# Diamond adventures

50-55 minutes | 9-12 years old | Difficulty: low

## Description

In this activity, pupils head off in search of a technological treasure lost across the galaxy. To overcome the three challenges that separate them from the treasure, they will discover and understand what a flowchart is. At the end of the adventure, the whole class will play a fun online video game as a reward.

## Preparation

- Groups: small groups (2-3 people).
- Prepare the material needed for the activity.
- Have the *Scratch* project open; use this link: **https://digicraft.fundacionvodafone.es/diamond_adventures** on all the computers that the pupils are going to use.
- Have the document with the material for the adventure already printed.

## Materials

| | |
|---|---|
| Scissors | Stationery. |
| Computer | IT supplies. Windows, Mac or Linux. |
| Pupil download | Document with the material for the adventure. One document per group. |

# Follow these steps

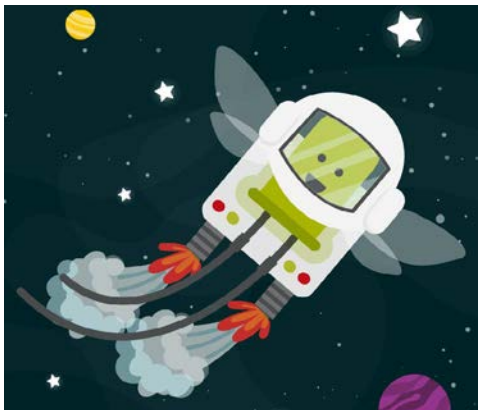
## Introduction 5 minutes

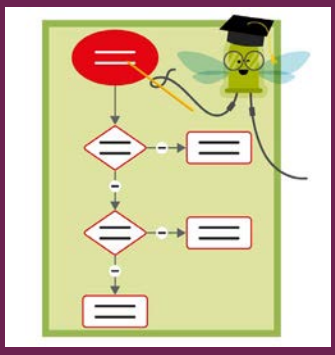
We begin the activity by explaining that we are going to help a famous treasure hunter from the dwarfs galaxy. This treasure hunter has obtained three mysterious documents used by the ancient programmers of Planet Earth, which are said to lead to an amazing treasure.

We organize the groups and give each group the pieces of the map and the first flowchart of the downloadable, which contains the illustration of a planet.

Next, we tell pupils that we are going to have an adventure, consisting of three tests in which it will be necessary to understand what flowcharts are and how they work. To be able to open the treasure and find a fun reward, we must pass the tests.

First, we explain what a flowchart is and how they are used in the programming world.





A **flowchart** is a graphical representation of an algorithm. It is the diagrammatic representation of the step-by-step solution to a given problem.

To read a flowchart, start with the oval symbol and follow the arrows. If you reach a diamond, you have to make a decision and, depending on this, continue along the arrow that represents the decision you have made.

Thanks to its creation, programmers can schematize and visualize a program before starting to write the code, thereby facilitating its development.

