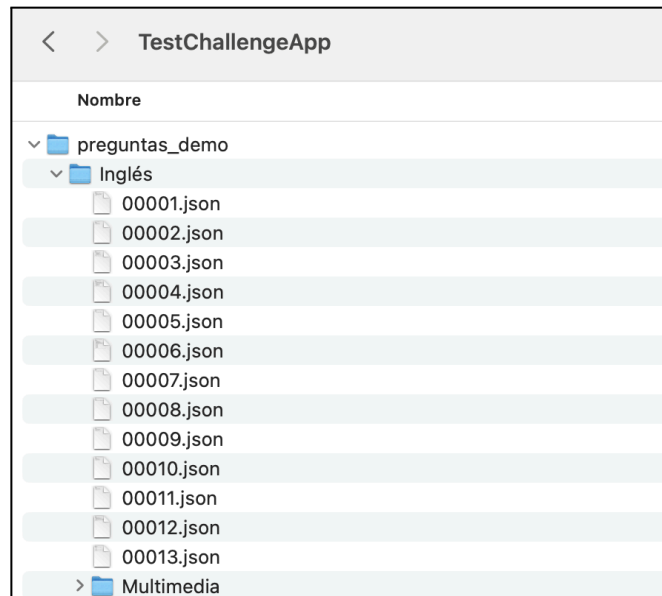# 1. Where are the questions stored?

The questions (JSON files) are stored in the server's file system, in one of the subdirectories of the base/root directory that is specified in the corresponding server startup parameter. Each subdirectory represents a subject/topic and its name is displayed in the client application on a drop-down list.

```
<   >   TestChallengeApp

        Nombre

∨ 📁 preguntas_demo
    ∨ 📁 Inglés
        📄 00001.json
        📄 00002.json
        📄 00003.json
        📄 00004.json
        📄 00005.json
        📄 00006.json
        📄 00007.json
        📄 00008.json
        📄 00009.json
        📄 00010.json
        📄 00011.json
        📄 00012.json
        📄 00013.json
    > 📁 Multimedia
```

The "**Multimedia**" subfolder stores the images and audio files that are associated with the JSON files that define the questions of the subject/topic **"Inglés"**.

2. What types of questions can be defined?

The application allows you to define five types of questions depending on the type of the answer:

- **Unica**: several options are presented and the user can select only one.

    Example. The question definition:

```
{
    "id":2,
    "texto":"His paintings are in museums ...",
    "tematica":"Inglés",
    "nivel":"Normal",
    "tipo":"Unica",
    "opciones": [
        "Picasso's paintings are in museums.",
        "Picasso paintings are in museums.",
        "Picassos's paintings are in museums."
    ],
    "respuestas": [
        "Picasso's paintings are in museums."
    ]
}
```

renders to:

His paintings are in museums ...

○ Picasso paintings are in museums.

◉ Picasso's paintings are in museums.

○ Picassos's paintings are in museums.

- **Múltiple**: several options are presented and the user can select more than one.

  Example. The question definition:

```
{
    "id":9,
    "texto":"Cómo se diría 'Los coches de mis profesores están aparcados fuera'?",
    "tematica":"Inglés",
    "nivel":"Normal",
    "tipo":"Múltiple",
    "opciones": [
        "My teachers' cars are parked outside.",
        "The cars of my teachers are parked outside.",
        "My teacher's cars are parked outside.",
        "My teachers cars are parked outside."
    ],
    "respuestas": [
        "My teachers' cars are parked outside.",
        "The cars of my teachers are parked outside."
    ]
}
```

renders to:

- **Texto:** the user has to write a sentence with the answer to be sent.

