University of Asia Pacific
Department of Computer Science and Engineering
Artificial Intelligence and Expert Systems Lab
(CSE 404)

Project Tittle: Technical Report on Religious, Folklore & Mythological Supernatural being Knowledgebase

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Problem Title

Prolog-Based Mythological, Religious & Folklore Knowledge System.

An Intelligent Prolog Framework to Explore, Query, and Understand Mythologies, Religions, and Folklore Across Cultures. This system provides a unified, logic-driven platform that brings together the beliefs, creatures, and spiritual entities from major world religions, ancient mythologies, and regional folklores.

Problem Description

This project aims to design a knowledgebase system that models mythological entities, their domains, relationships, and cultural associations using Prolog. It supports reasoning and querying about gods, creatures, symbols, and stories from various mythologies such as Greek, Norse, and Egyptian etc.

Mythologicia is a Prolog-based expert system that models mythological entities from various cultures, including Greek, Norse, and Egyptian traditions. The system captures both static and dynamic knowledge across mythologies, such as:

- Deities, creatures, and symbolic items
- Domains of power (e.g., war, wisdom, death)
- Parent-child and sibling relationships among gods
- Cross-cultural appearances of similar mythological roles

In addition to storing facts, the system supports logical reasoning and complex queries to derive meaningful insights, such as:

- Lineage tracing of gods and demigods
- Querying all gods associated with a specific domain
- Finding culturally equivalent entities across traditions
- Identifying symbolic connections and relationships

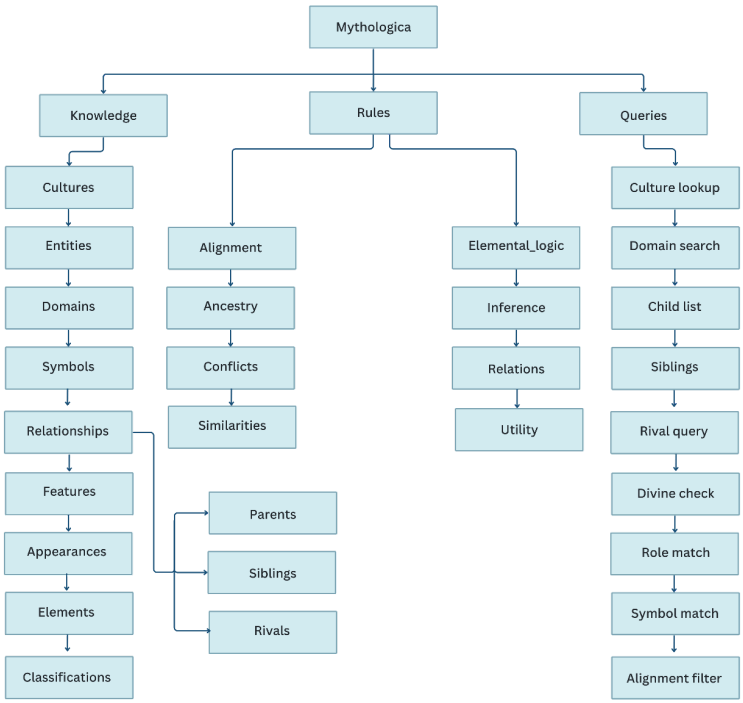
The project includes several information about mythology, folklore and religious beliefs at the same time. By doing so, the system acts as a tool for both educational and analytical exploration of comparative mythology and religious symbolism, supporting deeper understanding through logic-based interaction rather than static text.

Tools and Languages Used

Programming Language: The knowledgebase is implemented using Prolog, a declarative logic programming language particularly well-suited for building intelligent systems that rely on rules, relationships, and inference.
Platform: The project was developed and executed using SWI-Prolog
Editor: Visual Studio Code
Operating System: Windows
Tools: Draw.io + Canva for Diagram

Diagram/Figure

The diagrams, created with Canva and draw.io, visually represent the relationships and classifications of supernatural beings in this project, helping to clarify their connections and categories. They provide a clear overview that supports understanding of the topic.



Sample Input/Output

This section demonstrates example queries and their corresponding results from the Prolog program. It showcases how the system processes input to provide meaningful information about supernatural beings.

Query : Find all benevolent entities

```
Welcome to SWI-Prolog (threaded, 64 bits, version 9.2.9)
SWI-Prolog comes with ABSOLUTELY NO WARRANTY. This is free software.
Please run ?- license. for legal details.

For online help and background, visit https://www.swi-prolog.org
For built-in help, use ?- help(Topic). or ?- apropos(Word).

?-
% d:/4-1/Ai Lab/Mythologica.pl compiled 0.00 sec, 336 clauses
?- find_benevolent_entities(List).
List = [allah, jibreel, angel_mikael, god, jesus, michael, vishnu, brahma, ganesha|...].
```

Query: Which deities share the same domain as 'ra'?

```
?- shares_domain(ra, Other).
Other = apollo |
```

Query: Who are the ancestors of Thor?

```
?- ancestor_of(Ancestor, thor).
Ancestor = odin |
```

Query: Are Zeus and Loki in conflict?

```
?- conflict(zeus, loki).
false.

?-
```

Query: Explain the relationship between Shiva and Hades

```
?- explain_relation(shiva, hades).
shiva (Culture: hinduism, Type: deity, Alignment: complex)
hades (Culture: greek, Type: deity, Alignment: neutral)
true.
```

Query: Find all entities with the symbol 'serpent'

```
?- symbol(Entity, serpent).
Entity = loki .

?-
```

Query: Is Wendigo considered dangerous?

```
?- is_dangerous(wendigo).
true
```

Query: Find all entities that appear in the same story as Zeus

```
?- appears_together(zeus, Other).
false.

?-
```

Query: Find all rivals of Odin

```
?- rival(odin, Rival).
Rival = loki.

?-
```

Query: What features are associated with jinn?

```
?- associated_with(jinn, Feature).
Feature = smokeless_fire.

?-
```

Conclusion

This project aimed to build a structured knowledge base of supernatural beings rooted in religion, mythology, and folklore using Prolog. Through facts and inference rules, it models relationships, cultural origins, domains, symbols, and interactions between entities. The project demonstrates Prolog's strength in handling complex, interconnected data, enabling semantic queries like detecting conflicts, finding shared traits, and tracing mythological lineages. It offers a foundational system that can be extended for deeper cultural or narrative analysis.

Challenges

While developing this Prolog-based knowledge base, several challenges emerged due to the diversity and complexity of the subject matter. Some of the key difficulties encountered include:

- **Data Organization:**
  Collecting and categorizing diverse entities from various cultures required careful validation to avoid misclassification or cultural insensitivity.

- **Complex Relationships:**
  Representing complex relationships like ancestral lines, symbolic links, and domain overlaps posed logical design challenges, especially when managing recursion and bidirectional associations.

- **Rule Conflicts and Debugging:**
  Debugging Prolog rules was sometimes difficult due to overlapping logic or unintended recursive behavior, particularly in equivalence and relationship inference.

- **Balancing Depth and Simplicity:**
  Striking a balance between providing meaningful detail and keeping the knowledge base manageable was a constant challenge, especially when choosing which features or mythologies to include.

- **Tool Limitations:**
  Visualizing the data effectively required external tools like draw.io and Canva, since Prolog lacks built-in graphical representation support.

Despite these challenges, the process of building this knowledge base was both educational and rewarding. Each difficulty presented an opportunity to better understand Prolog's logic-based paradigm and how to structure complex, interconnected data.

Source Code Link- **Github**