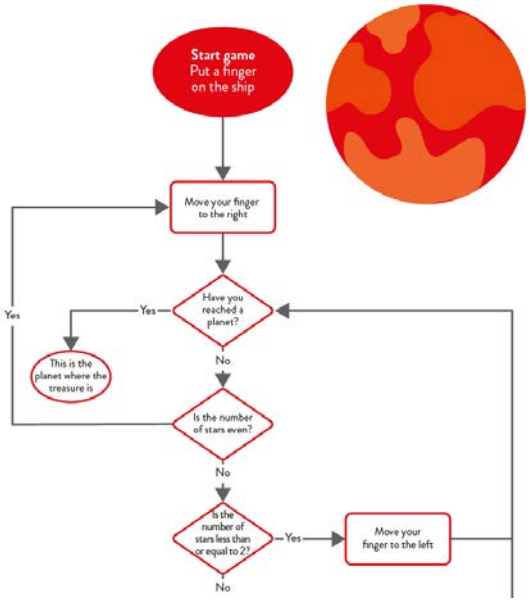
## Steps 30 minutes

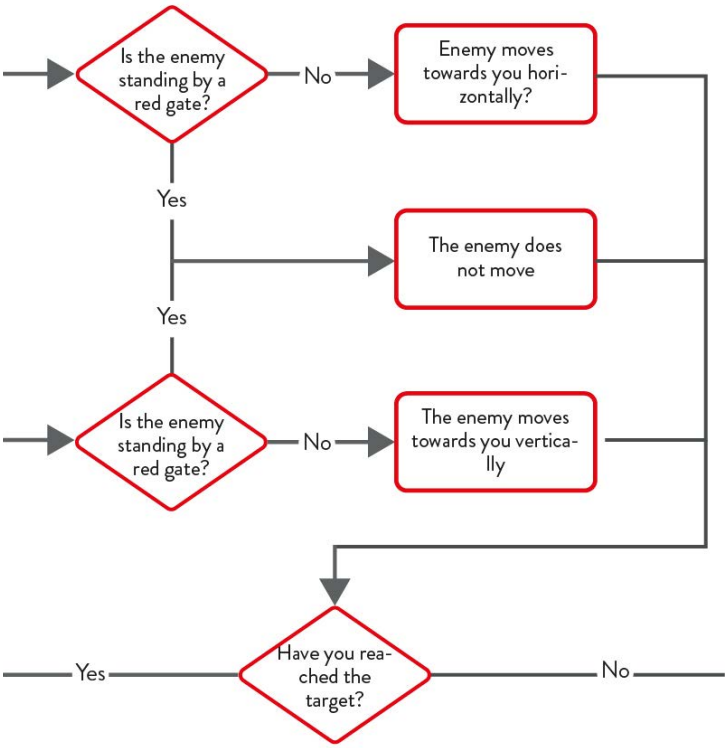
### Test 1: Find the lost planet.

Ask each group to cut out and assemble the map. To do this, they will have to look at the symbols on the edges of each piece.

Once the map is ready, we tell them that the purpose is to find out which planet holds the treasure. To do so, they will have to move around the map according to the indications of the flow chart that has a drawing of a planet. When they reach a rhombus, they will have to decide which line to follow depending on the answer to the question it contains.

**Answer:** The correct planet is Astra.






### Test 2: Dodge the treasure keeper.

When all groups have discovered the correct planet, we will start the second test. We hand out the second flowchart, with a drawing of a robot, from the downloadable, to each group.

The second test takes place in the Scratch video game that we left open in the preparation of the activity.

We ask the groups to access that tab. We explain that the purpose of the test is to reach the treasure chest, which is protected by an alien robot. With the arrow keys they move their player, but the enemy also moves. If the enemy gets to them, they have to start over.

To find out how to get to the treasure, they have to understand how the enemy moves. To do this, we tell them that the flowchart with the drawing of the enemy represents their programming and that, if they manage to understand it, they will be able to discover its weak spot and get to the treasure.

**Answer:** The diagram shows that the enemy does not move when he stands by a red gate. Therefore, they must take advantage of this and "block" the enemy with a red gate as they approach the treasure.

### Test 3: Find the password to unlock the treasure.

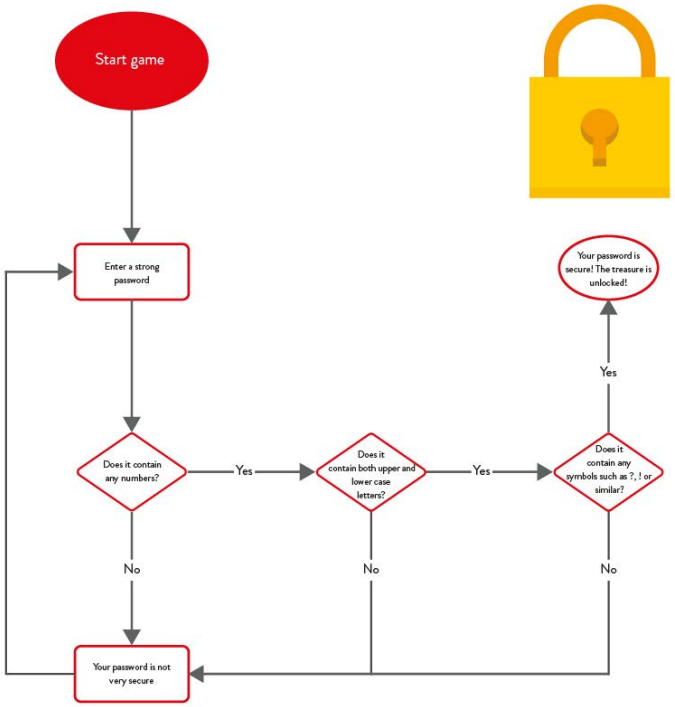
When all the groups have reached the treasure, we will start the third test, which also takes place in the Scratch video game. We hand out the third flowchart, which contains a padlock drawing, from the downloadable to each group.

