**HILBERT’S INFINITE HOTEL**

Freely inspired to the play

“Infinities” by J.Barrows & L.Ronconi

Dramatization by R. Fontana

Characters:

 Elisabetta Mariotto as Eliza, hotel director

Giulia Rovedatti as Julia, hotel porter

Anna Baranzini as guest, group leader and story-teller:

Other guests: an infinite number of students…

**ACT 1**

*Eliza is at her desk, looking for some papers. Near the desk a sign is standing, with the text:*

Ladies and gentlemen

Welcome to the HILBERT’S INFINITE HOTEL of Vipava!

This is one of the best Hilbert’s Infinite Hotels widespread all around the world.

Our Grand Hotel offers

* Infinite rooms available
* Good accommodation at low prices
* Splendid views
* Tea & Coffee Making Facilities
* TV in all bedrooms
* Optional 3 course evening meal
* No Smoking
* Credit / Debit Cards Welcome

At the moment we have no vacancies, as infinite guests are accommodated in our infinite rooms, but we will be glad to welcome any new guest!

*The story-teller enters.*

Ladies and gentlemen,

Edith Stein Secondary School of Gavirate is proud to present

HILBERT’S INFINITE HOTEL

A play about infinity

*The story-teller exits. After a while, Julia runs into the office. Behind her, at a certain distance, a lady with her luggage is standing.*

*Julia*

Director! A new guest is arriving. She’s a fine lady, and is asking for a room, but we have no vacancies! How can we get through it?

*Eliza*

Keep quiet, Julia! What does our poster read? “At the moment we have no vacancies, but we will be glad to welcome any new guest”. We can manage it; after all, we have infinite rooms…

*Julia*

 Yes, but they are all occupied!

*Eliza*

Listen, we can do that: let the guest of room #1 move to room #2, then guest of room #2 to room #3, then guest of room #3 to room #4, and so on, till infinite… So now room #1 is vacant!!! Please, let the lady come in and run to inform the other guests! Don’t be too late!

*Julia*

 Please ma’am, come in

*Julia runs away and the guest enters the office*

*Eliza*

Good morning, madam, welcome to our Grand Hotel. Room #1 is waiting for you. It is our best room! Please remember that smoking is not allowed.

**End of Act 1**

**ACT 2**

*Some people are waiting out of the hotel, with their luggage (they are some students out of other Comenius teams). The story-teller enters.*

*Story-teller*

Now ten people are asking to be registered. Will the hotel staff be able to accommodate them all?

*The story-teller takes her own luggage and goes to the beginning of the line.*

*Guest (speaking to the porter)*

Hello madam. There’s ten of us who would like to pass the night in your hotel. Do you think you have enough rooms for us all? The poster reads you have no vacancies, but it says also that you welcome any new guest! How is it possible?

*Julia*

Ehm, excuse me... I’m going to get some information…

*Julia runs into the office and speaks to Eliza*

Boss, that’s worse! Now TEN people are asking to spend the night here! Don’t you think it is impossible?

*Eliza*

Don’t worry, Julia! I’ve been well instructed how to manage such a case… This time, we’ll do like this: let the guest of room #1 go to room #11, then the guest of room #2 to room #12, and so on. So the first ten rooms of our hotel are vacant! Please, let the new guests come in and run to inform the other guests! Don’t be so late as yesterday!

*Julia*

 Please, ladies and gentlemen, come in.

*Julia runs away and the guests enter the office*

*Eliza*

Good morning kind guests, welcome to our Grand Hotel. Rooms from #1 to #10 are available for you. They’re our best rooms! Who’s the first of you to register? Please remember that smoking is not allowed.

**End of Act 2**

**ACT 3**

*Lots of people are waiting outside the hotel in two lines, with their luggage (they are some students out of other Comenius teams). They carry a sign that reads INFINI-TOURS. The story-teller enters.*

*Story-teller*

More and more difficult! A bus of Infini-Tours line has arrived, and it’s carrying infinite passengers who all want to be accommodated into the Hilbert’s Infinite Hotel. Will our Eliza be as cunning as usual?

*The story-teller and the other passengers pretend to speak whispering, then the story-teller approaches Julia.*

*Group leader*

Good morning madam. As group leader of this Infini-Tours bus, I’m kindly asking you if it is possible for you to accommodate infinite new guests. But I’m reading now you have no vacancies… Sorry if I’ve made you waste your time.

*Julia*

Please, wait! Maybe we can arrange it some way… my boss is surprisingly able in this sort of business!

*Julia runs into the office and speaks with Eliza*

My God, out here there are infinite people asking to be accommodated… don’t tell me you have a solution also for that!