Example. The question definition:

```
{
    "id":5,
    "texto":"Escribe la siguiente frase en Inglés: 'Hicimos una barbacoa en el jardín para celebrar el 4 de Julio.'",
    "tematica":"Inglés",
    "nivel":"Normal",
    tipo:"Texto",
    "opciones": [
    ],
    "respuestas": [
        "We had a barbecue in the garden to celebrate 4th July.",
        "We had a barbecue in the garden to celebrate 4th July"
    ]
}
```

renders to:

3

- **Emparejada:** several options are presented and for each option there is a drop-down list with the same list of values.

Example 1. The question definition:

```
{
    "id":3,
    "texto":"Complete each phrase with the correct word:",
    "tematica":"Inglés",
    "nivel":"Normal",
    "tipo":"Emparejada",
    "opciones": [
        "Dan ____ GOT any brothers or sisters.",
        "____ your mobile phone GOT music on it?",
        "____ your friends GOT identical trainers?",
        "She ____ English twice a week.",
        "My friend and I ____ MEET every day.",
        "My mum ____ WEAR earrings.",
        "____ your dad WORK at the port?",
        "Katie ____ her school uniform.",
        "___ the film STARTING now? Yes, IT IS.",
        "Why ___ the baby CRYING. Because he's hungry.",
        "___ the children PLAYING football at the moment? No, they AREN'T.",
        "Where ____ you GOING? I'm going to the park."
    ],
    "valores_opciones": [
        ["hasn't","Has","Have","studies","don't","doesn't","Does","likes","Is","is","Are","are"]
    ],
    "respuestas": [
        "hasn't","Has","Have","studies","don't","doesn't","Does","likes","Is","is","Are","are"
    ]
}
```

renders to:

Complete each phrase with the correct word:

My mum ____ WEAR earrings.	doesn't
____ your friends GOT identical trainers?	Have
____ your dad WORK at the port?	Does
___ the children PLAYING football at the moment? No, they AREN'T.	Are
Katie ____ her school uniform.	likes
My friend and I ____ MEET every day.	don't
___ the film STARTING now? Yes, IT IS.	Is
She ____ English twice a week.	studies
Why ___ the baby CRYING. Because he's hungry.	is
Where ____ you GOING? I'm going to the park.	are
Dan ____ GOT any brothers or sisters.	hasn't
____ your mobile phone GOT music on it?	Has

Example 2. The question definition that has associated an image:

```
{
    "id":14,
    "texto":"Match the number with the correct answer (https://www.ringteacher.com/materiales-didacticos/vocabulario-ingles/
partes-del-cuerpo-en-ingles/)",
    "tematica":"Inglés",
    "nivel":"Alto",
    "tipo":"Emparejada",
    "fichero_multimedia":"Parts_of_the_leg_and_the_foot.png",
    "opciones": [
        "1. _____",
        "2. _____",
        "3. _____",
        "4. _____",
        "5. _____",
        "6. _____",
        "7. _____",
        "8. _____",
        "9. _____"
    ],
    "valores_opciones": [
        ["Thigh","Knee","Shin","Foot","Toe","Sole","Heel","Ankle","Calf"]
    ],
    "respuestas": [
        "Thigh",
        "Knee",
        "Shin",
        "Foot",
        "Toe",
        "Sole",
        "Heel",
        "Ankle",
        "Calf"
    ],
    "desordenar_opciones":"false"
}
```

renders to:

Match the number with the correct answer
(https://www.ringteacher.com/materiales-didacticos/vocabulario-ingles/partes-del-cuerpo-en-ingles/)

1. _____	Thigh
2. _____	Knee
3. _____	Shin
4. _____	Foot
5. _____	Toe
6. _____	Sole
7. _____	Heel
8. _____	Ankle
9. _____	Calf

- **Multivalor:** several options are presented and for each option there is a drop-down list with values that can be different for each option.

