

# Cognitive stimulation training medical game to delay the progression of dementia



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# Dementia



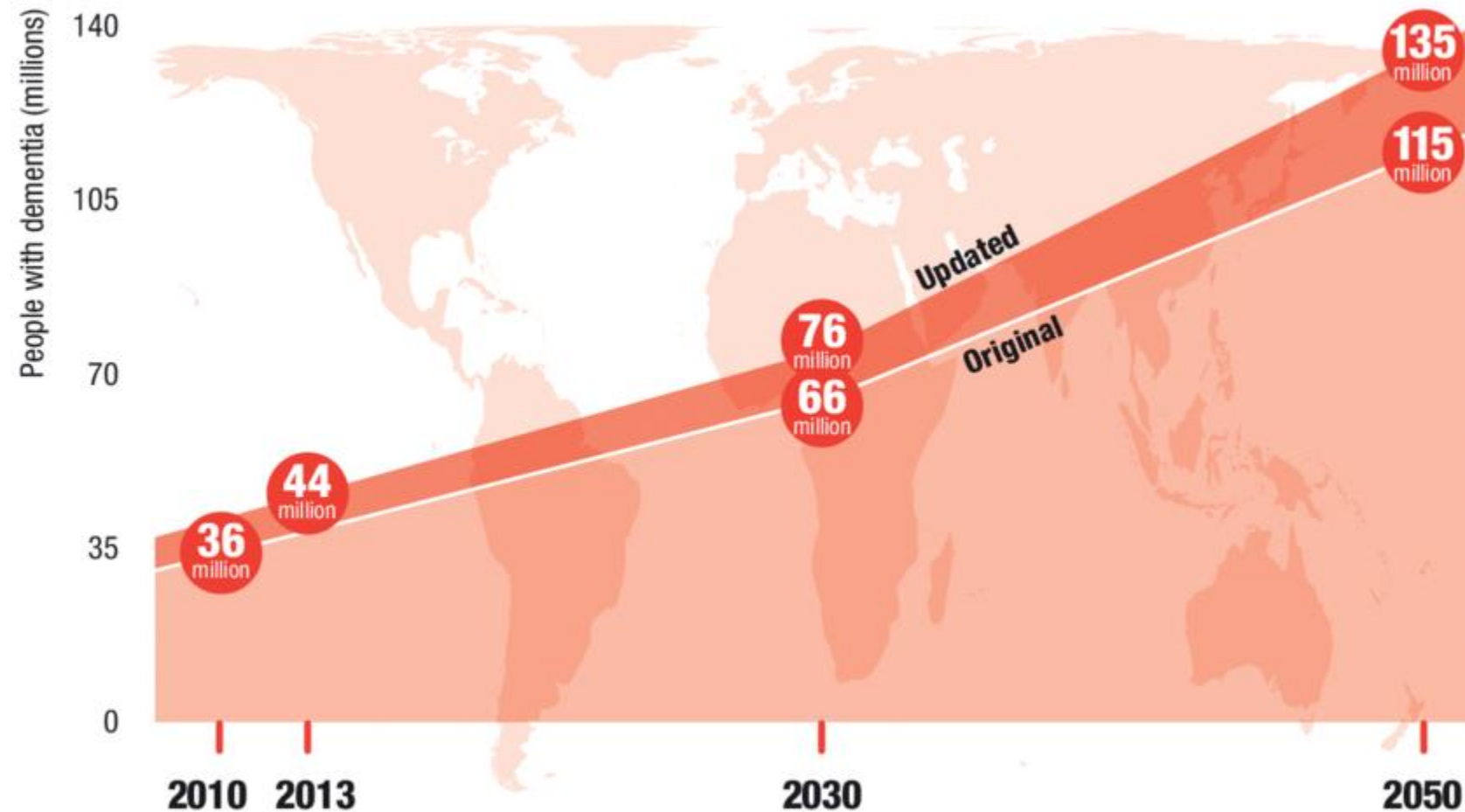
## WHAT IS DEMENTIA?

### Dementia

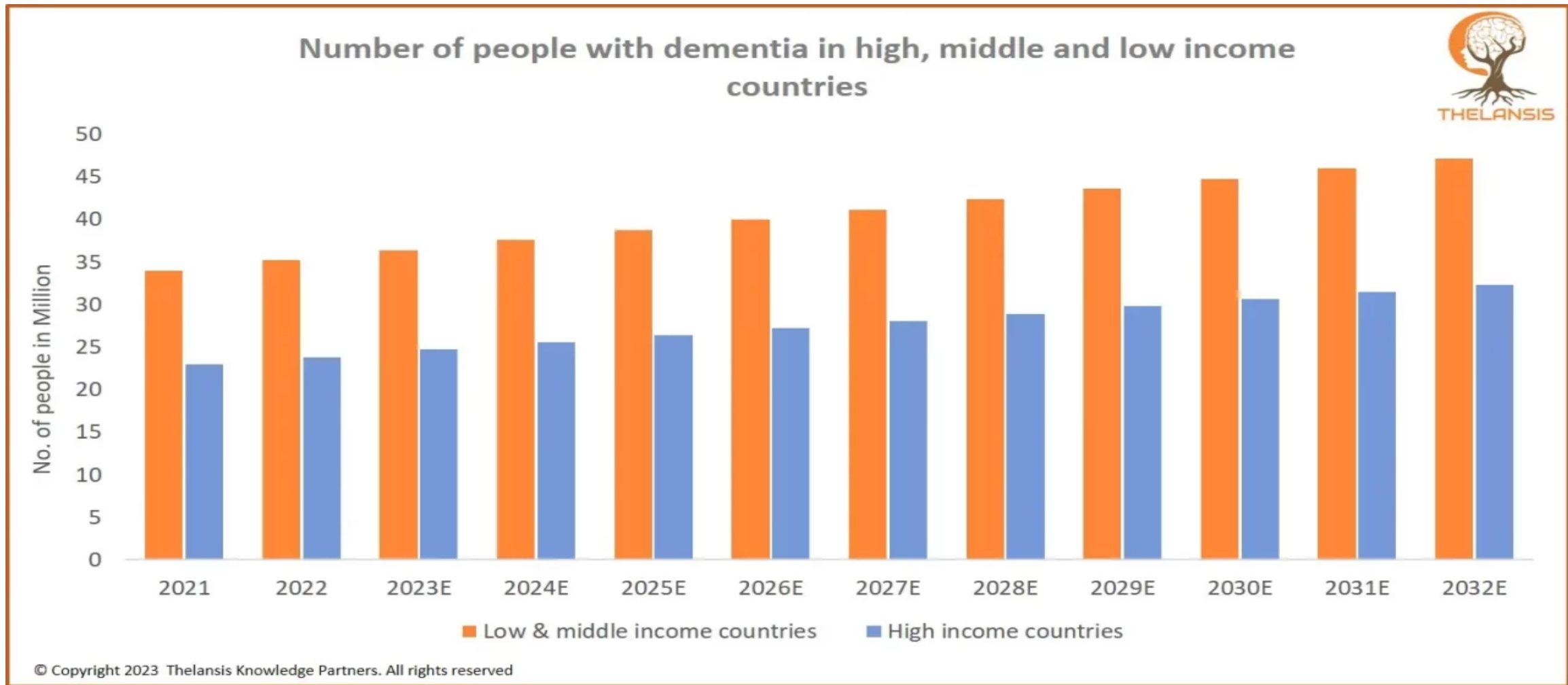
**is a general term for loss of memory,** language, problem-solving and other mental abilities that are severe enough to disrupt daily life.

