



# THINK AS FAST AS LIGHTNING



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Escape  Stay



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# Escape Stay

**Making vocational education and training  
a first option - not a second choice!**

**[www.escape2stay.eu](http://www.escape2stay.eu)**



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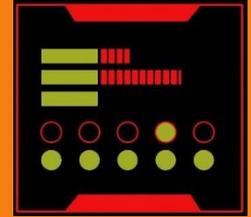
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# THINK AS FAST AS LIGHTNING



You and your class were on a school trip to a close-by VET school, where you decided to check out an interesting room. However, after you enter the room, the door closes, and you cannot open it...

**Can you get out before the teacher notices your absence?**

*This is one of five free escape rooms you can play with your students to make vocational education career paths attractive.*

Find all of them here:  
[www.escape2stay.eu](http://www.escape2stay.eu)

In this escape room you will immerse in the

## **MECHATRONICS**

and cover the following related skills and typical tasks:

1. Maths
2. Electronics
3. Arduino
4. Binary
5. Colour code



After completing this escape room, your students will be able to:

- ✓ Name the combination of disciplines that are present in Mechatronics.
- ✓ Name the basic physical components in Mechatronics.
- ✓ Understand how programming can improve daily life.
- ✓ Understand what a microcontroller is, and some of its functionalities.

### **RIDDLE OVERVIEW**

1. Timer
2. Find the Components
3. Maths Problem
4. Colour Riddle

### **CONTENTS OF THE BOOKLET**

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## INSTRUCTIONS FOR GAME MASTERS

This booklet will provide you with all necessary information to implement the escape room and link all needed materials.

As a game master, you will introduce the game setting and aim to your group of players. You will be available in case they need help and provide them with hints that will guide them to find the solutions of the riddles and ultimately reach the goal.

Sometimes the Game Master has to interfere without being asked to avoid players working too long in the wrong direction or to prevent them from settling on a wrong solution. But not too much! Watch out for your body language and where you look in the room to avoid unintentional hints.

Remind players that they can use a hint – sometimes they forget or pride prohibits them from asking. Read the room and be flexible with the hints. You do not have to use the exact hints that are provided in the instructions.

*To find out more about your role as a game master, please have a look at the **Escape2Stay handbook** and our complete guideline here:*

[www.escape2stay.eu](http://www.escape2stay.eu)



### GAME RULES

When introducing the Escape Room, make sure to:

- define the playing area and let the players know if there are any objects that are off limits. If the room is very full of material, mark objects that are not part of the game with a coloured dot.
- instruct them that they do not have to destroy/break any objects in the room. They will never need force to discover any clues.
- Set the time limit to 30 minutes and make sure that the players have an opportunity to see the time passing by placing a clock or a countdown visibly in the room.



### TIME FRAME

120 minutes	Preparation before playing for the very first time including reading instructions, preparing materials and getting familiar with the game
10 minutes	Introduction of the escape game to players
30 minutes	Estimated game time for one group
15 minutes	Resetting the room after one play-through



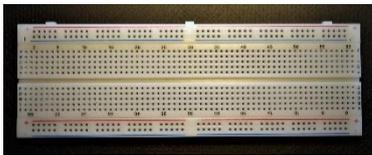
## PREPARATION

### ITEMS TO PREPARE

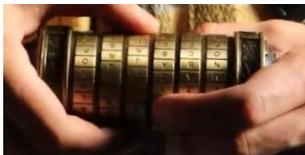
- 2 Arduino



- 1 Breadboard



- 2 USB cables
- 4 Arduino kit cables
- 1 RGB LED
- UV invisible ink pen
- UV flashlight
- six-letter word lock (Cryptex)



- 4-digit number lock
- 3-digit number lock
- 1 safe (or lockable box) with 3-digit lock
- 1 safe with key (or lockable box with key lock)
- 2 boxes
- 2 clocks
- 2 chains to close the boxes with a lock: Use the best locks that you can buy and have in consideration the size of the boxes.
- Various sheets of paper – some to provide clues, some to distract with any kind of content
- Pens & paper for the players



*You can find all instructions here:*

[www.escape2stay.eu/think-as-fast-as-lightning](http://www.escape2stay.eu/think-as-fast-as-lightning)





