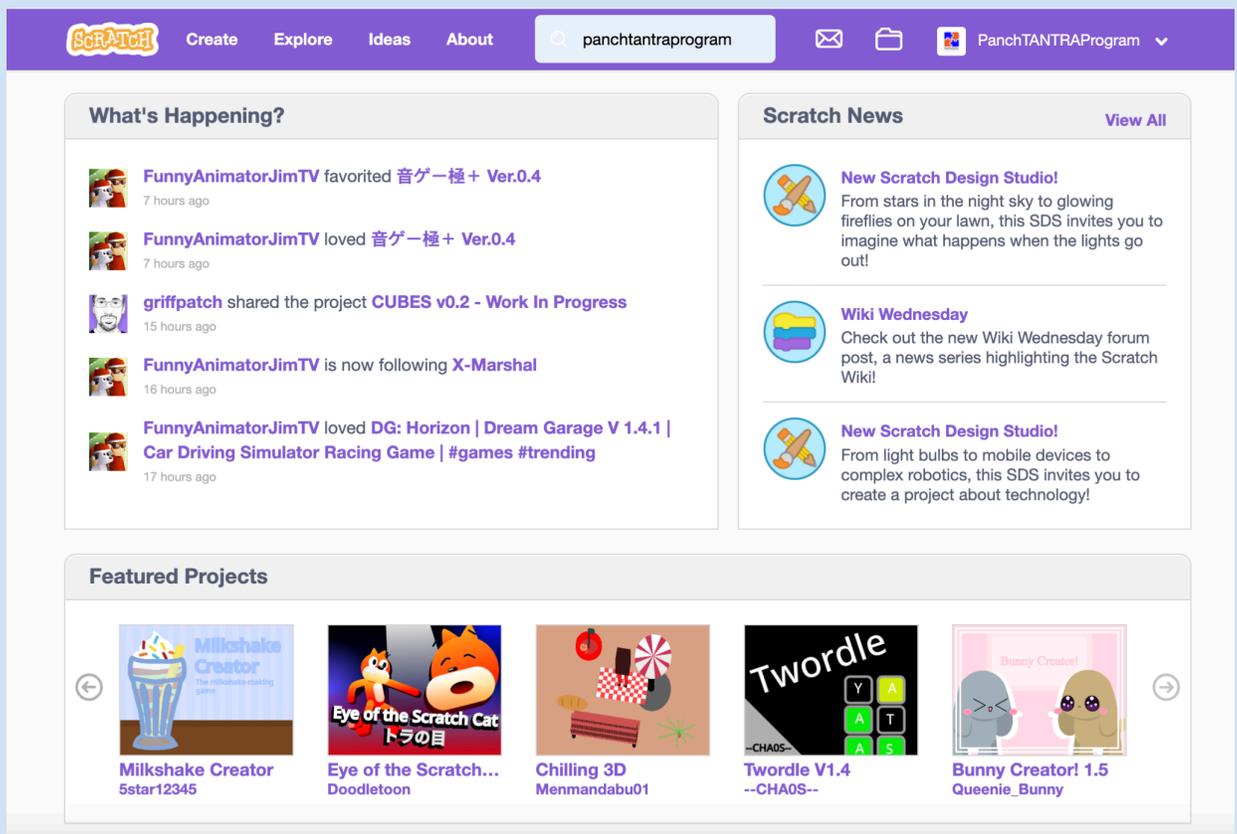
60 mins

STEP 1

Open the Scratch Website <https://scratch.mit.edu/> and login with your username and password.

Confirm that you have logged in successfully. You can do this by looking at the right top corner, your login name should be displayed.

Example:



The screenshot shows the Scratch website interface. At the top, the Scratch logo is on the left, and navigation links 'Create', 'Explore', 'Ideas', and 'About' are in the center. A search bar contains 'panchtantraprogram'. On the right, there are icons for mail, a folder, and the user's profile 'PanchTANTRAProgram'. Below the navigation is a 'What's Happening?' section with five recent activity items. To the right is a 'Scratch News' section with three news items. At the bottom is a 'Featured Projects' section with five project thumbnails: 'Milkshake Creator', 'Eye of the Scratch Cat', 'Chilling 3D', 'Twordle', and 'Bunny Creator!'.

Here you can see that PanchatantraProgram is signed on Scratch

STEP 2

Open the project <https://scratch.mit.edu/projects/521790364/>

Click on the Green Button **Remix**



This will get you your very own project.

STEP 3

You will see the project has opened up in the Editor mode.

What is a Scratch Editor?

The Scratch Editor is the workspace within the Scratch programming environment. It features a colorful palette of code blocks for writing your code, a stage where animations and interactions are visualized, and sprites that users can program to move and react.