- **Memory loss is often an early sign of dementia.** But having memory loss alone does not automatically mean someone has dementia.

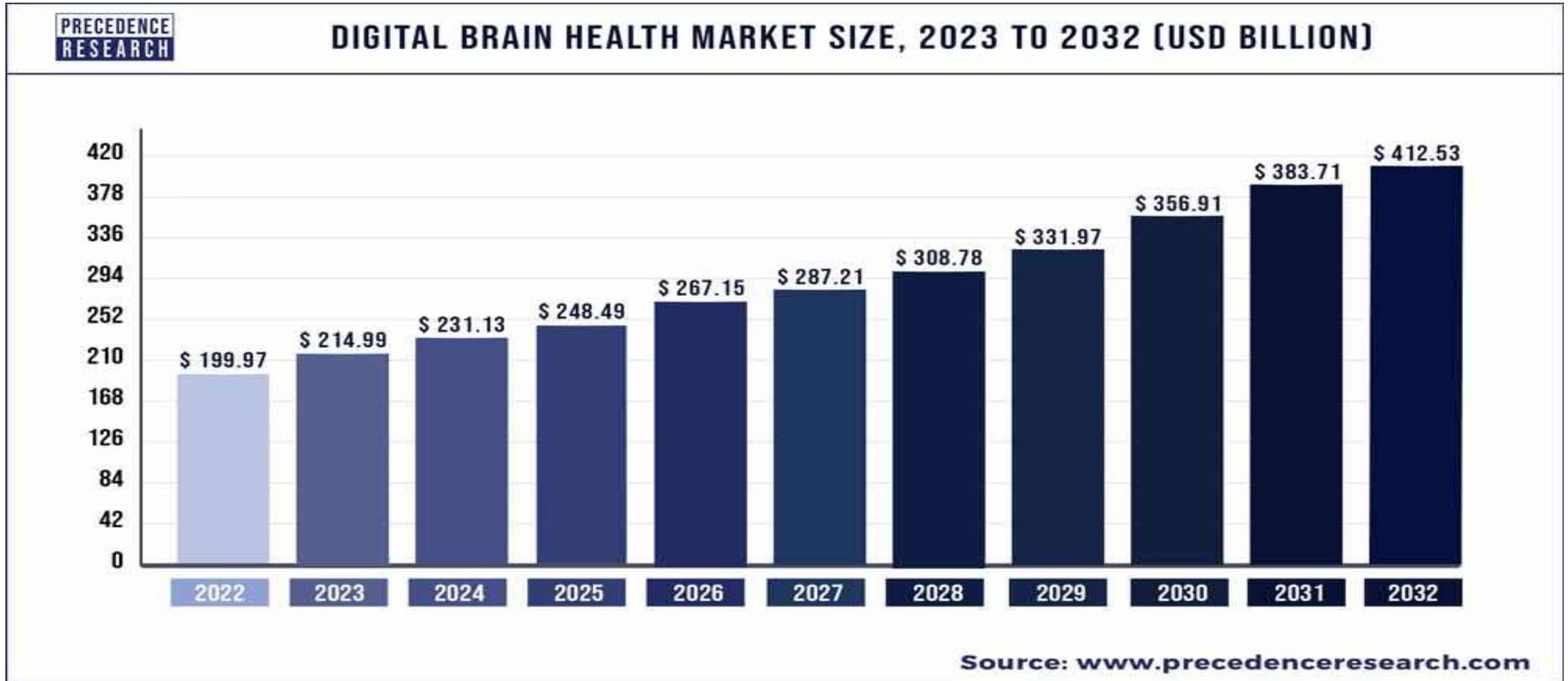