## PREPARATION BEFORE FIRST PLAY-THROUGH

*Estimated time: 120 minutes*

- Reading instructions and getting familiar with the hints (45 minutes)
- Buy needed objects if necessary
- setting up the room for the first time (20 minutes)
- Make sure that all materials in the room are well closed, and accessible.
- Do a small test on the room and on all the materials to check if they are functioning properly.
- Make notes where you have hidden the hints for players in the room. As each room is a bit different, you can choose yourself where to put the hints (2 minutes)



*Find all materials you need here:*

[www.escape2stay.eu/think-as-fast-as-lightning](http://www.escape2stay.eu/think-as-fast-as-lightning)



## PREPARATION TIME TO RESET THE ROOM

*Estimated time: 15 minutes*

- removing traces and notes from previous group/play-through and hiding new hints (15 minutes)





## STARTING THE GAME

It is recommended to estimate **50 minutes for a play-through**, of which you take 10 minutes to brief the players, 30 to let them play, and 10 for a quick de-briefing. Ideally, you combine it with a more intense career counselling session before or after the escape game.

After generally introducing your plans and motive to play the game with your students, continue with these steps:

- First, build groups of max. 6 players per group.
- Second, introduce the setup and the rules of the escape game.
- Finally, give them the story introduction and start the timer.



### INTRO OF “THINK AS FAST AS LIGHTNING”

This Escape Room will show you some basic knowledge concerning the Mechatronics VET course. You will understand many of the terms that are used in this subject. You will also understand the number of subjects that are presented in this course. The Escape Room will introduce you to some theoretical aspects, but also some practical parts of mechatronics.

You are not allowed to use your mobile phone, nor any other device that is not in the room. Everything that you need to fulfil the escape from the room is present in the room. You can only use each object once. Work as a team to solve the riddles and communicate with each other so you all have the same information.

Now the story:

You and your class were on a school trip to a close-by VET school. This trip was intended to give you some ideas of what you can study if you go to that specific VET School. You and a group of your friends found a room and decided to leave the rest of the class and checkout that room. However, after you enter the room, the door closes, and you cannot open it. All of you know that if your teacher notices that all of you have disappeared you will have major problems at your school. You have 30 minutes to leave the room.

*Watch the intro  
video here:*

<https://bit.ly/3O7PCDK>





## RIDDLE OVERVIEW & HINTS

### Riddle 1: Timer (Code in Words)

#### Description

The first task to be done is to connect a timer that will start counting down the clock. Above the timer there is the following sentence:

**Look at th3 t1m3.**

The code written in this sentence will open a lock. This will be a little more difficult to understand since in the room there will be at least two other clocks that the players may want to check.

After understanding the code, the players will have to open a box where they will find a UV flashlight and a sheet of paper stating:

**“Use me to find the components”.**

**The goal is reached when players have found the code in the riddle (313), and when they open the first locker.**

#### Hints for Game Master

- There will be a sheet saying that the first clue can be found by connecting the timer.
- The phrase is also a clue.

#### Materials needed

- Arduino programmed with a timer



- Power supplier
- Two other clocks
- A box locked with a three-digit padlock
- A sheet of paper with the phrase “Use me to find the components”
- A sheet of paper with the clue that the timer has to be connected.



## Riddle 2: Find the Components (Invisible Ink)

### Description

After finding the UV flashlight, the players must use it on the papers that can be found in the room.

They will find four pieces of paper with words written in invisible ink. One of those four pieces will have a binary code sheet, and the other three will have the information needed to unlock the next lock.

After unlocking this new lock, they will find several components and a sheet of paper with an image and a maths problem.

**The goal is reached when players have found how to reach the components, and have managed to open the second lock.**

### Hints for Game Master

- The game master can tell the players to use the lamp on the sheets of paper.
- The game master can tell them that binary code is a type of language.

### Materials needed

- UV ink pen and UV flashlight
- Several sheets of paper with the information written in invisible UV ink
- Arduino



- RGB LED cables
- USB cable
- Sheet of paper with the full scheme ((the way to connect the Arduino components that the students must develop later) and the maths problem



## Riddle 3: Math Problem

### Description

After finding the components and the piece of paper with the image the students will understand that one component is still missing.