Example 1. The question definition that has associated an mp3 audio:

```
{
    "id":12,
    "texto":"Answer to the questions after listening to the audio (https://listeningingles.com/career-search/).",
    "tematica":"Inglés",
    "nivel":"Alto",
    "tipo":"Multivalor",
    "fichero_multimedia":"Career Search.mp3",
    "opciones": [
        "1. What kind of career does the woman want to pursue?",
        "2. Right know, the woman's boyfriend is ...",
        "3. What does Ryan think about James' future career?",
        "4. Ryan suggests that women are more suited for jobs in _____"
    ],
    "valores_opciones": [
        ["sales associate","repairing vehicles", "major in mechanical engineering"],
        ["majoring in secondary education", "pursing a career in auto mechanics", "getting a degree in a medical field"],
        ["there is no money in that profession", "James isn't qualified for the job", "James is pursuing a job for women"],
        ["farming and housing cleaning","education and office work", "nursing and child care"]
    ],
    "respuestas": [
        "repairing vehicles", "getting a degree in a medical field", "James is pursuing a job for women", "education and office work"
    ],
    "desordenar_opciones":"false"
}
```

renders to:

Example 2. The question definition:

```json
{
    "id":6,
    "texto":"Select the correct word for completing each phrase:",
    "tematica":"Inglés",
    "nivel":"Normal",
    "tipo":"Multivalor",
    "opciones": [
            "I met him ___ holidays.",
            "I don't like working ____ night.",
            "I can work ____ the morning",
            "Did you have a good time ___ Christmas?",
            "I live ___ 13, Zazuar street.",
            "I may not be at home ___ the morning.",
            "Can you phone ___ the afternoon instead.",
            "Tom won a gold medal ___ the age of 21.",
            "Jack's brother is an engineer but he is out of work ___ the moment.",
            "There are usually a lot of parties ___ New Year's Eve.",
            "Tom see his parents usually only ___ Easter.",
            "He usually see his parents ___ the summer for a few days.",
            "Carol went to live to Paris ___ 17 and she came back when she was 25.",
            "The telephone and the doorbell rang ___ the same time.",
            "We live ___ the second floor."
    ],
    "valores_opciones": [
            ["on","at","in","were"],
            ["on","at","in","were"],
            ["on","at","in","were"],
            ["on","at","in","were"],
            ["on","at","in","were"],
            ["on","at","in","were"],
            ["on","at","in","were"],
            ["on","at","in","were"],
            ["on","at","in","were"],
            ["on","at","in","were"],
            ["on","at","in","were"],
            ["on","at","in","were"],
            ["on","at","in","were"],
            ["on","at","in","were"],
            ["on","at","in","were"]
    ],
    "respuestas": [
            "on", "at", "in", "at", "at", "in", "in", "at", "at", "on", "at", "in", "at", "at", "on"
    ]
}
```

renders to:

Select the correct word for completing each phrase:

Phrase	Answer
Can you phone ___ the afternoon instead.	in
Jack's brother is an engineer but he is out of work ___ the moment.	at
Carol went to live to Paris ___ 17 and she came back when she was 25.	at
I may not be at home ___ the morning.	in
Tom won a gold medal ___ the age of 21.	at
The telephone and the doorbell rang ___ the same time.	at
He usually see his parents ___ the summer for a few days.	in
I met him ___ holidays.	on
There are usually a lot of parties ___ New Year's Eve.	on
We live ___ the second floor.	on
Tom see his parents usually only ___ Easter.	at
Did you have a good time ___ Christmas?	at
I can work ____ the morning	in
I don't like working ____ night.	at
I live ___ 13, Zazuar street.	at

3. Is it possible to display questions containing images?

Yes, the image is displayed in the upper right corner of the panel containing the question. That is, in this version of the application a single image can be associated with a question, but not with each of the options of the question.

The image (.gif, .png, .jpg, .jpeg) can be zoomed in by double-clicking on it and then resized by resizing the pop-up window that is shown (Note: the popup-window showing the image is closed when the focus is lost or when you close it specifically; this has been done this way on purpose).