STEP 4

You should now Rename your Project. You can give it a fun an interesting name.

Take a minute and Think of a name.

Examples like

My Key Generator
My PIN Blaster
My Code Express
Magic Passcode Maker
Mystic Mantra Codes
Cyber Magic Token
CodeWizard's Secret Spells
Random PIN Factory

These are just examples. You can come up with any fun name.

STEP 5

Now watch the tutorial:

Video Link - <https://youtu.be/Qv1XZ07nNHA>

STEP 6

Now try the RANDOM coding block that you have been introduced.
Did you find it?

Locate it by Clicking on the **“Operators” Coding Section**

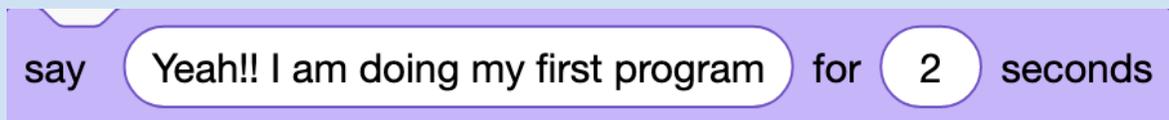
Try this block by giving it different range of numbers



Click on the block multiple times and observe what it generates.

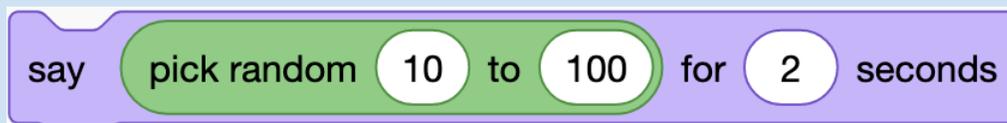
Does it generate a different random number each time?

STEP 7 Now try the SAY block



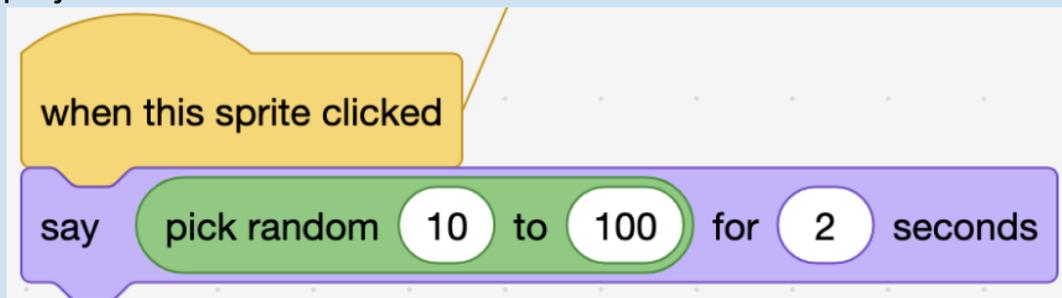
Change the text and try what happens.

STEP 8 Now try to fit the “pick random” inside the “say” block



Click on this and see what happens

STEP 9 Now fit this code that you have create under the code project given in your project:



STEP 10 Now try clicking the Sprite



Generate 6 Digits OTP

What do you notice?

STEP 11 Now change the range of the “pick random” block and see that you can generate 6 Digit OTP

STEP 12 SAVE your project



Save Now

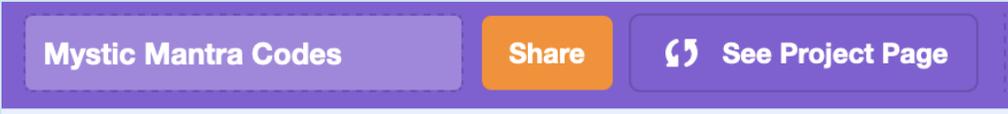


pp-codetocreate ▼

You will see the “**Save Now**” button appear on top just left to your profile name, whenever any code changes to the coding area.

It will auto-save, but you can also try clicking on this and see that it Saves immediately.

STEP 13 SHARE YOUR PROJECT



Mystic Mantra Codes

Share

See Project Page

You will see this Orange Button called “**Share**”
Click on this, so that others are also able to view your project.

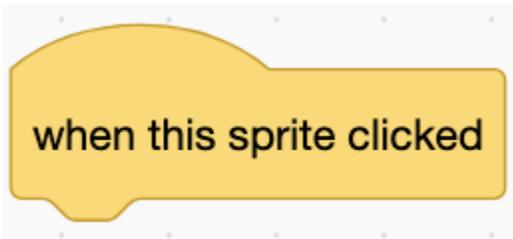
Remember, sharing is a fundamental aspect of the Scratch community ethos, encouraging collaboration, learning, and celebration of creativity.