To find that component they will have to solve a simple math problem that will give them a code for a four number lock.

After solving the math problem, they will find all the components to develop the build as per image.

### Materials needed

- Sheets of paper
- Pens
- Box
- 4-digit lock
- Breadboard
- Math problem

**The goal is reached when players have fulfilled the math problem and have reached a result that unlocks the four number lock.**

### Hints for Game Master

- The Game master can inform the players that there is a math problem to solve.
- The GM can also inform the players to respect the calculation order (multiplication and division are first, and then the rest).



## Riddle 4: Colour Riddle

### Description

The players will have to create the “robot”, only after developing properly the build the RGB will give a colour code.

The way the players can read the code is using a sheet of paper with a code key that will be in the room.

The word will be a **SENSOR** and will be used to open a six-letter word lock. In that six-letter word lock, the players will find a key to open the last safe, in this last lock, they will find the room keys.

**The goal is reached when players have understood the colour code and found that the missing word is SENSOR. At the end of this riddle the room is fulfilled.**

### Hints for Game Master

- The GM will have to advise the players to develop the build exactly as shown in the image. This is important since if the build is slightly different that will give a very different code.

### Materials needed

- Sheets of paper
- Pens
- someplace to connect the USB cable
- Six-letter word lock
- Paper with colour code
- Keys to the last safe
- Safe with key
- Room keys



## DEBRIEFING

On completion, meet the students and give them feedback about how they performed. Explain what worked well, if and where they surprised you, where they performed better than the average or expected and where team and individual efforts were good and fruitful. Also mention what did not work so well and where improvements in the group and the individual actions could have helped solve the riddles easier.

If they completed the game in the 30 minutes timeframe, congratulate them on their success. If they needed longer, still mention the finalisation positively and explain what caused the delay.

Ask the following reflective questions:

- What did you feel about your performance in the Escape Room?
- What did you learn in it?
- What subjects will you learn in the Mechatronic course?
- How did you feel in the Escape Room?
- Are you interested in learning more about Mechatronics?
- Do you see yourself working in this field?
- How was your teamwork inside the Escape Room?



## WALK-THROUGH

Students enter the room without knowing the topic of the room. The Game Master brief them about the story behind their entrance into that specific room. The students are there since they were on a school trip to a VET school, and they walked aside from the rest of the class to check this room. The students got stuck in the room and if they do not find a way out in 30 minutes the teacher and the school director will discover and will punish them.

The timer starts right after the story is told to the students. After the timer starts the students will look around the room collecting all the boxes and locks, they can find. Since there is a sign that says that the room is to start at a certain point, they will understand that they must connect the Arduino into a plug. This action will start a new timer that was written on it the following "Look at th3 t1m3".

From all the collected materials that the students have found one box is closed by some chains and a three-digit lock. This box contains a flashlight that is useful to read invisible ink. The students will start to use this flashlight on the papers that they will find in the classroom. They will detect that some of them have binary code written on them. They will also find a piece of paper that has a list of numbers in binary. Students will discover through this the code for another three-digit locker. In this locker, the students will find almost all the Arduino components that they need. They will also find in the same box a piece of paper that contains the Arduino build that they need to develop (this paper also explains the components) and a math problem at the end.

The participants will understand that they are missing an important component in developing the build, that component is the whiteboard. The students must resolve the math problem that can be found in the build sheet in order to have access to the four-digit code that will hope the locker where the whiteboard is hidden.

After having all the components, the students have to develop the Arduino build that they have on the piece of paper. The students must develop the build exactly as it is in the paper in order to achieve the result. The build when connected to a power source will turn on a multicolour led. This led will change its colours in order to make a code. Students will be able to find a paper with an association between letters and colours, they must use this paper to find the word SENSOR that is being emitted by the LED.

The word SENSOR will be used to open the six-letter locker that has the room key inside. This will trigger the room to open and the game to finish. At this moment the Game Master will debrief all the participants in order to collect the feedback and to make the students think about what they have learned.

*Have a look at this video from the testing phase:*

<https://youtu.be/YHbHYxt5DAY>



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