4. Is it possible to display questions containing audios?

Yes, when a question has an mp3 audio file associated with it, it can be played by double-clicking on the "Mp3" icon that appears in the upper right corner of the panel displaying the question.

In this version only .mp3 file playback has been implemented. You can pause it or stop it, but you cannot go forward or backward. (Note: the popup-window playing the .mp3 file is closed when the focus is lost or when you close it specifically; this has been done this way on purpose).

## 5. Is the order of the options shown in the questions always the same?

No, by default when a question is sent to the connected users by the test server the options it contains are randomly reordered so that the order in which they are presented may change from one test execution to another. This is done to make it more difficult to memorize the answers.

This behavior can be modified by including the optional field "desordenar_opciones" in the question definition file with the value "false". In that case, when the question is submitted by the server, the options are ordered following the order of the definition. This can be useful for example in those questions that have an audio associated with them, so that the options of the question are temporally ordered according to the listening of the audio.

```
{
    "id":13,
    "texto":"Match the number with the correct answer (https://www.ringteacher.com/materiales-didacticos/vocabulario-ingles/
partes-del-cuerpo-en-ingles/)",
    "tematica":"Inglés",
    "nivel":"Alto",
    "tipo":"Emparejada",
    "fichero_multimedia": "Parts_of_the_leg_and_the_foot.png",
    "opciones": [
        "1. _____",
        "2. _____",
        "3. _____",
        "4. _____",
        "5. _____",
        "6. _____",
        "7. _____",
        "8. _____",
        "9. _____"
    ],
    "valores_opciones": [
        ["Thigh","Knee","Shin","Foot","Toe","Sole","Heel","Ankle","Calf"]
    ],
    "respuestas": [
        "Thigh","Knee","Shin","Foot","Toe","Sole","Heel","Ankle","Calf"
    ],
    "desordenar_opciones":"false"    ⬅
}
```

6. Is authentication required to log into the application?

No, the application doesn't manage users and password credentials, and it is not integrated with an IdP (Identity Provider) or another authentication system. Users log into the application using an alias/nickname that must be unique among the group of users that are connected to the same server.
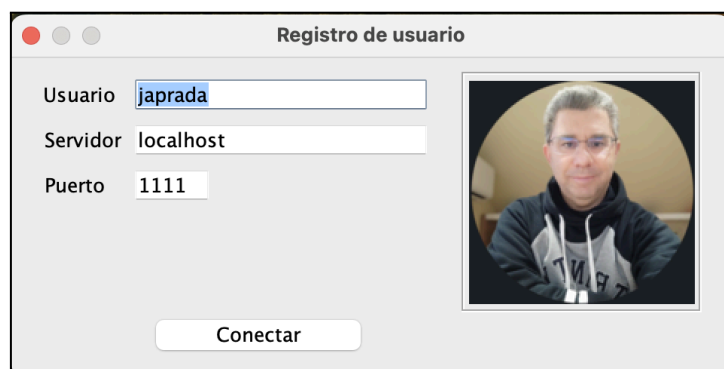
7. Is authentication required to log into the application?

If you log into the application with a username's nickname/alias that is already registered, you'll get this error message:
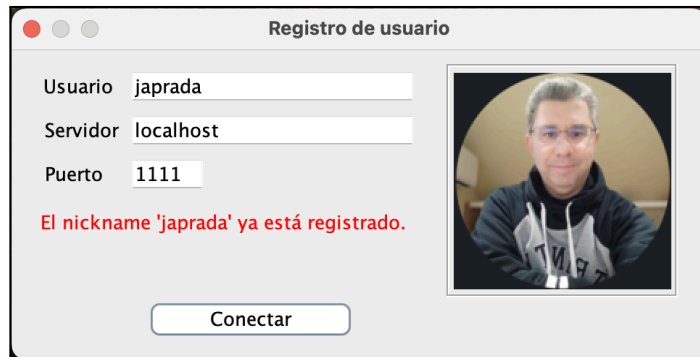
8. Is it possible to upload new questions to the server?