Congratulations on completing your very first project on Scratch! 🎉 Wishing you an abundance of creativity, loads of fun, and countless moments of awesome coding in your exciting coding journey ahead!

5. KEY CONCEPTS

30 mins

EVENTS => when this sprite clicked



What is it?	Events are like things that happen, triggering different actions or reactions. They are like the special moments or changes that make us do something, and we can choose to respond to them
Where is it?	In the coding area called " Events " you'll spot blocks with rounded tops. These special blocks don't snugly fit into other blocks above them. Instead, they kickstart a series of code to make things happen. All the code underneath runs one step at a time, like a story unfolding, running one step at a time, in a sequence.
Examples from the world	Imagine your morning routine as a series of events. The sunrise is an event – it's when the sun comes up in the morning sky. And this event can trigger a whole series of actions for you! Another example you can think of "When school bell rings". Here this will trigger a set of actions for you.
TRY THIS OUT	What will happen if two similar Event blocks are used and different code is written under it?

OPERATORS => pick random



What is it?	The "pick random" operator in Scratch is like a magical dice that selects a random number from a given range. It adds an element of surprise to your projects, allowing for unexpected outcomes. By using this operator, you can create variety and unpredictability in your code.
Where is it?	In the coding area called " Operators " you'll spot this coding block.
Examples from the world	<p>Rolling Dice: Playing board games with dice involves randomness. The number you roll is unpredictable, adding an exciting element to the game.</p> <p>Shuffling Cards: When playing card games, the order of the cards after shuffling introduces randomness, making each round unique.</p> <p>Radio Stations: Tuning in to a radio station often involves hearing songs in a random order, adding an element of surprise to your listening experience.</p>
TRY THIS OUT	What will happen if two similar Event blocks are used and different code is written under it?

LOOK => say “ _____ ” for 2 seconds

say Yeah!! I am doing my first program for 2 seconds

What is it?	In Scratch, the "Looks" category provides blocks that allow you to control the appearance of sprites on the stage. One of the commonly used blocks in the "Looks" category is the "say" block. The "say" block enables a sprite to display text on the stage, creating a visual element in your Scratch project.
Where is it?	In the coding area called " Looks " you'll spot this coding block.
Examples from the world	Communication: Speech Bubbles in Comics: Think about speech bubbles in comic books. When a character in a comic "says" something, the text is displayed in a bubble near the character. Similarly, in Scratch, the "say" block can be likened to a digital speech bubble appearing above a sprite, conveying a message or dialogue.
TRY THIS OUT	Use the say block 2-3 times after each other and see what is effect on changing the number of seconds

6. Resources

Scratch Project to REMIX	https://scratch.mit.edu/projects/521790364/
Video Tutorial	https://youtu.be/Qv1XZ07nNHA
Panchatantra Programming Sprite Library	https://scratch.mit.edu/studios/25317136

WORKSHEET

30 mins

Exploration - Your first Coding Project and you generate a One Time Password, popularly known as OTP

Name:

Class:

Date:

1 - What is the Title/Name you have given to your OTP project? If you want a moment to change or update it, you can do so.

2 - Add another Sprite to your project. You can take any Sprite from the Library, it can be any character from the animals, or sports related object like a ball. Mention the object that you added.

3 - Now code this new Sprite that you have added on the Event “**When this sprite clicked**” and generate **4 Digit Even OTP**, such that the OTP that is generated is always an even number. Mention how you completed this activity. Did your team discuss this? What were the different ideas discussed?

4 - Use the **say** block in your new sprite to say that it is generating an even OTP. Try to use the **say block** with a timer and the **say block** without the timer. Can you note down the difference?

ASSESSMENT GUIDE

5 mins

Grade the students on their understanding of the concepts, coding and supporting other students. You can use the same Grading system as generally used in the school.

This can also be used as a peer activity by the children, where the children can do the assessment amongst the teams.

You can take prints of the assessment sheet below.

ASSESSMENT

Exploration 2 - Your first Coding Project and you generate a One Time Password, popularly known as OTP

Name:

Class:

Date:

Concepts	Clarity in logic	Coding logic	Collaboration	Worksheet
Evaluate the student's understanding of fundamental coding concepts relevant to the project.	Evaluate how well the student structures the code to achieve the intended functionality.	Consider the creativity and innovation demonstrated in coding solutions beyond basic requirements.	Evaluate communication skills, including the sharing of ideas, constructive feedback, and collaboration on coding tasks.	Assess the completion and accuracy of any accompanying worksheets or documentation.