*Eliza*

Don’t panic, Julia! Have you ever asked yourself why our hotel is named after Hilbert? You’d better buying a book or two about maths, one day! This is our actual strategy: let the guest of room #1 go to room #2, then the guest of room #2 to room #4, then room #3 to room #6, and so on. We have infinite even-numbered bedrooms, so it won’t be a problem but for the time we need… Moreover, in such a way we would have all our odd-numbered rooms vacant! And what’s more they are infinite too! So we can begin registering the infinite new guests from the bus outside. Hurry up, it will keep you busy to inform all our infinite guests! And let all new guests come in.

*Julia*

 Miss Eliza, you’re so clever! Please infinite ladies and gentlemen, come in.

*Julia runs away and the group leader enters the office*

*Eliza*

Good morning madam, your group is warmly welcome to our Grand Hotel. All our infinite odd-numbered rooms are available for you. They’re our infinite best rooms! Please remember that smoking is not allowed, but in the last room.

**End of Act 3**

**ACT 4**

*Much more people are waiting outside the hotel in some lines, with their luggage (they are some students out of other Comenius teams). They carry a sign that reads GALAXY-INFINI-TOURS. The story-teller enters.*

*Story-teller*

That’s great! Infinite buses of Galaxy-Infini-Tours line have arrived from the infinite galaxies of the universe, each carrying infinite passengers who all want to be accommodated into the Hilbert’s Infinite Hotel! Will the staff be so infinitely able to arrange it?

*The story-teller and the other passengers pretend to speak whispering, then he approaches Julia.*

*Group leader*

Hullo honey… My colleagues spoke very well about your place. So I thought of bringing some galactic tourists here: they’re coming from all the infinite galaxies of our universe, and ther’s an infinite number of them on each bus! Is there a chance they can be accommodated before breakfast? I’ve to collect some guys from another dimension…

*Julia*

Really sir, I don’t know what to tell you… But never say never! Maybe Miss Eliza has a flash of genius of hers…

*Julia runs into the office and speaks with Eliza*

This time I really don’t know how you will manage it, director! There are infinite buses in our parking area, each carrying infinite passengers, and each of them wants to pass the night here! I’m going to bet you my bottom penny that even you can’t solve the present puzzle, Miss Eliza!

*Eliza*

Save your bottom penny for difficult moments, Julia, and let me think about this problem… Mmhh, what have Dedekind written about it? Ah, now I’ve got it, it was so simple!

First of all we can play the same trick as the last time, do you remember? We can move all our guests to the even-numbered rooms, leaving the odd ones vacant. Then you have to number all the buses, starting from one, and all the passengers in each bus, starting again from one… are you following me, Julia?

*(Julia’s looking a little bit astonished…)*

Well! Now, if you have passenger “m” coming from galaxy “n” you can obtain the right number of his or her room by simply applying this formula:

**R = (n+m)(n+m-1)-2n+1** *this formula must not be read.**It is displayed by the projector on the wall.*

Why is your mouth so wide open, Julia? Can’t you remember such a simple formula?

Oh, perhaps it is better explaining it to you in another way, I suppose… Then, draw a grid, and place the passenger numbers in the leftmost column, while the galaxy numbers lay on the topmost row. Now you can get the room number just starting from one and counting by two in diagonal, like that… Isn’t it absolutely simple?

*This grid must not be read.**It is displayed by the projector on the wall*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Galaxies** |  |  |  |  |  |  |  |
|  |  | **1** | **2** | **3** | **4** | **5** | **6** | **…** |
| **Passengers** | **1** | 1 | 5 | 11 | 19 | 29 | 41 |  |
|  | **2** | 3 | 9 | 17 | 27 | 39 |  |  |
|  | **3** | 7 | 15 | 25 | 37 |  |  |  |
|  | **4** | 13 | 23 | 35 |  |  |  |  |
|  | **5** | 21 | 33 |  |  | **…** |  |  |
|  | **6** | 31 |  |  |  |  |  |  |
|  | **…** |  |  |  |  |  |  |  |

*Julia*

 Miss Eliza Cantor, you’ve left me without words…

*Eliza*

Don’t waste your time, Julia, run to inform all guests! And remember that breakfast must be served in a short while!

*Julia*

I’ll do my best, director, but you’re asking me too much! Please infinite ladies and gentlemen from infinite galaxies, come in.

*Julia runs away and the all the groups enter the office*

*Eliza*

Good morning infinite ladies and gentlemen, you’re welcome to our infinite Grand Hotel. You will find your infinite room numbers on the board over you. They’re our infinite best rooms! Please remember that smoking is not allowed but in the last galaxy.

**End of Act 4**

**END**