Yes, a functionality has been implemented to enable users to upload new questions to the server together with the multimedia file (image or audio) that is specified in the JSON definition file.
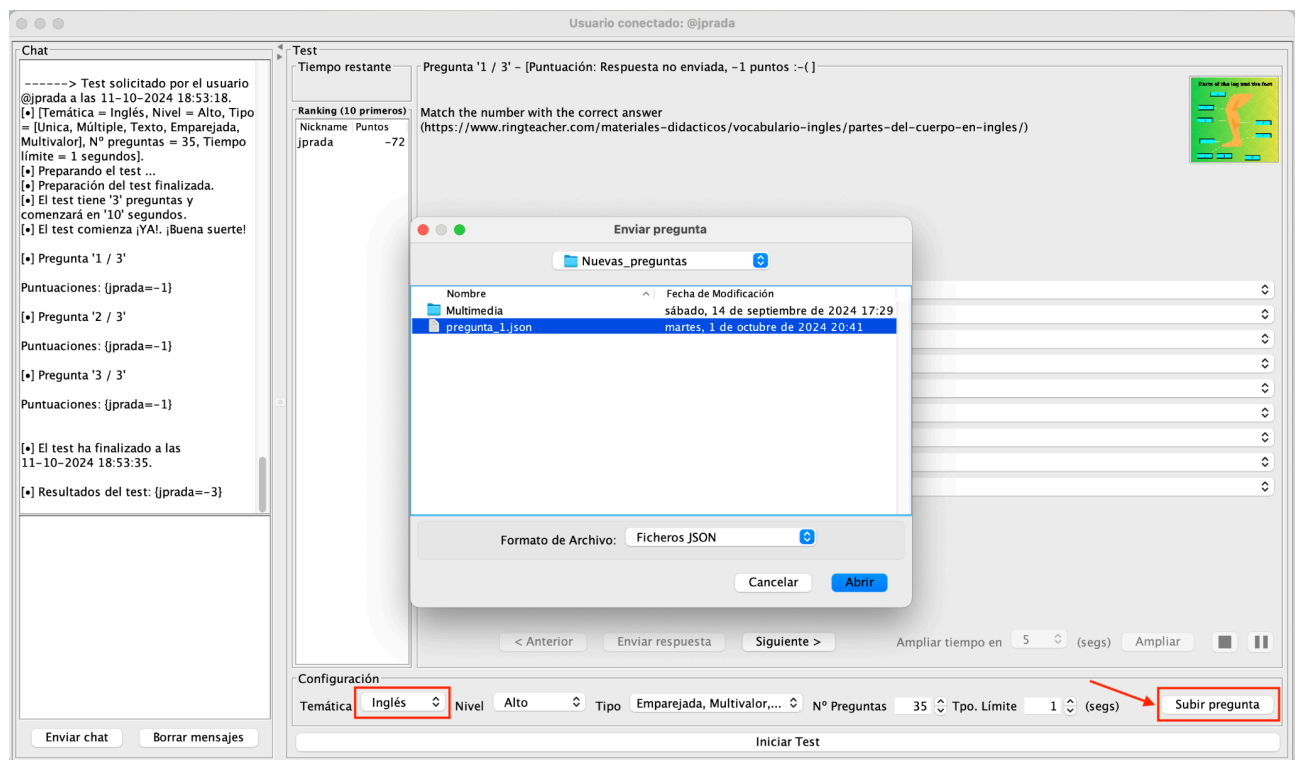

As can be seen in above screenshot, the button "Subir pregunta" opens a pop-up window from which the user can select the new question that wants to upload to the server, together with the file of the image or audio associated with the question (if any), that must be stored in the "Multimedia" subdirectory. The question (and the multimedia file) is uploaded to the subject/topic folder that is selected in the drop-down list on the server at the moment of confirming the operation. Once the question has been uploaded, a chat is sent from the server to inform all the clients.

