OPEN THE DOOR... PLEASE?!

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Escape 2 Stay

IHK-Projektgesellschaft mbH OSTBRANDENBURG

Šolski center Nova Gorica

Cámara Zaragoza

AUXILIUM

Escape 2 Stay

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

www.escape2stay.eu

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OPEN THE DOOR... PLEASE?!

You are on a guided tour in a local power generating utility with your class. Suddenly, an electric security door shuts down. There is only air for 30 minutes…

Can you escape in time?

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

In this escape room you will immerse in

ELECTRONIC ENGINEERING

and cover the following related skills and typical tasks:

1. Ability to read and apply technical documents (basic terms and principles)
2. Identification of work equipment, working methods, and safety measures
3. Understanding and repairing circuit boards
4. Logical, problem-solving and numerical skills

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

- ✓ Name relevant basic terms and principles of electronic engineering
- ✓ Understand basic circuit boards and identify errors/ensure a proper electric flow
- ✓ Name and identify relevant equipment of electronic engineers
- ✓ Identify safety hazards typical for the work of electronic engineers

RIDDLE OVERVIEW

1. Investigate surroundings
2. Key safe code
3. Understanding the final goal
4. Find the electrician
5. Understanding the circuit plan
6. Equipment grid
7. Ohm's Triangle note

CONTENTS OF THE BOOKLET

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Escape 2 Stay

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***

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

75 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
10 minutes	Resetting the room after one play-through

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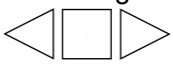
PREPARATION

ITEMS TO PREPARE

- Printed materials for riddles (see list on next page)
- A5/A4 envelopes to insert the clues (optional)
- **Key safe** with a number pad that can be programmed with an individual code (costs are about 15-20 €). Alternatively, a numeric lock and a box can be used. Either way, the key safe or the box have to be big enough for the circuit board solution cards.
- The **key safe code** should be programmed to be **794 for a 3-digit lock** and **7194 for a 4-digit lock**.
- Draw or glue these symbols on the key safe / the locked box



- Recommended but not necessary: a clock or even better a countdown very visible in the room so that players can see how much time has passed.
- Players should be provided with paper & pens. They do not need a calculator or mobile phone.

You can find all instructions here:

www.escape2stay.eu/open-the-door-please/

PREPARATION BEFORE FIRST PLAY-THROUGH

Estimated time: 75 minutes

- Reading instructions and getting familiar with the hints (45 minutes)
- printing of materials one page (not double sided!) and in colour (15 minutes)
- putting the riddles in envelopes and writing the number of the clue on envelopes (e.g., 1/5 or 4/5).
- shopping for **key safe** (time needed depends on your situation and if you buy it online or locally)
- **setting the code of the key safe** (5 minutes)
- setting up the room for the first time (10 minutes)
- 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)

PREPARATION TIME TO RESET THE ROOM

Estimated time: 10 minutes

- removing traces and notes from previous group/play-through and hiding new hints (10 minutes)

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PRINTABLE MATERIALS

For players:

- **Riddle 1**: Image of circuit plan (1 A4 page)
- **Riddle 2**: 4 hint cards with numeric puzzle for the key safe code.
  Cut them in squares, but give players only one “Part B”-card, depending on the number of digits of the key safe/numeric lock. (1 A4 page)
- **Riddle 3**: Prepare a handwritten note that says:
  “Use four of these in case of emergency to power up the door” and put it in the key safe.
- **Riddle 4**: 9 circuit board solution cards (4 correct ones, 5 wrong ones) (riddle 3-8), printed double sided as on their back there should be the construction worker jigsaw puzzle. Fold in half, glue together and cut them in squares (1 A4 page, double-sided print) and put them in the key safe.
- **Riddle 5**: Maze and handout with circuit symbols and explanations (2 A4 pages)
- **Riddle 6**: Equipment Grid (1 A4 page)
- **Riddle 7**: Note with Ohm’s law and equation to solve (1 A4 page)

www.escape2stay.eu/open-the-door-please/

For game masters (Hints & Solutions):

- **Riddle 2**: Solutions to the key safe hint cards numeric puzzle
- **Riddle 3/8**: Completed circuit plan including the specification of the 4 correct circuit plan solution cards
- **Riddle 4**: Full picture of the jigsaw puzzle including the highlighted solution
- **Riddle 5**: Solved maze and written solutions of circuit board symbols and their names
- **Riddle 6**: Solution to the equipment grid
- **Riddle 7**: Solution for Ohm’s law note

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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 "OPEN THE DOOR… PLEASE?!"

"Welcome to the guided tour in our power generating utility!

Today you will learn what electrical engineering is all about to find out if this could be a future profession for you. You will see that our facility is equipped with most modern security measures and many of our control rooms – like this one – can be completely sealed shut in case of emergency. So, please stay closely together to ensure our group does not split up.

Our main technician is out of the house today, so it would be the worst timing to encounter a technical problem!"

You and your friends find yourself alone in a control centre room when suddenly an alarm goes off. In the same moment, the electric security door shuts down, cutting you off from the rest of the group. Even though you try immediately to open it again, it does not move. After a few moments of shock, the voice of your guide comes on the intercom:

"Hey, are you in there? We have lost connection to the door and the only way to power up again is in this room. You have to find the broken circuit board and repair it with 4 spare parts; I will try what I can do from the outside. Let me know if you need help, okay? And I don't want to stress you, but this room is hermetically sealed, so no air will come in. The air inside is just enough for about 30 minutes, so do not waste a breath! Get to work!"

There is an intro video available:

https://tinyurl.com/y4cutzbz

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RIDDLE OVERVIEW & HINTS

Riddle 1: Investigate Surroundings (Quick Win)

Description

The group has to search for clues in the room.
They will find:

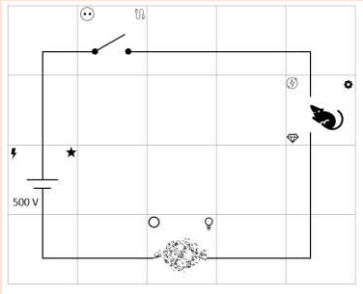
- A **picture of an electric circuit** that is broken.
  The whole picture is divided into squared grid, but they players do not yet know why.
- A **key safe**
- **3 cards** with symbols and numbers that need to be put together (*see riddle 2*)

The goal is reached when the group has the 2 pictures, the 3 cards and the key safe.

They can also find more riddles/clues, which they will need for the next riddles.

Materials needed

- Picture of the broken circuit plan



- Key safe
  (in the key safe there are more hint cards
  → see riddle 3)
- 3 cards with numeric puzzle (→ see riddle 2)

Hints for Game Master

Take notes where you hid the items in the room:

- The picture of the electric circuit is hidden in the

  _____

- The key safe is hidden in the

  _____

- There are 3 hint cards for the second riddle hidden in the following locations:

  _____

  _____

  _____

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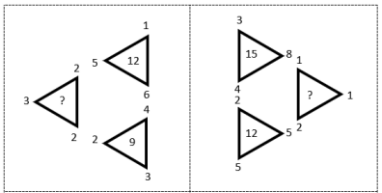
Riddle 2: Key Safe Code (Numeric Puzzle)

Description

The players have found 3 cards withs symbols and numbers in the room in riddle 1.

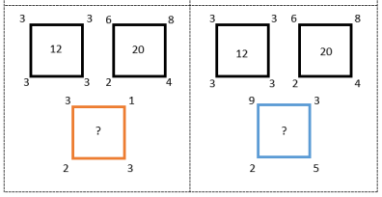
The players do not now that the cards are named Part A, Part B and Part C (this identification is only for the game master).

PART A



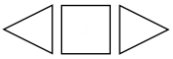
PART C

PART B (3-digit code)



PART B (4-digit code)

They also found these symbols on the key safe:



Now they have to find out the numbers represented by the question mark and put them in correct order according to the order of symbols on the key safe.

The goal is reached when the players open the key safe and obtain the 9 solution cards.

Hints for Game Master

- Hint 1: Add up the numbers at the edge of the symbols.
- Hint 2: Look at the key safe to find out the order.
- Hint 3:

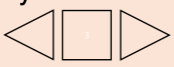
 = Part A = 7

 = Part B = 9 (for 3-digit code) **OR** 19 (for 4-digit code)

 = Part C = 4

Materials needed

- Make sure to **program the key safe** before the game starts with the following code:
  The code for a **3-digit** safe should be 794.
  The code for a **4-digit** safe should be 7194.
- Give players **only one Part B card**, depending on the number of digits for the key safe.
- Draw or glue these symbols on the key safe:



- If you cannot program the key safe yourself and have to keep the initial code it comes with, remodel the hint cards so that the code for the safe is the solution of the riddles.
- Instead of a key safe, you can also use a simple number lock and a box, granted you can use a 3-digit or 4-digit code and can fit the cards inside.

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Riddle 3: Understanding the final goal (Quick Win)

Description

The players find strange cards in the key safe and a note that says:

“Use four of these in case of emergency to power up the door”.

On the cards, there are fragments of a circuit board, but too many to fit on the circuit board they found in riddle 1.

The goal is reached when the players understand that they somehow have to use these cards to repair the door by putting the correct pieces in the correct places.

Hints for Game Master

All cards have something unique on them (symbol). The other riddles will provide the solution, so that the players can identify the correct cards.

It is possible that players found hints for the cards in riddle 1, while investigating the room. If they have already found all clues (and solutions) before acquiring the cards in the key safe**, this is may be the final riddle. Once they correctly place the cards on the broken circuit board, the door is repaired and they can exit the room.**

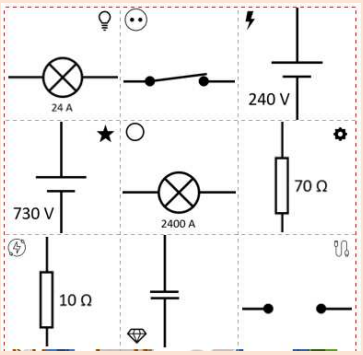
There is a picture of the repaired circuit board for the Game Master, including the symbol and location in the grid. Do not show this to the players until the end!

Help the players understand the end goal of the game by asking questions such as:

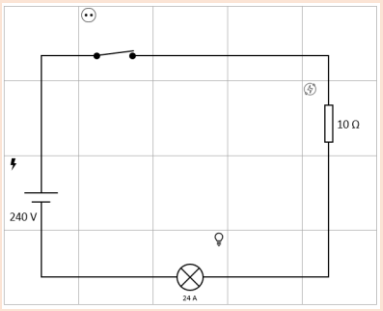
- “What do you think you should do with these cards?”
- “Do the cards remind you of something you have already found?”
- Reward them with a positive answer (verbal or non-verbal) if they get it right.

Materials needed

- The cards featuring the fragments of the circuit boards.



- The picture of the final solution to open the door.



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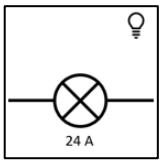
Riddle 4: Find the Electrician (Jigsaw Puzzle)

Description

On the back of the cards found in the key safe, there is a jigsaw puzzle. If put in the correct order, the players see an image of construction workers and the players need to identify the card piece with the electrician. This is one of the correct cards to be put on the circuit board to repair it.

The goal is achieved if players identify the piece of the jigsaw puzzle that shows the electrician, turn it around and put in on the circuit board in the correct location.



Hints for Game Master

This riddle can be solved immediately after the players found the cards in the key safe, but maybe they do not recognise it right away.

- Hint 1 (if the player did not yet see the jigsaw puzzle on the back of the cards): “Have you tried looking at the back of the cards?”
- Hint 2: “One of those professionals can maybe help you with your electrical problem.”
- Hint 3: “Can you spot the electrician?”

Materials needed

- Solution cards with jigsaw puzzle on their back which were found in the key safe (→ see riddle 3)

Designed by macrovector / Freepik

- Picture of the broken circuit plan (→ see riddle 1)

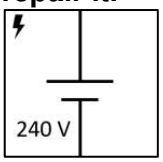
Riddle 5: Understanding the Circuit Plan (Maze)

Description

One of the items the players can find in the room in riddle 1 is a labyrinth that connects the symbols featured on the circuit board with the correct explanations.

This riddle can be done in parallel to the previous riddles and if the players already know what the symbols on the circuit board mean, it is mostly obsolete. Nonetheless, one solution the labyrinth provides is one correct placement of the cards found in the key safe as the players are able to find a broken part on the circuit board and replace it with a working one on the cards.

The goal is reached when the players can name the symbols on the circuit board and have place one correct card on it to repair it.



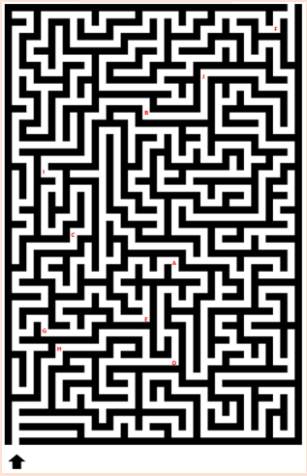
Hints for Game Master

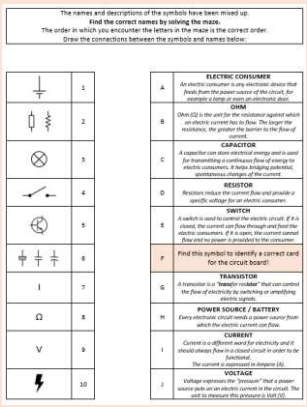
The Game Master has a solved maze available as well as the solutions to the symbols and names.

- Hint 1: Clarify the challenge if the players do not understand that they have to solve the maze and encounter the letters in the maze in the order of the symbols given.
  Each letter corresponds with a name/description and they have to make the connection.
- Hint 2 – 3: help players if they have made a mistake and correct them when necessary.

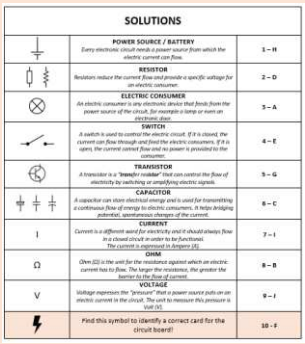
Materials needed

- The maze and handout for the players





- The solved maze and solutions for the Game Master

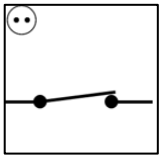


Riddle 6: Equipment Grid (Connect the points)

Description

In this rather quick riddle, the players find a grid filled with equipment used by electrical engineers and random objects. They have to connect the squares featuring the useful equipment. Together, the connected squares form a symbol that is also found on the circuit cards. By finding all equipment pieces in the grid, they can identify one part to repair the electric circuit.

The goal is reached once the players have identified the hidden symbol and place the correct card on the circuit board.



Hints for Game Master

- Hint 1: Clarify the goal of the riddle by telling the players that they have to find all icons used by electrical engineers in their work.
- Hint 2: help players if they have overlooked a symbol and ask a question that helps them find the missing item in the grid.
- Hint 3: Show them all solutions to the grid.

Materials needed

- The empty grid for the players

- The solved grid for the Game Master

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Riddle 7: Ohm's Triangle Note (Calculating)

Description

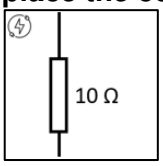
This riddle is an equation the players have to solve by applying Ohm's law and by calculating.

The players find this riddle somewhere in the room. It looks like someone took a quick note and there is a triangle with 3 letters on it (Ohm's law triangle). The note tells them that the resistor is often broken and that in order to fix the door, the right resistor needs to be installed.

The battery/power source has 240 V (Volt). The current has 24 A (Ampere). By applying Ohm's law triangle, the players will need to calculate V/I=R, hence R=10 Ω.

There are two cards for the circuit board that feature a resistor, but only one is specified as 10R. Hence, the players need to place this card with the 10R resistor on the board.

The goal is reached once the players solved the equation and place the correct card on the circuit board.

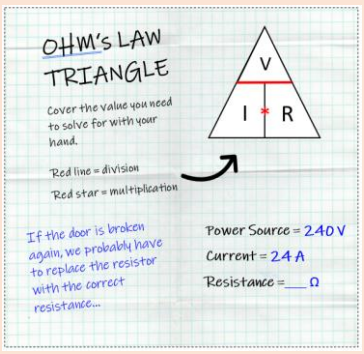


Hints for Game Master

- Hint 1: Mention that they could use the solutions of the maze to understand the meaning of the letters and symbols.
- Hint 2: Make them aware that the solution can be calculated very easily without a calculator.
- Hint 3: Make them aware that there are two possible solution cards, and only one of them makes sense as result of the calculation.

Materials needed

- The empty grid for the players

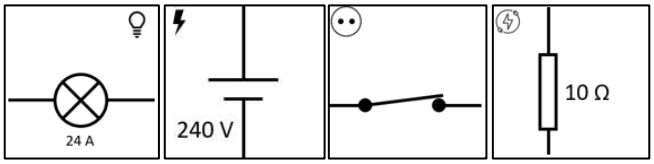


Riddle 8: Opening the Door

Description

This final riddle is similar to riddle 3, because the only goal is to place all correct cards from the key safe on the circuit board to open the door.

The goal is reached once the players have identified the hidden symbol and place the 4 correct cards on the circuit board.

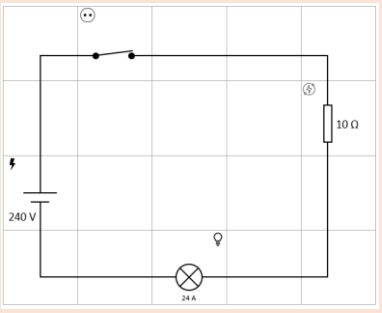


Hints for Game Master

- Check the final line-up of the circuit board shown to you by the players.
- **If they have found the correct solution, stop the time and congratulate them to successfully escaping the room in time.**
- If they have made a mistake, tell them that there is an error, but do not tell them yet where the mistake is.
- They can use hints to ask you to tell them which card/cards is/are in the wrong place.

Materials needed

- Solved solution plan to compare with the repaired circuit plan



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DEBRIEFING

Congratulate the players! Ask them, if they understand why the circuit board was broken before and is now repaired. If they are not sure, explain the following.

The circuit board was broken because there were 4 things wrong. Most obviously, a mouse has nibbled on the cable and found its own demise in the process. But even without this, the circuit was not working. The power source was too strong, the electrical consumer was destroyed and the switch was not closed.

Now the repaired circuit board has a more appropriate power source (240 V) and the switch is closed, which allows the current to flow. The resistor (10 Ω) reduces the power of the current and allows the electrical consumer with 24 Ampere to function properly.

Give them also 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 where 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.

WALK-THROUGH

The game begins once the Game Master starts to read the intro. After the intro, the timer is set to 30 minutes.

The players start the game with the knowledge that they have to find the broken circuit board and repair it with 4 spare parts.

First, the player should spread out to investigate the room and see what they can find (Riddle 1). The riddles in this escape room do not follow a specific order, but some of them are depending on the solutions of others. The players need to find all hidden clues and open the key safe to solve the game's ultimate goal: repairing the circuit board.

In the room, the players will find the following:

- a printed picture of a broken circuit plan
- a key safe
    - inside are 9 solution cards showing repair parts for the circuit board
- 3 cards with numeric puzzles that provide the code for the key safe (hide closely together)
- a printed 2D-Maze with hidden letters along the path
- a printed handout with electrical symbols that can be connected with their meaning using the letters in the maze
- a printed grid with symbols
- a note featuring Ohm's Triangle

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Ideally, the broken circuit board should be one of the first clues the players find – it should be hidden in a fairly easy spot by the Game Master.

The next two clues needed are the key safe and the 3 cards with the numeric puzzle. If players find other clues before that, they can start to solve the riddles, but they will probably not yet know how the solutions contribute to the final goal.

Once the players have found the key safe and the 3 cards with the numeric puzzle, they can find out the code and open the safe (Riddle 2).

In the key safe, they find 9 solution cards that show repair parts for the circuit board. Each card has one tiny symbol in the corner. Players should then realise that the circuit board features the same symbols, but it is not clear yet, which repair parts are able to undo the damage (Riddle 3). For this, they have to find more clues.

One of the first clues to find a fitting repair part is hidden on the solution cards. When turned around, they are a jigsaw puzzle and the instruction says that the players need to find the electrician. Once identified, this piece can be placed on the broken circuit plan (Riddle 4). The piece they are replacing is an electrical consumer that consumes 24 Ampere; it is a circle with an X in it and the symbol used to identify it is a light bulb.

The next three riddles can be solved in any order and help the players identify one repair piece each.

The Equipment Grid is a simple connecting riddle, in which the players must highlight the icons that have something to do with electrical engineering. It will then show a plug-symbol, which they can find on one of the solution cards (Riddle 6). The repair part is a closed switch that allows the current to flow through the circuit.

The note with Ohm's Triangle provides a very easy calculating riddle. It briefly explains that in order to solve for one of the values, one has to cover it in the triangle and then implement the calculation (either divide or multiply). The note gives the values for the power source (V) and the Current (I/A), hence the players must solve for the correct resistance. The calculation is 240/24, resulting in 10 Ohm for the resistance (Riddle 7). The solution cards show two resistors, only one of them states 10 Ohm. Hence, this repair part must be placed on the circuit board.

Since this riddle requires players to know some specific terms and symbols, they are provided with an informative handout as part of the game. In the room, they have found a printed maze and a handout, however, the symbols are not yet connected with the correct meaning. They have to solve the maze and note in which order they encounter letters in the maze. The order of the letters then enables them to connect the symbols and their meaning on the handout. It also provides one more clue to find a repair part for the circuit board (Riddle 5), which is the correct power source.

Finally, the players have now placed the 4 correct repair parts on the circuit board. They tell the Game master that they are ready and the Game Master confirms by checking the repaired board (Riddle 8).

The timer is stopped and the players have successfully escaped the room!

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Escape 2 Stay

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