

# CEN4010-001 - Principles of Software Engineering (Spring 2025)

## Solution Overview

**Group:** Group GLS

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**Discord Bot:** Group GLS Bot

## Scope

### Study Companion



- **Objective:** Engage users with interesting, educational, and entertaining content, sparking curiosity, promoting learning in a fun way, and enhancing community interaction within the server.
- **Solution Overview:** Deliver random facts, trivia, and educational content through simple commands. It enhances learning with interactive features like flashcards, trivia games, and leaderboards, making education fun and engaging within the server.
- **Preliminary Requirements:**
  - Respond to commands like to share interesting facts.
  - Provide fun trivia and check user answers.
  - Let users create, view, and study flashcards with simple commands.
- **User Bot:** <https://discord.gg/aewdJ2jR>

## Solution Ideation

The development of the 'Group GLS Bot' is designed to be a conversational companion that helps students learn in an engaging and interactive manner.

The solution should work as follows:

- Knowledge & Trivia engine
  - Diverse knowledge base that includes:
    - General trivia (science, history, geography, pop culture, etc.)
    - Fun and random facts
    - Education insights
- Natural Language Understanding

- Use intent recognition to process user input.
  - Commands that trigger an educational response or fun fact.
- Conversational Engagement
  - Dynamic greetings and responses
  - Personality
- Command Handling
- Flashcard Game Feature

## Requirement Analysis

Our 'Group GLS Bot' should support interactions with student such as:

- GLS Bot must be able to respond to "Hello" and "goodbye"
  - The bot will respond differently each time, simulating a human companion.
- GLS requires and input from the user
  - The input must have different responses for specific phrases.
  - GLs should provide information on many different topics
- GLS Flashcard Feature should allow students to study using a flashcard mode or create custom deck creation.
- GLS Flashcard Gaming mode requires the bot to ask the user a question, scores the answers wrong or right and keeps track of wins/points.

## Roadmap

NOTE: this is the 'Requirement Prioritization'

We will implement our 'Group GLS Bot' following this roadmap.

v0.1 Mockup

- Basic Interactions
- Demonstrate the Question-Answer that we aim to support
- Configure the Rules of your Discord Bot Runner to support the demonstration Questions-Answers

V0.2 Second Release

- Implement flash card feature
  - Users prompt bot to build personal flashcard decks
- GLS Flashcard Gaming mode
  - The bot sends a question as an embed, waits for the user's answer, then reveals the correct answer

V0.3 Third Release

# Dialogue Rules

## Rules 1

\*hello\*, Hello! Did you know honey never spoils? Archaeologists have found pots of honey in ancient tombs that are over 3000 years old!

\*hi\*, Hi there! Here's a fun fact: Octopuses have three hearts!

\*hey\*, Hey! Did you know that a group of flamingos is called a "flamboyance"?

\*how are you\*, I'm doing great! Did you know that bananas are berries! But strawberries aren't?

\*what's up\*, Not much! Did you know that wombat poop is cube-shaped?

\*good morning\*, Good morning! Did you know the Eiffel Tower can grow over 6 inches taller during summer due to heat expansion?

\*good evening\*, Good evening! Here's a fun fact: A bolt of lightning is five times hotter than the surface of the sun.

\*good night\*, Good night! Did you know sharks existed before trees?

\*hi bot\*, Hi there! Did you know sloths can hold their breath longer than dolphins can?

\*howdy\*, Howdy! Did you know that goats have rectangular pupils?

\*hello\*, Hello! I can tell you some fun facts!

\*hello\*, Hi there! Would you like to here some fun facts?

\*hello\*, Greetings! Did you know that I say fun facts!

\*hello\*, Hello! I can say some facts about coding!

\*hello\*, Hi! I can say some fun facts about animals!

\*hello\*, Hello there! Would you like to see some fun facts about mammals?

\*hello\*, Hey! Would you like to hear some fun facts about food?

\*hello\*, Hi! I say fun facts!

\*hello\*, Greetings! fun fact: I say fun facts!

\*hello\*, Hello! I say fun facts about a bunch of different things!

\*what is trivia\*, Trivia is small bits of information that are often surprising!

\*tell me a fact\*, Sure! Did you know the longest hiccuping spree lasted for 68 years?

\*share a fun fact\*, Of course! Did you know that octopuses have nine brains? \*random fact\*, Here's one: A cow-bison hybrid is called a "beefalo."

\*trivia please\*, Sure thing! Did you know apples float because they are 25% air?

\*give me trivia\*, Alright! Did you know koalas have fingerprints that are nearly indistinguishable from humans?

\*educate me\*, Happy to help! Did you know humans share about 60% of their DNA with bananas?

\*tell me something cool\*, Here's a cool fact: The inventor of the frisbee was turned into a frisbee after he died.

\*fact time\*, You got it! Did you know the dot over a lowercase "i" or "j" is called a "tittle"? \*learn something\*, Alright! Did you know an octopus has blue blood because it contains copper?

\*goodbye\*, Goodbye! Here's one last fact: The word "goodbye" comes from "God be with ye."

\*bye\*, Bye! Did you know that the world's smallest reptile was discovered in 2021?

\*see you\*, See you later! Did you know a bolt of lightning contains enough energy to toast 100K slices of bread?

\*farewell\*, Farewell! Did you know that you can't hum while holding your nose closed?

\*take care\*, Take care! Did you know there's only one letter that doesn't appear in any U.S. state name? It's "Q."

\*later\*, Later! Did you know octopuses can taste with their arms?

\*have a nice day\*, Thanks, you too! Fun fact: Penguins propose to their mates with pebbles.

\*see you later\*, See you later! Did you know the inventor of the microwave got the idea after a chocolate bar melted in his pocket?

\*peace\*, Peace! Did you know an eagle can kill a young deer and fly away with it?

\*adios\*, Adios! Did you know spiders can't physically chew their food? Rules 2

\*hello\*, Hi there! I can help you learn facts about penguins!

\*hello\*, Hi there! Would you like to here some fun facts?

\*hi\*, Hello! I can say some facts about coding!

\*hi\*, Hi! fun fact: I say fun facts!

\*hey\*, Hey there! I say fun facts about a bunch of different things!

\*good morning\*, Good morning! Ready to hear some fun facts?

\*what is trivia\*, Trivia is small bits of information that are often surprising!

\*tell me a fact\*, Sure! Did you know the longest hiccuping spree lasted for 68 years?

\*share a fun fact\*, Of course! Did you know that octopuses have nine brains?

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\*tell me something cool\*, Here's a cool fact: The inventor of the frisbee was turned into a frisbee after he died.

\*fact time\*, You got it! Did you know the dot over a lowercase "i" or "j" is called a "tittle"?

\*learn something\*, Alright! Did you know an octopus has blue blood because it contains copper?

\*Fun Fact about honey\*, Did you know honey never spoils? Archaeologists have found pots of honey in ancient tombs that are over 3000 years old!

\*tell me a fact about cows\*, Cows have best friends and get stressed out when separated.

\*teach me something\*, A day on Mercury lasts 1408 hours. Making it longer than a year on Mercury.

\*fact about animals\*, A group of porcupines is called a "prickle."

\*insect fact\*, Butterflies can taste with their feet.

\*facts about birds\*, Ravens can imitate human speech.

\*penguin fact\*, A gentoo penguin presents a pebble to a potential mate as a courtship ritual.

\*scientific fact\*, Hot water freezes faster than cold water. A phenomenon called the Mpemba effect.

\*coding fact\*, The first computer virus was called "Creeper" and was created in 1971. It displayed the message: "I'M THE CREEPER: CATCH ME IF YOU CAN." \*Fact about coding\*, The first computer programmer was a woman named Ada Lovelace. She wrote the first algorithm intended to be processed by a machine in the mid-1800s, long before modern computers existed.

\*animal fact\*, Sea otters hold hands when they sleep to keep from drifting apart.

\*fruit fact\*, Bananas are berries! But strawberries aren't.

\*whale fact\*, The heart of a blue whale weighs as much as a small car.

\*country fact\*, The heart of a blue whale weighs as much as a small car.

\*pineapple fact\*, Pineapples take about two years to grow from planting to harvest.

\*time fact\*, A jiffy is an actual unit of time! Equaling 1/100th of a second.

\*ant fact\*, Ants don't sleep, but they do take short breaks to rest.

\*basketball fact\*, LeBron James was the first player in NBA history to play with his son at the same time in the same team.

\*fact about the oscars\*, Did you know Kobe Bryant is the only basketball player to win an oscar? In 2018 Bryant won the Academy Award for best animated short film.

\*comic fact\*, Stan Lee made cameo appearances in almost every Marvel movie until his passing. but his first on-screen Marvel cameo was in the 1989 TV movie The Trial of the Incredible Hulk, where he appeared as a jury member in a courtroom scene.

\*space fact\*, Did you know a teaspoon of a neutron star would weigh about six billion tons?

\*ocean fact\*, The ocean is so vast that more than 80% of it remains unexplored.

\*dog fact\*, Dogs' noses are wet to help them absorb scent chemicals better.

\*cat fact\*, A cat's nose print is as unique as a human fingerprint.

\*history fact\*, Cleopatra lived closer in time to the moon landing than to the construction of the Great Pyramid of Giza.

\*bee fact\*, Bees can recognize human faces! like how we recognize each other.

\*random fact\*, It takes about 50 licks to finish one scoop of ice cream.

\*tree fact\*, Some trees can live over 5000 years.

\*chocolate fact\*, White chocolate isn't technically chocolate because it doesn't contain cocoa solids.

\*space fact\*, The moon is moving away from Earth at a rate of about 1.5 inches per year.

\*trivia please\*, The world's most expensive cheese is made from donkey milk and is called Pule cheese.

\*volcano fact\*, There's an underwater volcano in the Pacific Ocean that erupts so frequently it's nicknamed "the soda bottle."

\*weather fact\*, Lightning can strike the same place multiple times. The Empire State Building is struck about 25 times a year.

\*tell me a fact\*, Greenland is the world's largest island that isn't a continent.

\*human body fact\*, Your stomach gets a new lining every 3-4 days to prevent it from digesting itself.

\*sports fact\*, Golf is the only sport ever played on the moon.

\*food fact\*, Ketchup was once sold as medicine in the 1830s.  
\*bat fact\*, Bats are the only mammals capable of sustained flight.  
\*train fact\*, The fastest train in the world is the Shanghai Maglev! Which can reach speeds of 267 mph (430 km/h).  
\*camera fact\*, The first photograph ever taken required an exposure time of 8 hours.  
\*earth fact\*, Earth's magnetic field is flipping. It happens roughly every 300k years and we're overdue for the next flip.  
\*snail fact\*, Snails can sleep for up to three years if conditions aren't right for them.  
\*fact time\*, Monarch butterflies migrate up to 3k miles each year the longest migration of any insect.  
\*money fact\*, The largest denomination of U.S. currency ever printed was the \$100k bill featuring Woodrow Wilson.  
\*language fact\*, The sentence "The quick brown fox jumps over the lazy dog" uses every letter in the English alphabet.  
\*pencil fact\*, A single pencil can draw a line about 35 miles long or write roughly 50k English words.  
\*cereal fact\*, The first breakfast cereal ever invented was granola! Created in 1863.  
\*bird fact\*, The Arctic Tern holds the record for the longest migration. Traveling around 44K miles annually!  
\*eye fact\*, The human eye can distinguish about 10 million different colors. Implementation

**Mockup v0.1 Link:** <https://github.com/shivan-03/Group-GLS-Bot>

## Mockup v0.1 Screenshots