9. Application GUI executing on different operating systems.

The following screenshots show the client application GUI executing on a Windows, Linux, and Mac system:
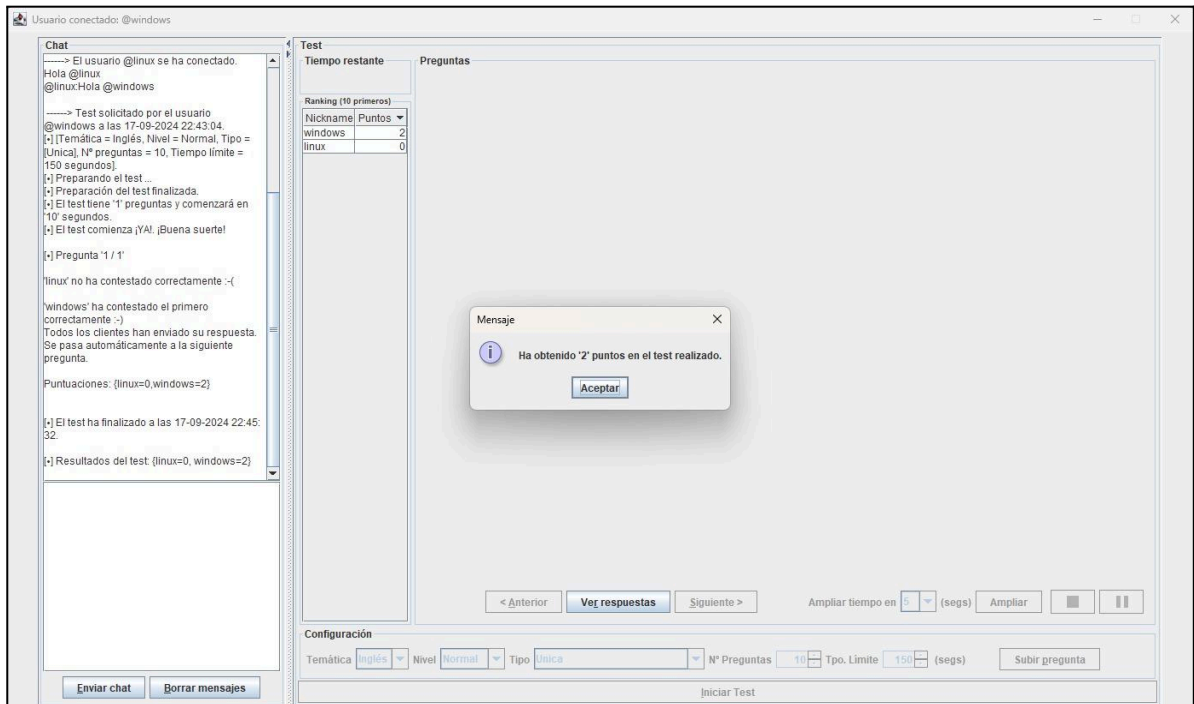