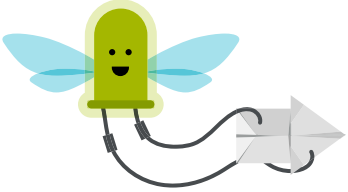
We explain that the purpose of this test is to unlock the treasure, for which they will have to prove that they know how to create secure passwords. They will have to learn how to make a secure password in order to open this special padlock.

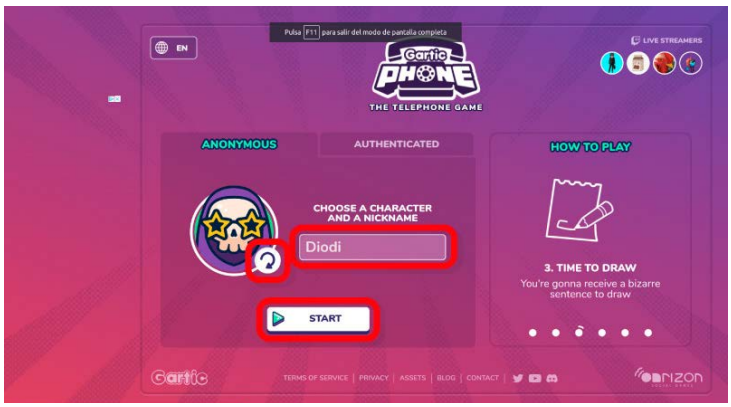
We tell the pupils that the third flowchart corresponds to the security check of the padlock. Each group has to create a password that meets the necessary conditions to get from the initial block to the Secure password block by following all the arrows correctly.

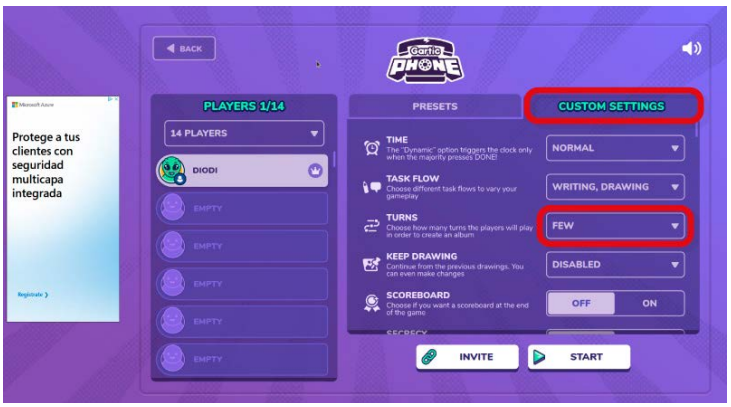
To open the treasure, they have to type that password in the video game. If it is secure enough, they will have opened the treasure and finished the adventure.

**Answer:** Any password that contains numbers, a symbol (such as question marks, a dash, etc.) and upper and lower case letters. For example: P3ng81n!



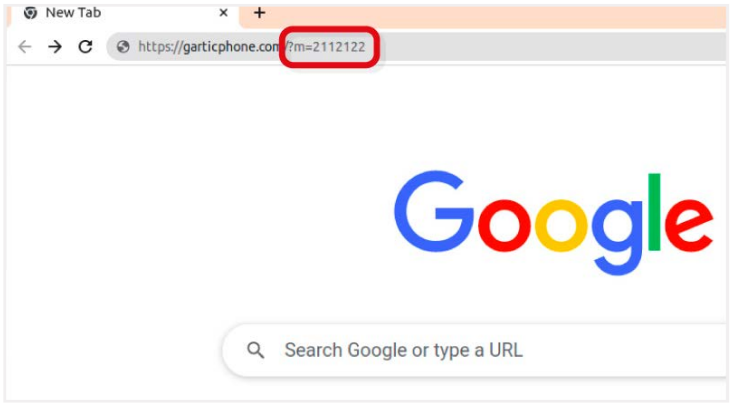






When the first group finishes the adventure, we create the game in ***Gartic Phone***, the online video game that we are going to use as a reward, in order to obtain the code that our pupils need to access it. To create the game follow these steps:

1. On the computer of the first group that finishes the adventure, open the ***Gartic Phone*** website.
2. Ask this group to choose an avatar by clicking on the arrow button next to the character.
3. Also ask them to choose a nickname for their group and write it in the box.
4. Click on *START.*
5. In the new window that appears, click on the *CUSTOM SETTINGS* tab and select *FEW* in the *TURNS* category.
6. Click on the *INVITE* button.




This action will copy a link containing the code for other groups to access the same game.

This code is whatever follows after *https://garticphone.com/en,* and starts *with /?c=* followed by 9 alphanumeric characters.

To see the code, paste this link anywhere you can enter text, such as the address bar of a new window.

We save it to share it with our pupils.

## Play 15 minutes

When all the groups have successfully opened the treasure, we will tell the pupils that they have found an online video game in which all the groups will be able to play at the same time. This is called ***Gartic Phone***, a game based on the classical "Broken telephone".

We ask them to open Google, search for *Gartic Phone* and click on the first page. Once opened, they should add the access code to the room that we have saved after the web address they are on. We can share it using a whiteboard or by dictating it out loud.

Each group chooses an avatar and a nickname and clicks Join. We can see on the first group's computer how the other groups are showing up.

When everyone is in, we tell them that first they will have to write a short sentence. Then they will have to draw the sentence displayed and finally write down what they think the drawing shown is. Each step will have a time limit, which they can see at the top right.

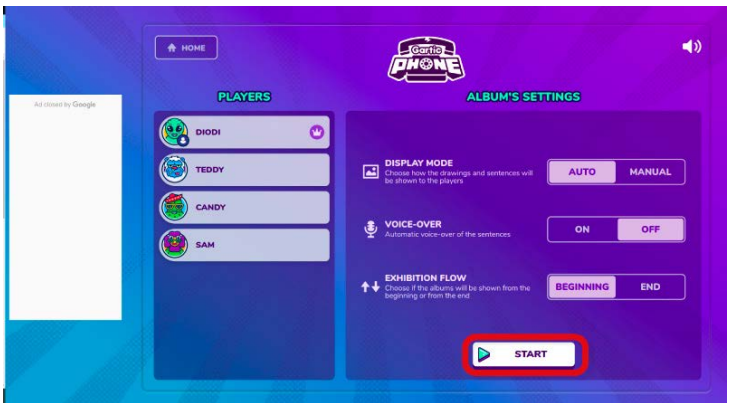
We remind them that it is not a competitive game, it is only to be able to have a laugh over the final result and we tell them that it is OK if they fail in the first round.

We also emphasise that they should be respectful to other teams while playing online.

We tell them that between turns, they should change who operates the computer. Finally, we press *START to* start the game.

When the game is over, on the first group's computer, click on *Start* so that all the groups can see how the sentences have changed.

If we have time, we can play more rounds until the end of the class.




# Objectives and competences

## Objectives

- To learn a few basic aspects of the fundamentals of programming.
- Know how to create safe passwords.
- Know how to behave appropriately when communicating through digital media (write messages appropriately, respect recipients, not use offensive language in messages, etc.).
- Use technological collaborative tools (online office applications, online games, etc.).

## Digital competences

### Communication and collaboration

- Interaction through digital technologies.
- Collaborating through digital technology.

Creating digital content

- Programming.

Safety

- Protecting devices.

## Other competences

- Ability to analyse and summarise.
- Problem solving.
- Teamwork.
- Critical reasoning.
- Independent learning.
- Ability to practically apply theoretical knowledge.
- Ability to self-assess.

# Recommendations

- You can establish groups or allow the pupils to choose their team members.
- If there is more time available or pupils progress more quickly than expected, you can experiment different game modes in *Gartic Phone.*
- If there is less time available, you can give many clues or do one of the three tests in a guided way.