# The trend of Dementia Patients



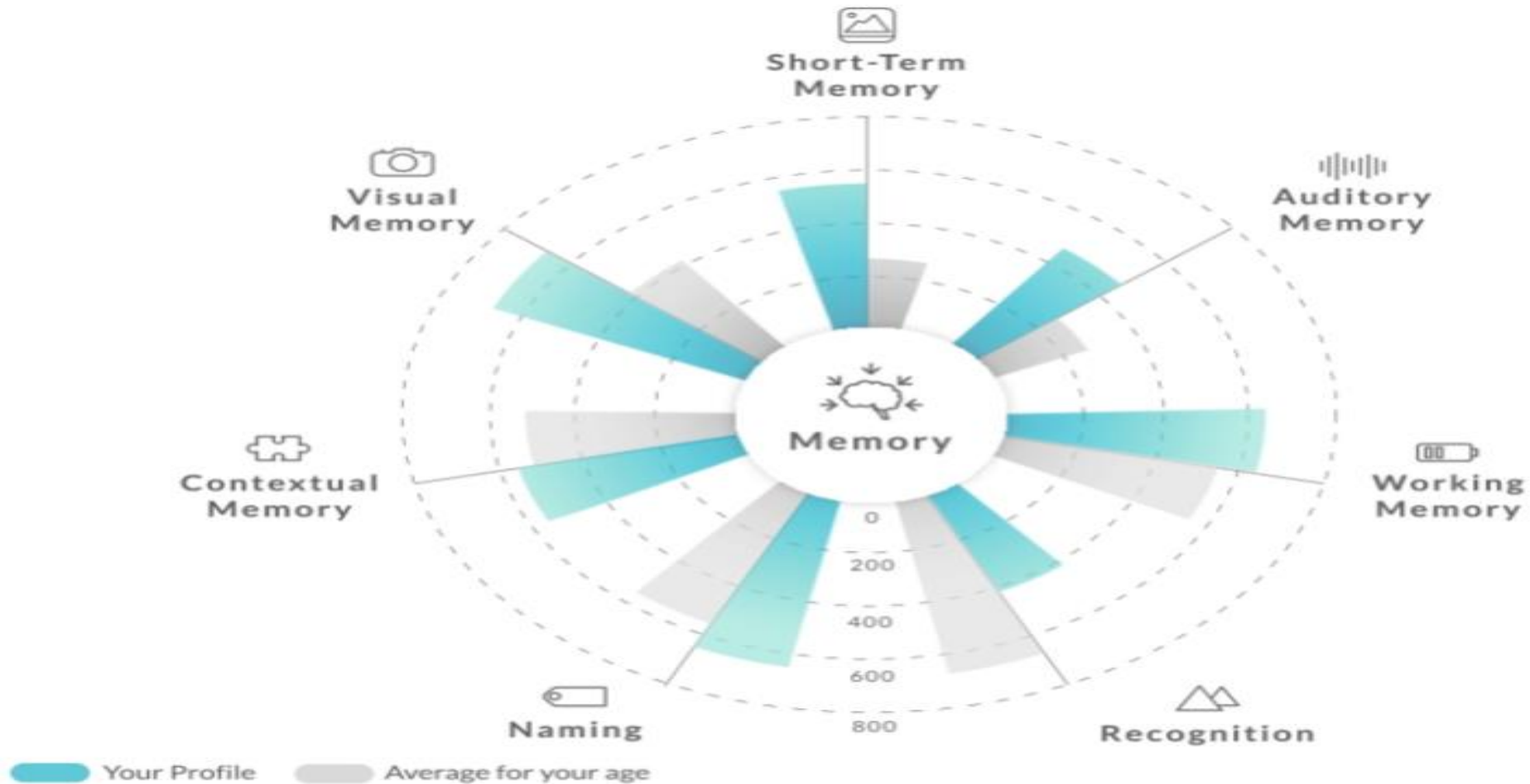
# Why we developed



# Market Size



# Cognitive training to Dementia



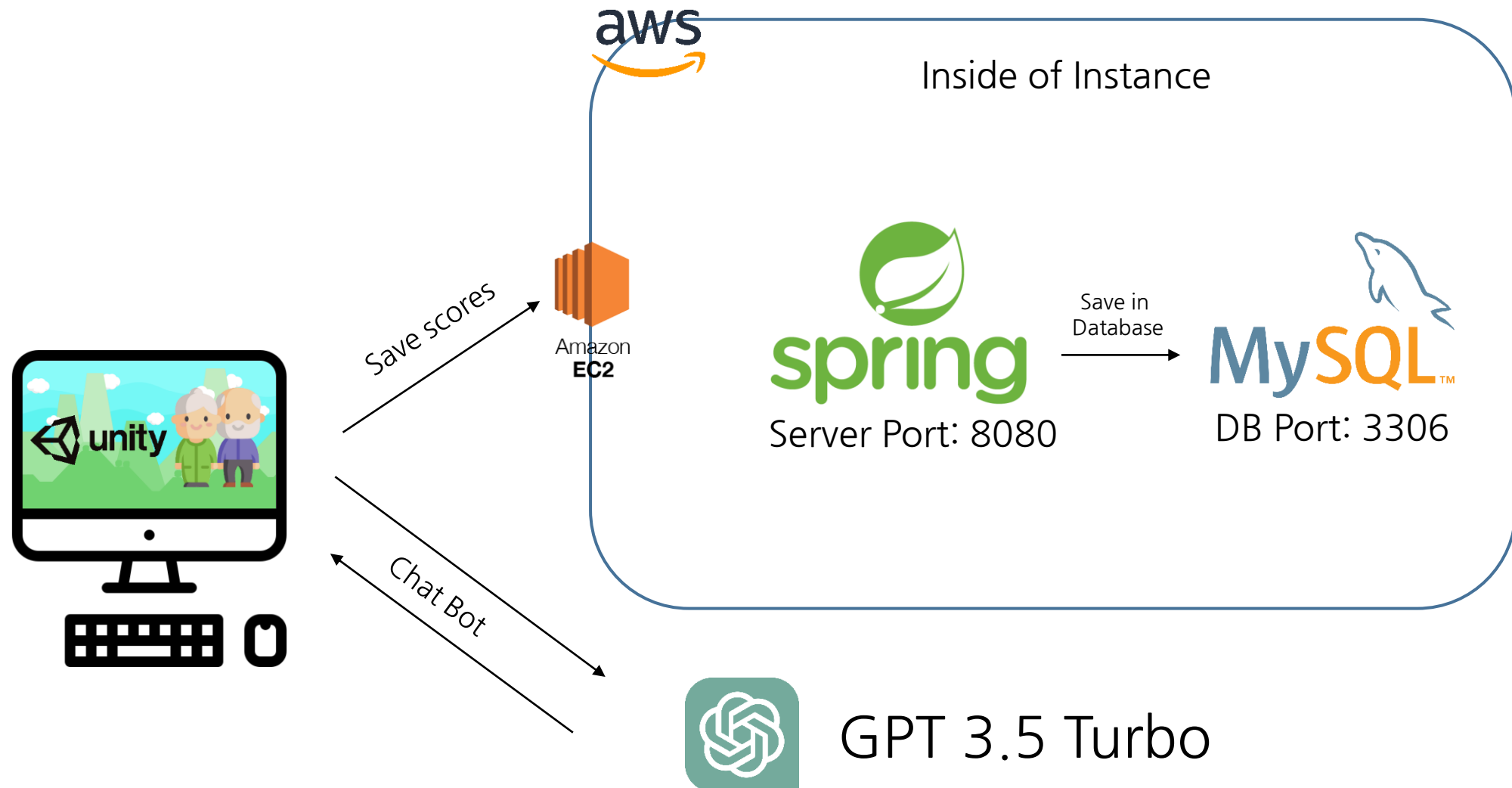
# Why? Stimu Stimu??

- “Stimulate”





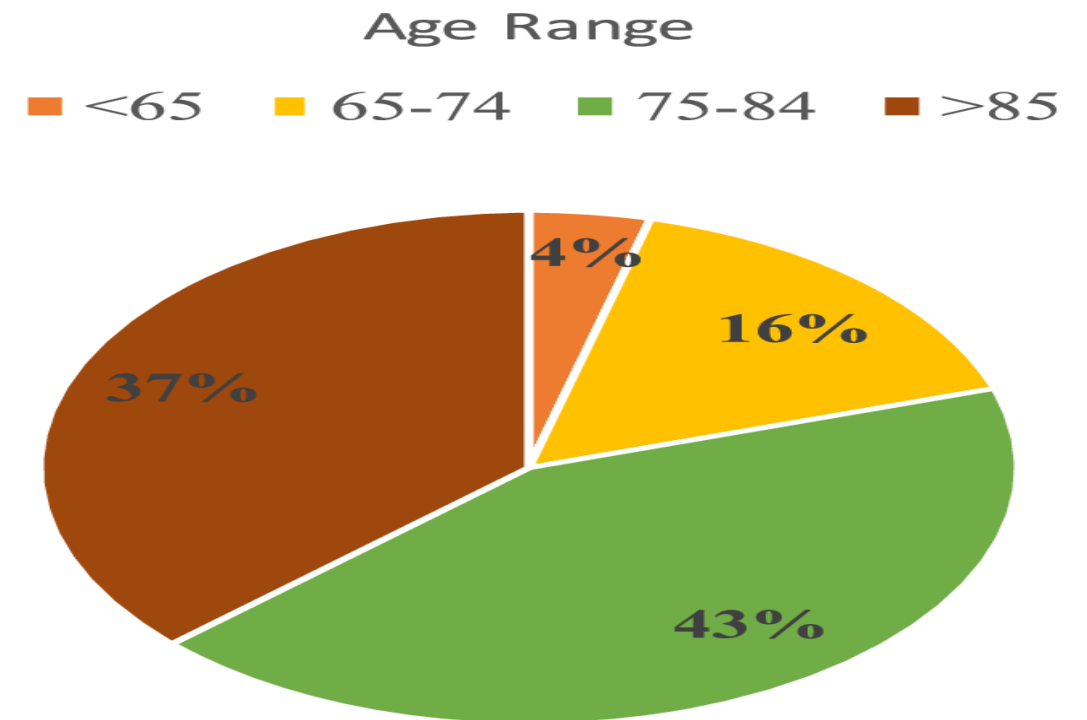
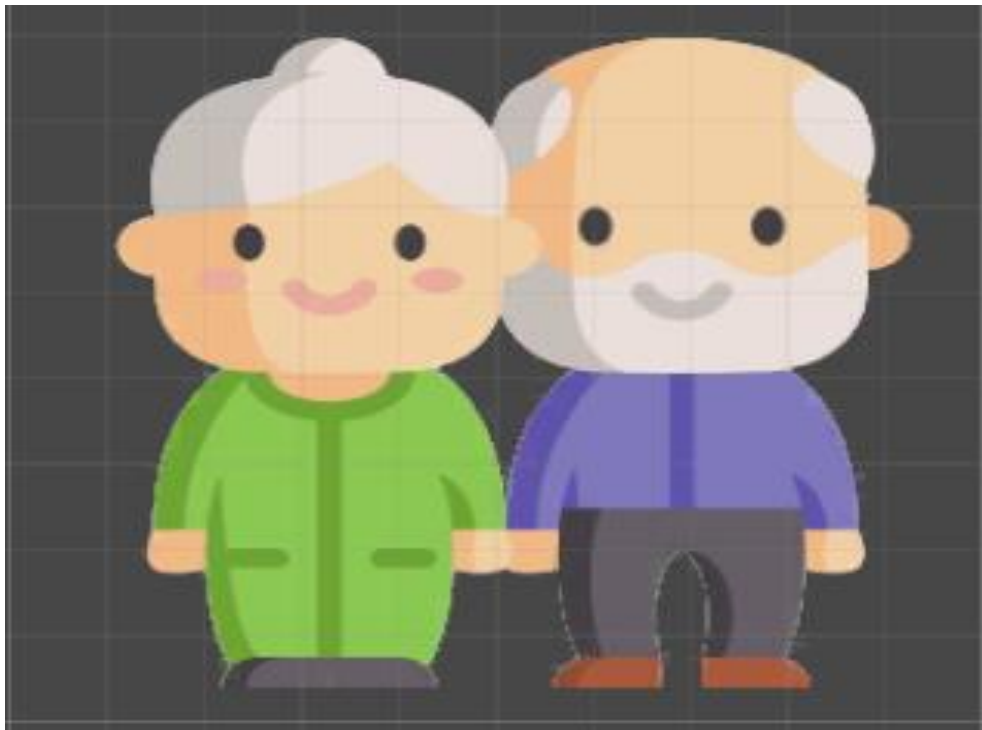
# System Architecture & Development Environments



# Game scenario

- NPC(Non-Player-character)'s Rules

- Jack & Rose
  - Set at a similar age for intimacy



# Game scenario

- Controller

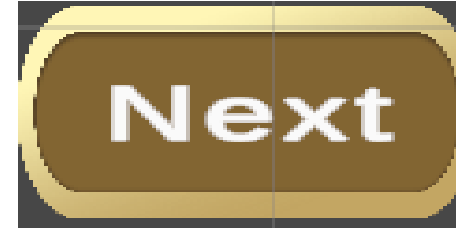
- Play Controller



Chatbot button

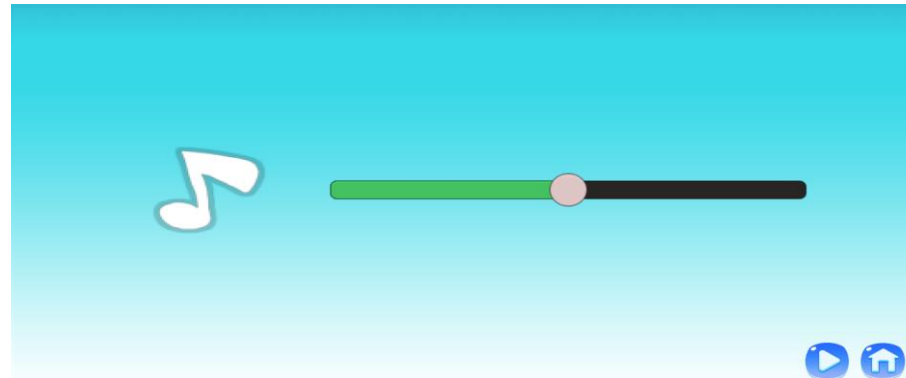


Scene change button



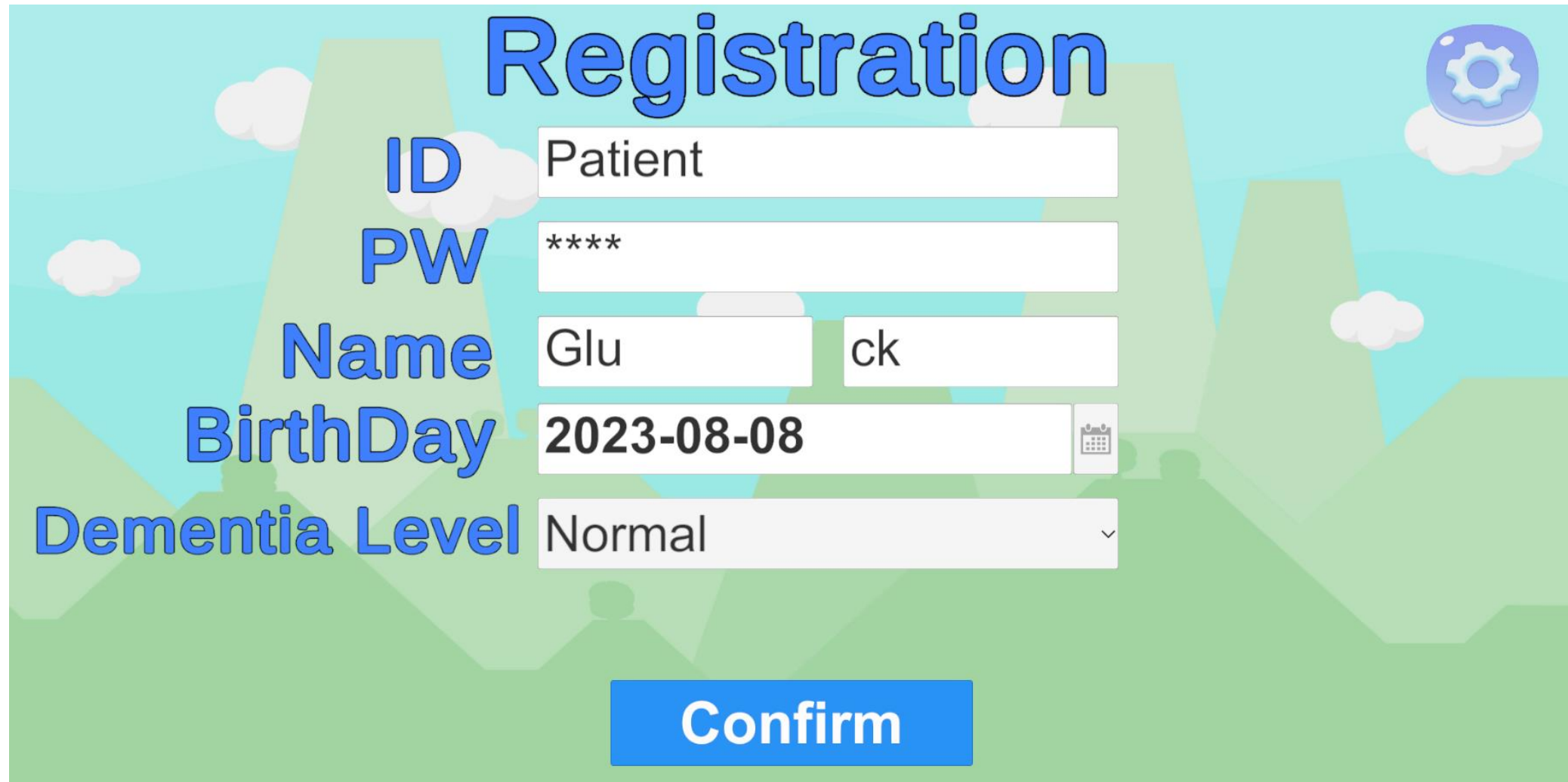
Next button

- Setting Controller



# Game scenario

- Registration





**Registration**

**ID**

**PW**

**Name**

**BirthDay**  

**Dementia Level**  

**Confirm**

# Game scenario

- Three progressive phases of Dementia

- **Mild Cognitive Impairment**

- A condition that memory, concentration, and language skills are deteriorated, but there is no significant impact on daily life

- **Moderate Dementia**

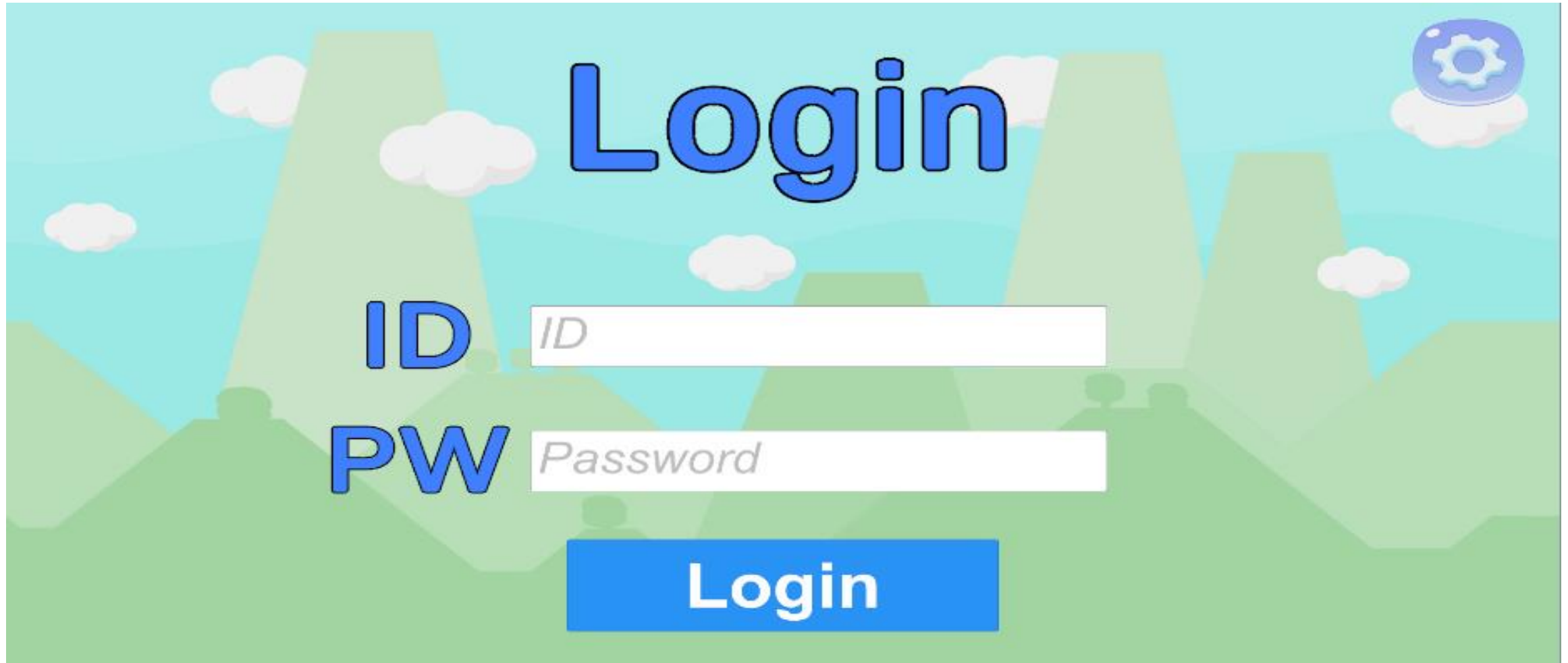
- A condition that memory and cognitive abilities are significantly deteriorated, they need helps from Guardian

- ~~**Severe Dementia**~~

- ~~- A condition that daily life is needed and self-protection ability is reduced~~

# How to play

- Access token is sent to Server



The login screen features a stylized background with green hills, white clouds, and a light blue sky. A blue gear icon is in the top right corner. The word "Login" is written in large blue letters at the top center. Below it, the labels "ID" and "PW" are in large blue letters. To the right of "ID" is a white input field with the placeholder text "ID". To the right of "PW" is a white input field with the placeholder text "Password". At the bottom center is a blue button with the word "Login" in white text.

Login

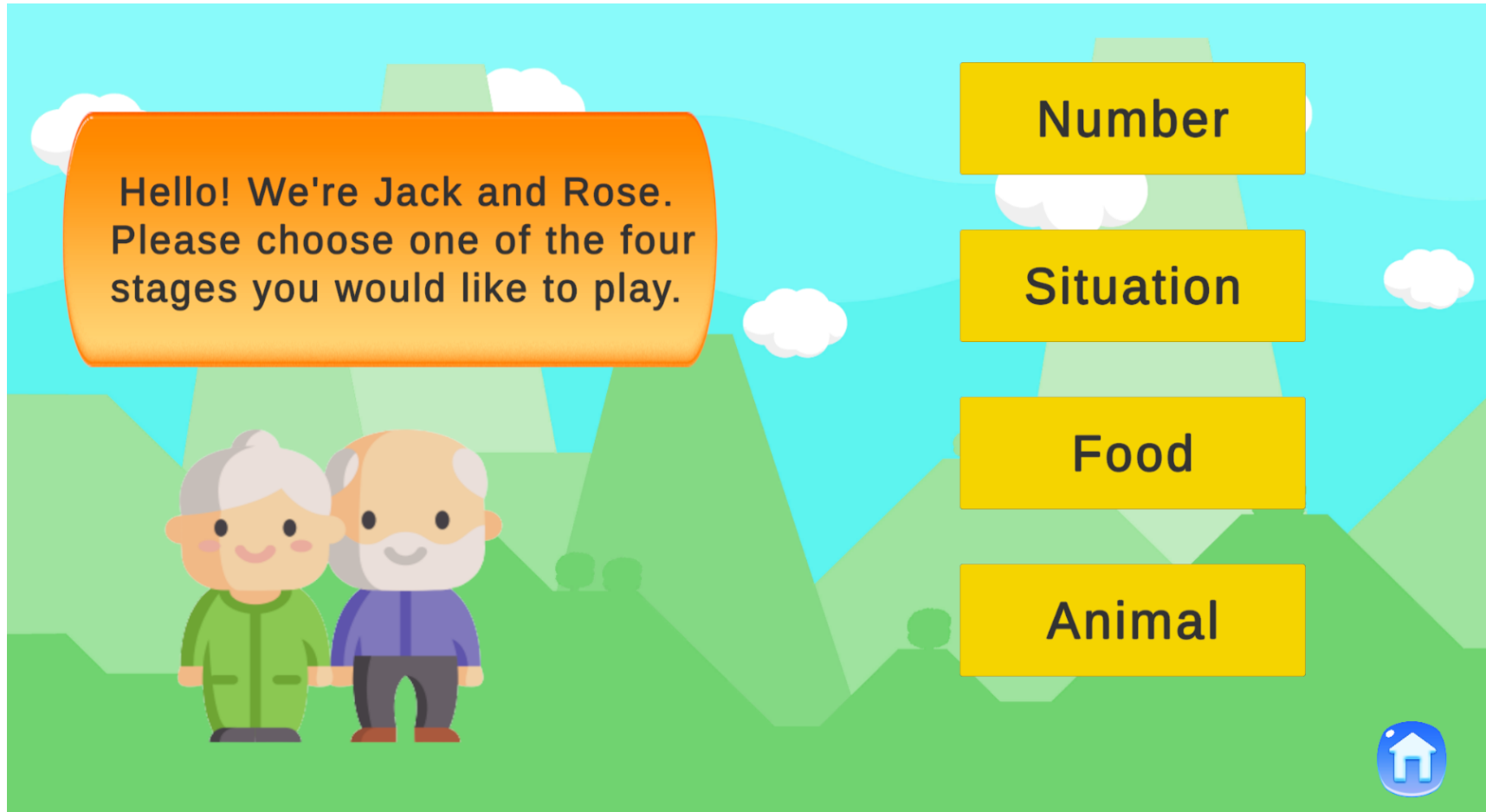
ID

PW

Login

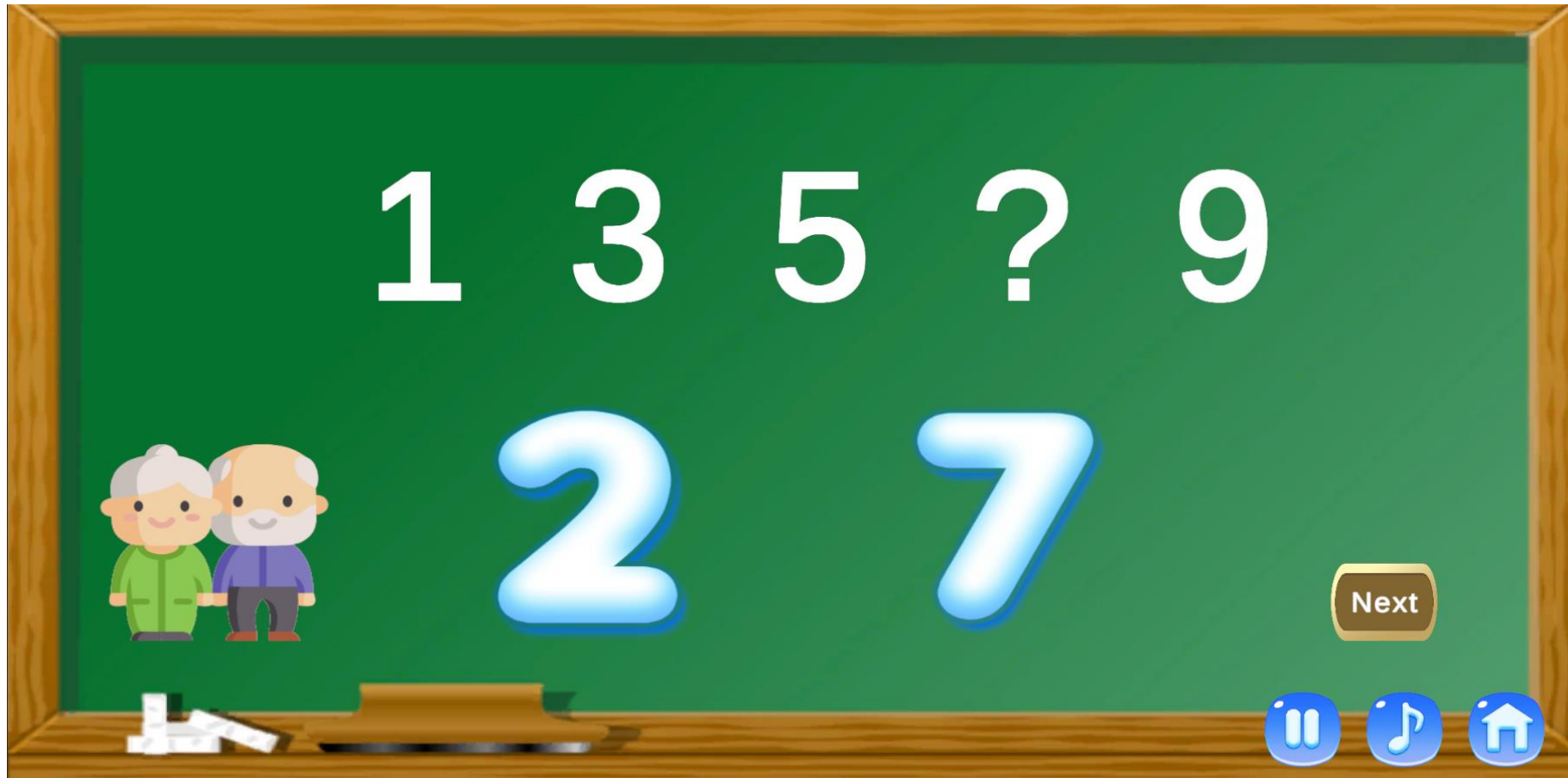
# How to play

- Categories



# How to play

- Category 1: Number



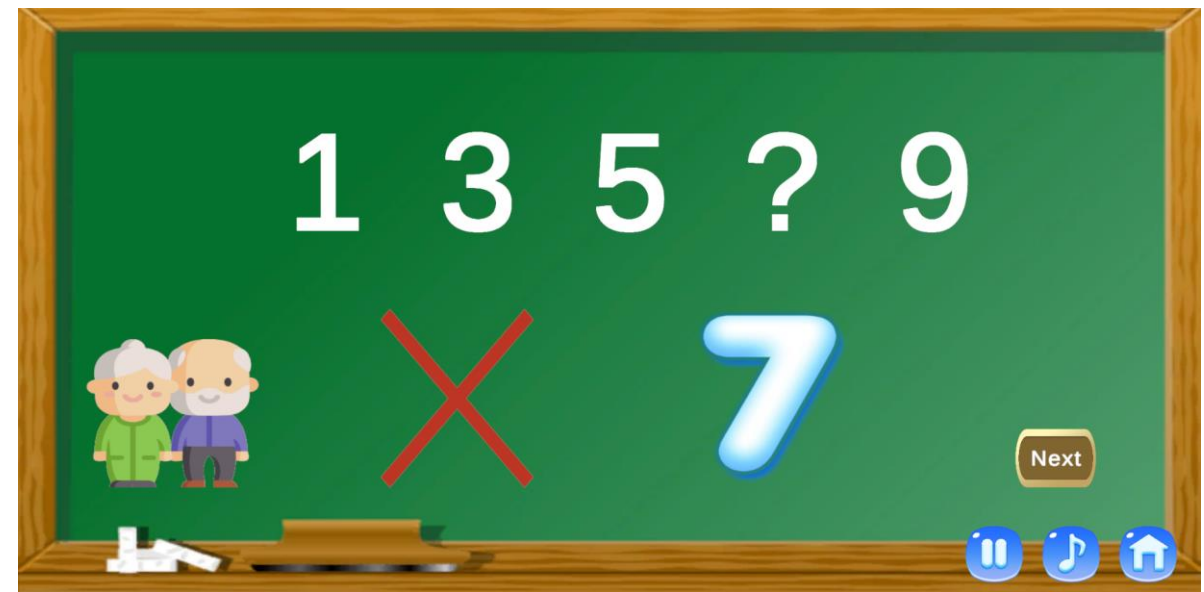


# How to play

- Category 1: Number



Right answer



Wrong answer

# How to play

- Category 2: Situation





# How to play

- Category 2: Situation



Right answer



Wrong answer

# How to play

- Category 3: Food





# How to play

- Category 3: Food



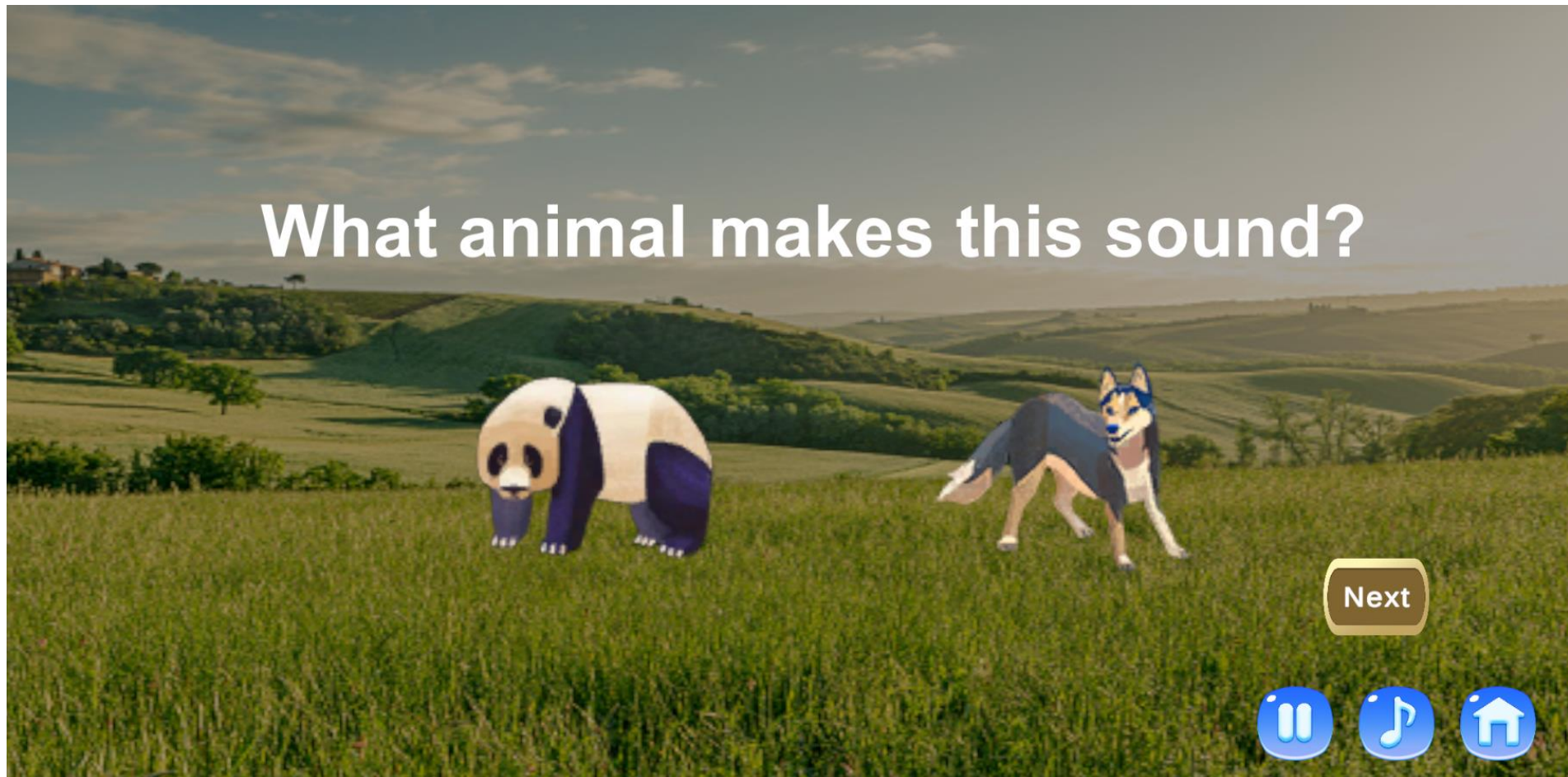
Right answer



Wrong answer

# How to play

- Category 4: Animal





# How to play

- Category 4: Animal



Right answer



Wrong answer

# Result

- Detection of score changes





# ChatBot

- support dementia patients through conversation.

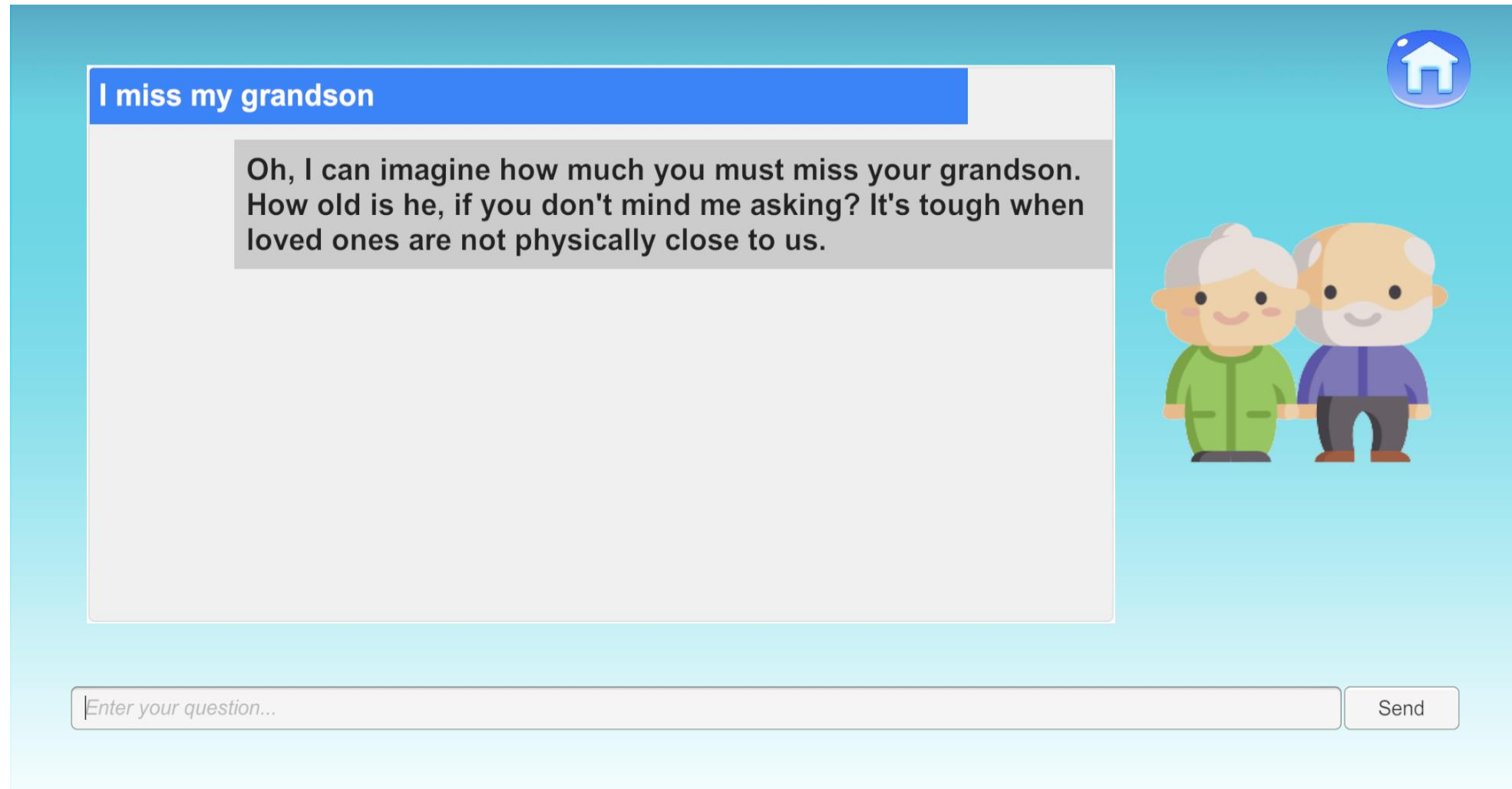


# Benefits of Chatbots for Dementia Patients

- Provide memory training
- Stimulate good memories
- Provide advice
- Emotional support
- Avoid loneliness

# ChatBot

- Openai (Gpt-3.5-turbo)



# Conclusions

- Check results on server
- Stimulate brain Steadily
- Delay progression of Dementia

# Future Works

- Make more game level
- Make community for Caregivers
- Analyze dementia improvement by analyzing score changes

# Summary

- Stimulation training to delay dementia progression and relieve symptoms
- Borrowed “Stimu” from stimulate and set it to the friendly name “Stimu Stimu”
- Adjustment of 5 levels of difficulty according to individual level of dementia
- Using sound, Cognitive card training

# References

- [1] <https://alzheimer.ca/en/about-dementia/how-can-i-prevent-dementia/risk-factors-dementia>
- [2] Prince, Martin & Guerchet, Maëlen & Prina, Matthew. (2013). The Global Impact of Dementia: 2013-2050.
- [3] <https://thelansis.com/insights/number-of-people-with-dementia-in-high-middle-and-low-income-countries/>
- [4] <https://www.precedenceresearch.com/digital-brain-health-market>
- [5] <https://mhtoolkit.com/38919/cognitive-stimulation-therapy-a-promising-intervention-for-dementia/>
- [6] Ruggiano N, Brown EL, Roberts L, Framil Suarez CV, Luo Y, Hao Z, Hristidis V. Chatbots to Support People With Dementia and Their Caregivers: Systematic Review of Functions and Quality. J Med Internet Res. 2021 Jun 3;23(6):e25006. doi: 10.2196/25006. PMID: 34081019; PMCID: PMC8212632.
- [7] <https://www.yakup.com/news/index.html?mode=view&cat=12&nid=265510>
- [8] Schneider, F., Horowitz, A., Lesch, KP. et al. Delaying memory decline: different options and emerging solutions. Transl Psychiatry 10, 13 (2020). <https://doi.org/10.1038/s41398-020-0697-x>

The background of the screen is a stylized landscape with green hills and mountains under a light blue sky with white clouds. In the top right corner, there is a blue gear icon inside a circle, which is itself inside a cloud. The word "Stimu" is written twice in a large, blue, rounded font with a black outline, centered on the screen.

# Stimu Stimu

Login

Sign Up

# Q & A

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