1. User 'windows' connected from a Windows system participating in a test challenge of one question:
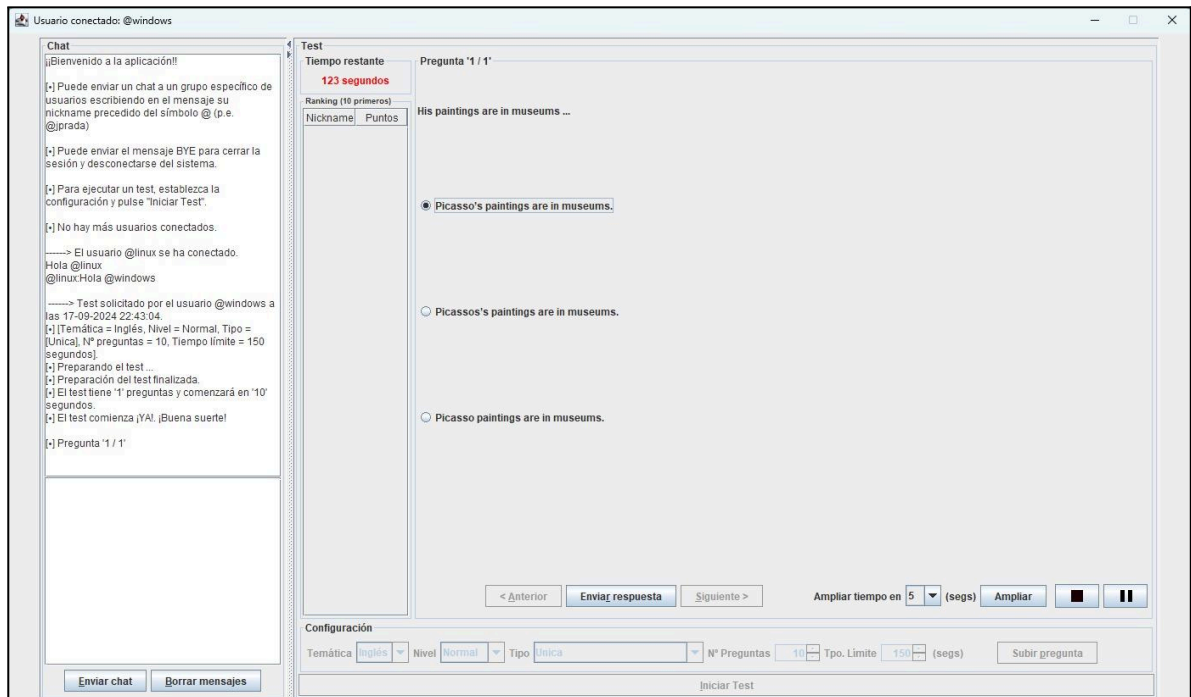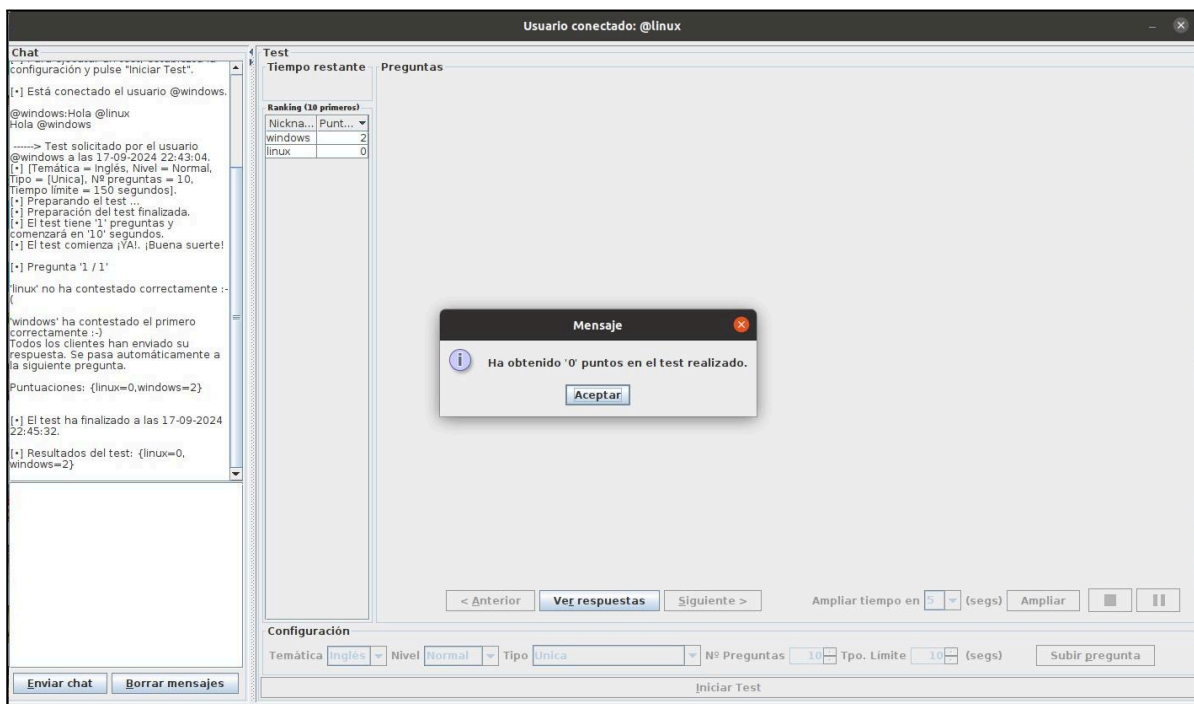

2. User 'linux' connected from a Linux system participating in the same test challenge as user 'windows':
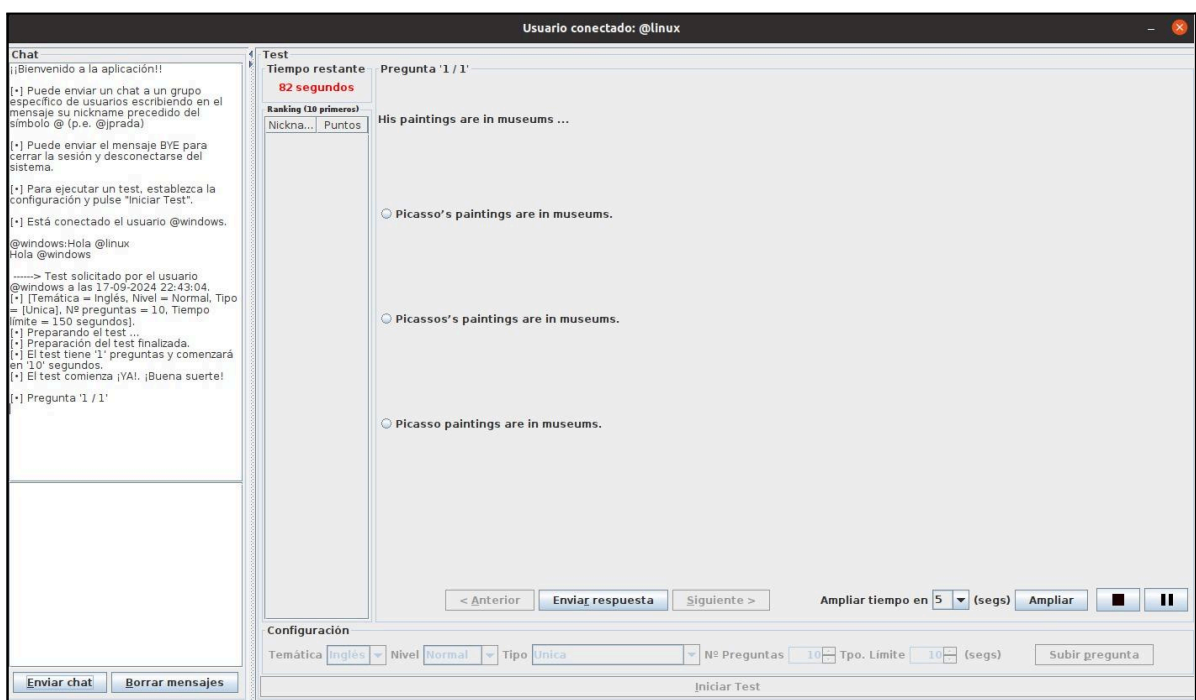
3. User 'windows' connected from a Windows system being informed of the number of points obtained once the test challenge has finished:

4. User connected from a Linux system being informed of the number of points obtained once the test challenge has finished:

5. Client application GUI running on a Mac OS system: