First Sinhala Chatbot in action (ppt)

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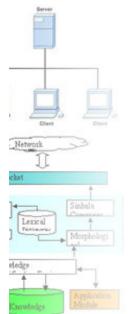


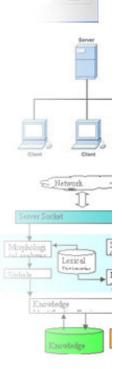




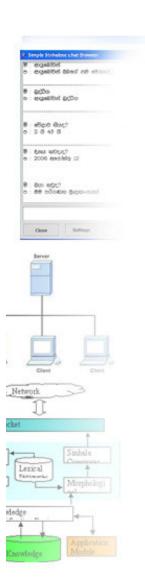


Sri Lanka Association for Artificial Intelligence





First Sinhala Chatbot in action



Budditha Hettige

Department of Statistics and Computer Science,

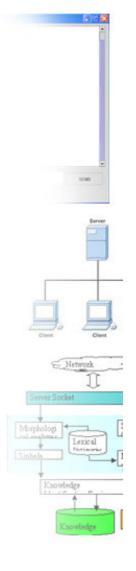
Faculty of Applied Science,

University of Sri Jayewardenepura, Sri Lanka.

&

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Faculty of Information Technology, University of Moratuwa, Sri Lanka.





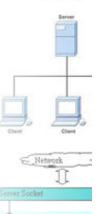
Introduction

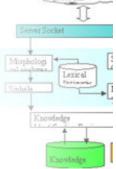




- Introduction: Chat systems
- Structure of a Chatbot System
- Some Popular Chatbot Systems
- Design -Sinhala Chatbot System
- Implementation
- Chatbot in action
- Further work





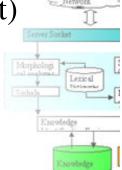


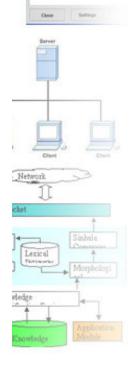


Chat systems



- Computer-based chat system is one of the most popular commutation methods used in the modern world
 - Enable communication using natural languages such as English
 - Types of Chat Systems
 - Human-Human dialog systems
 - Human-Computer dialog systems (Chatbot)





Human-Human dialog systems



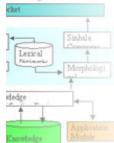
Development is easy

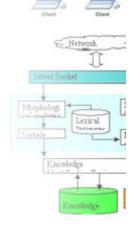
Work only as a mediator between two humans who actually manipulates the respective natural language

Do not need machine level natural language processing abilities



Yahoo Messenger, MSN Messenger



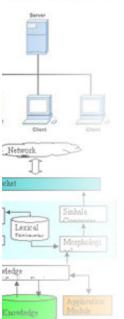


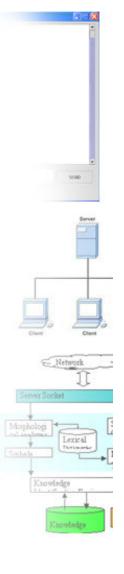
Human-Computer dialog systems (Chatbot)



Is a more challenging task

All these chat systems are available in
 English language



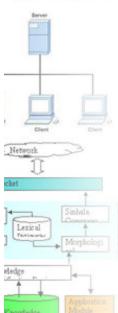


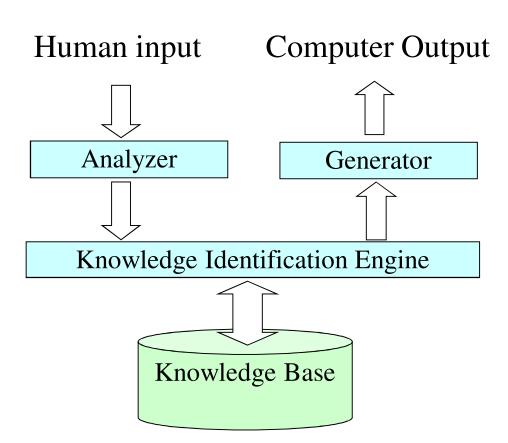


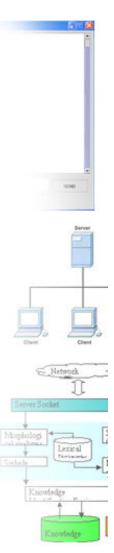
Overview: Chatbot System











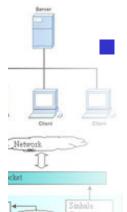


Analyzer

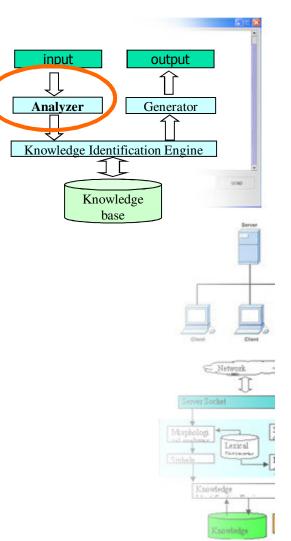




Analyzer reads input sentence from user and analyze Syntax of the given sentence



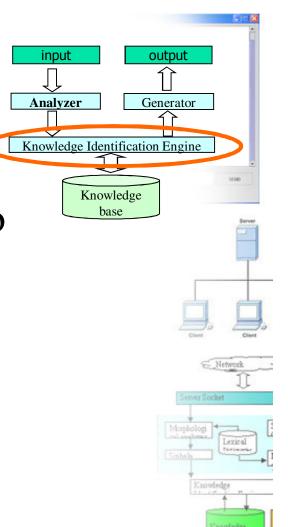
Identify appropriate Tags andPatterns

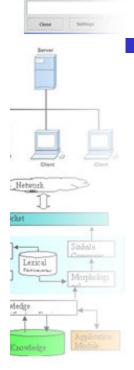


Knowledge Identification Engine

Reads Tags and Patterns from analyzer and find the suitable answer from Knowledge base

 Use some Search mechanism to identify the correct answer





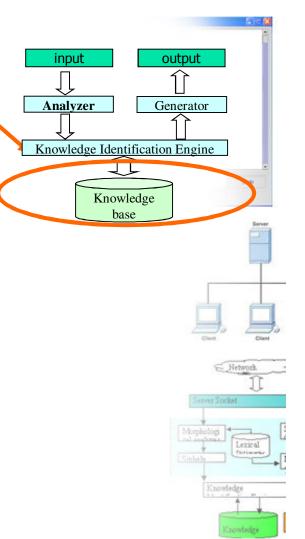


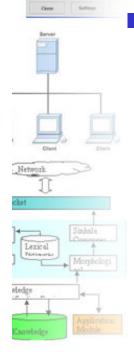




Is a database

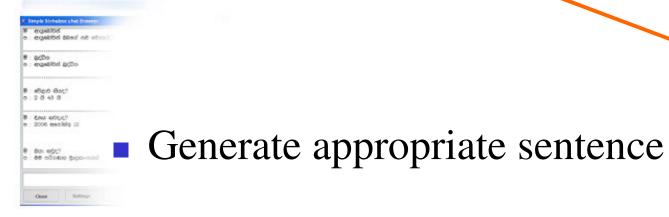
Contains knowledge of the chatbot system

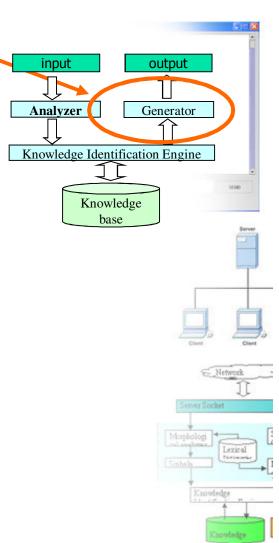


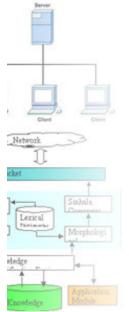


Generator







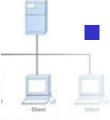




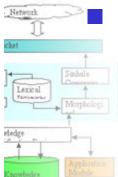




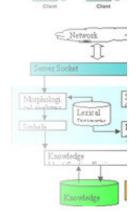
ELIZA is an early Artificial Intelligent program that was written in the mid 1960s by Joseph Weizenbaum to simulate a non-directive psychotherapist.



Input sentences are analyzed on the basis of decomposition rules



ELIZA had very limited natural language processing capabilities





Elizabeth





Elizabeth is another Chatbot system that adaptation of the Eliza

Elizabeth uses to store knowledge as a script in a text file

Client Control

each line is started with a script command notation

Elizabeth has the ability to produce a grammar structure analysis of a sentence using a set of input transformation rules to represent grammar rules



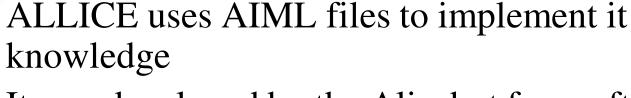
A.L.I.C.E



Artificial Linguistic Internet Computer Entity



is a software robot or program that you can chat with using natural language



It was developed by the Alicebot free software community during 1995-2000 to enable people to input dialogue pattern knowledge into Chatbots based on the ALICE free software technology



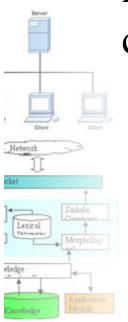
A.L.I.C.E continued.

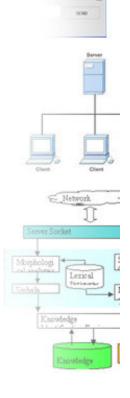




ALLICE uses pattern-matching algorithm to identify user input and this algorithm uses depth-first search techniques

ALICE has passed the Turing test in two consecutive years







Sinhala Chatbot System

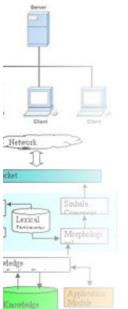


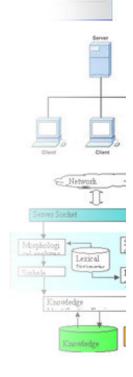


 Can Communicate through Sinhala Natural Language

Can answer simple questions

Can do the small operations

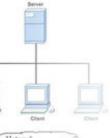


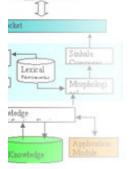


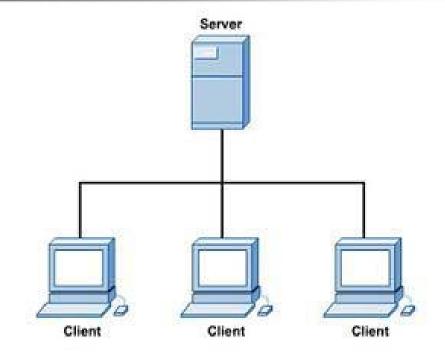


Design: Client-Server model









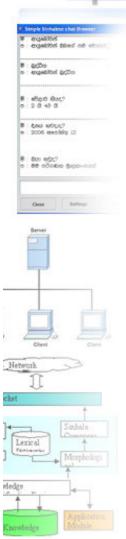
- Client-sever model
- Client can use chatbot through client server network

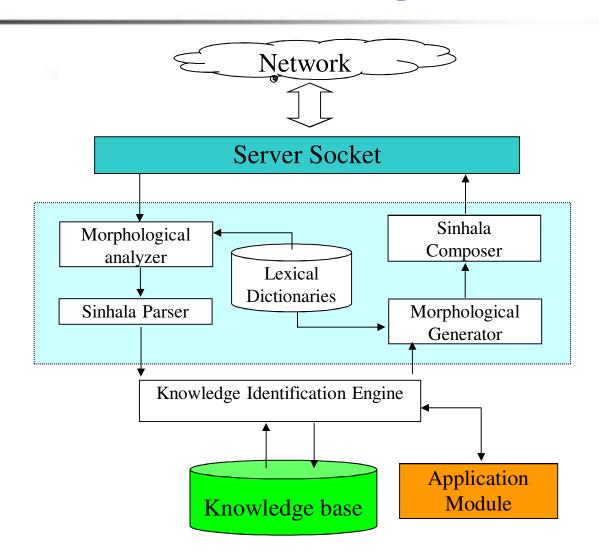


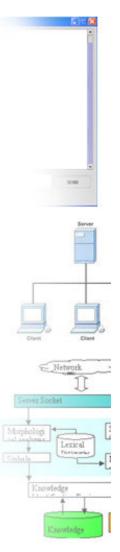


Server side Design









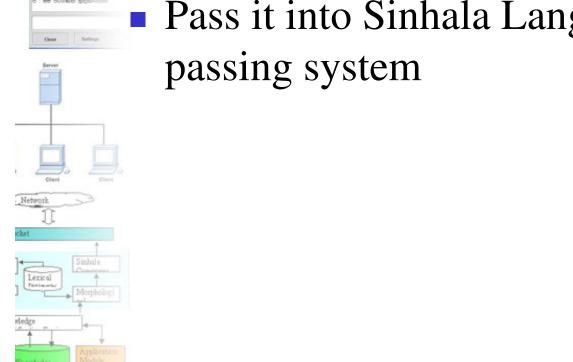


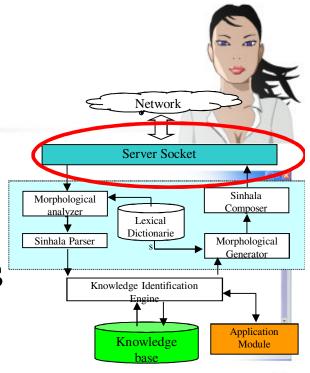
Server Socket

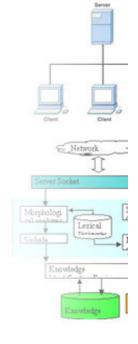


Reads data string from clients

Pass it into Sinhala Language







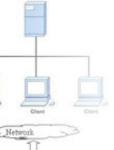


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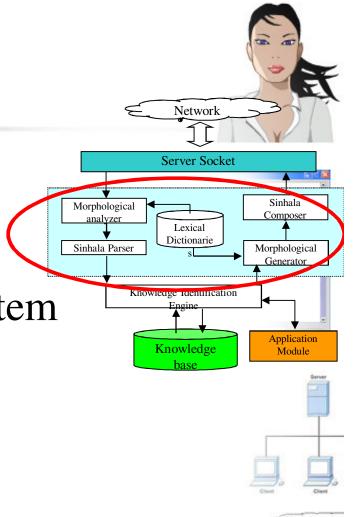
Sinhala language passing system

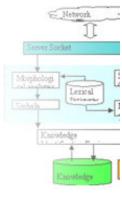
Sinhala language passing system contains





- Morphological Analyzer
- Sinhala Parser
- Three Dictionaries
- Morphological Generator
- Sinhala Composer







Morphological Analyzer

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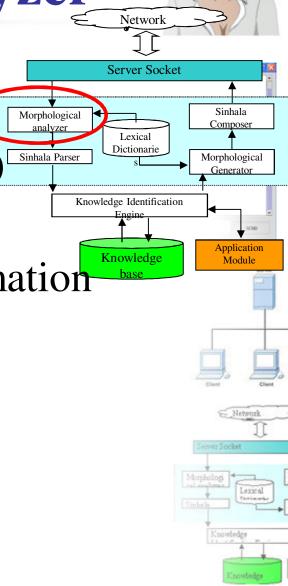
Morphologi

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Reads a data string (sentence) word by word

Identifies grammatical information

Send each information into Sinhala parser





Sinhala Parser

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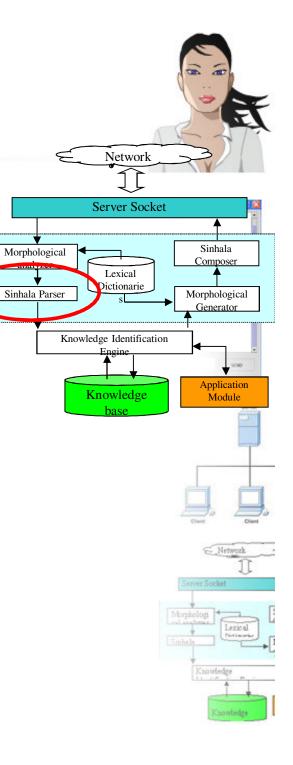
9 : \$0.00 80.00

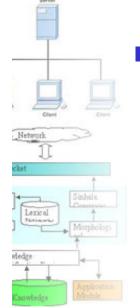
9 : \$0.00 80.00

9 : \$0.00

Analyze syntax of the Sinhala Sentence

Identify the sentence patterns







Three Dictionaries



Base dictionary

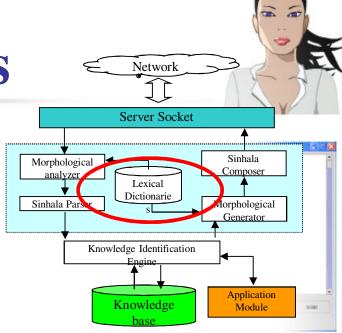
Stores base words

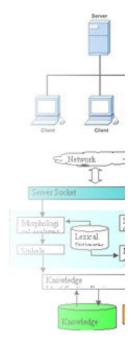


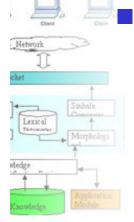
Stores Grammatical rules

Concept dictionary

Stores synonyms and antonyms







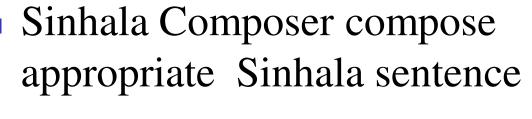


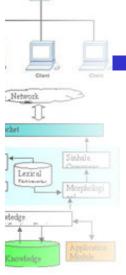
Morphological Generator

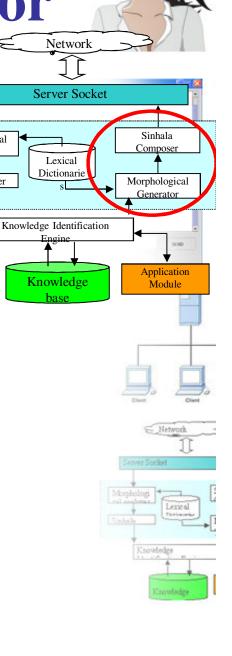
and Sinhala composer



 Morphological generator generates appropriate words







Morphological

Sinhala Parser

Lexical

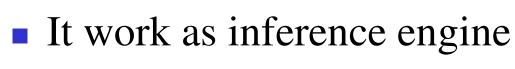


Knowledge

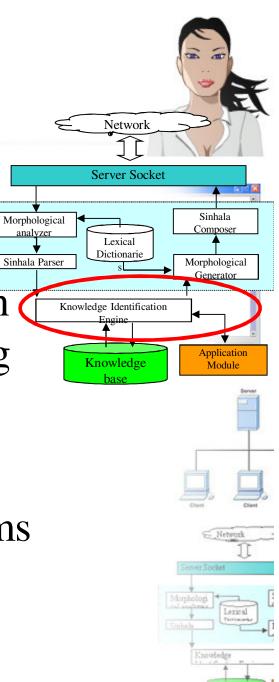
Identification Engine

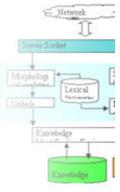


Reads all the information given from Sinhala Language passing System



Uses pattern machine algorithms to identify user input







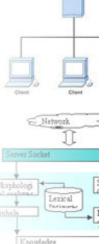
Some question patterns

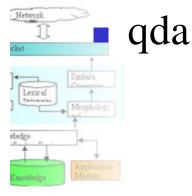




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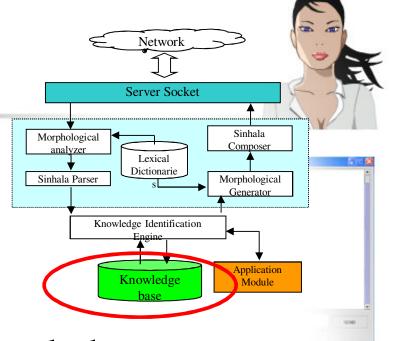
- Message
- Question with yes/no answer form
- Question with more answers
- Question with command
- Unknown question
- Question with direct answer





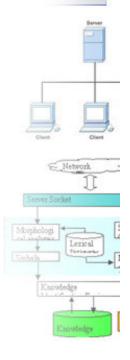


Knowledge base



 Stores all the requires knowledge in a chatbot system

Implemented using SWI- Prolog database





Application module

Simple Similations and Dispersion

8 management described and education

8 septime or engagement group

8 septime dispersion group

8 septime dispersion group

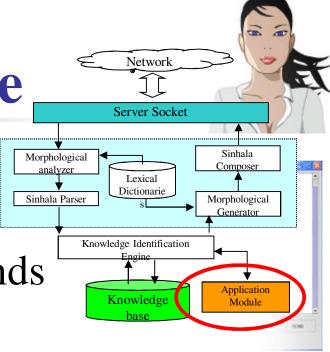
8 septime dispersion group

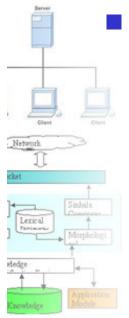
8 dispersion group

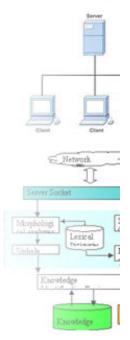
Can run appropriate commands and read the results



- Can run System Command
- Open / Close applications etc.









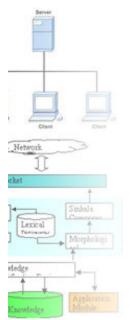
Software requirements

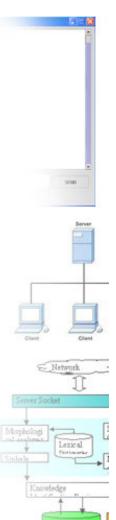




Software

- SWI- Prolog 1.4.7
- JDK 1.4

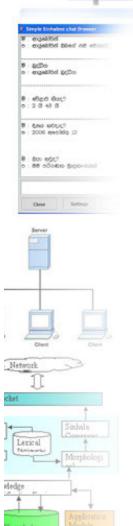


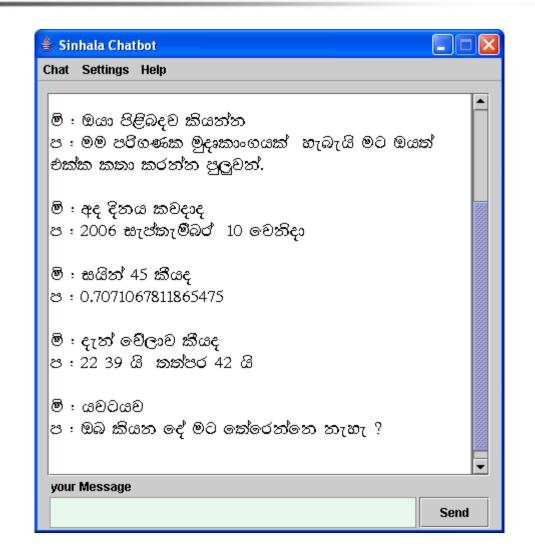


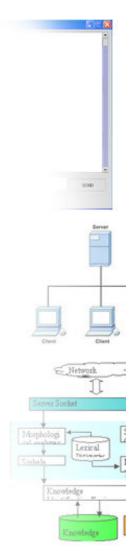


Sinhala Chatbot in action





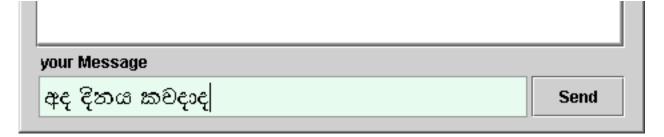




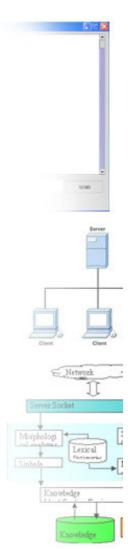




Input Sentence



- Morphological Analyzer identified
 - adjective(අද).
 - noun(දිනය).
 - verb(කවදාද).

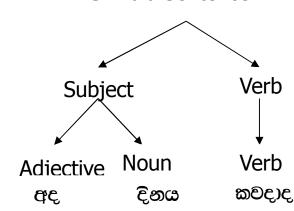




Sinhala Parser

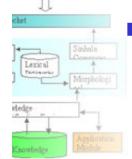
Sinhala Sentence



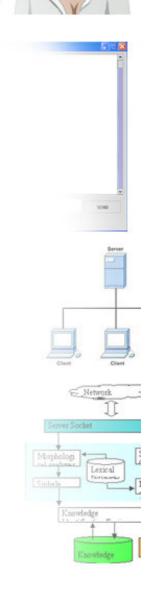




Knowledge Identification Engine Pattern(today, date, qus).



Knowledge Base do_action(today, date, qus).



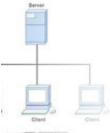


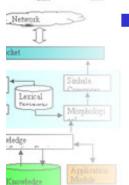


Application Module

printtoday(PD):-

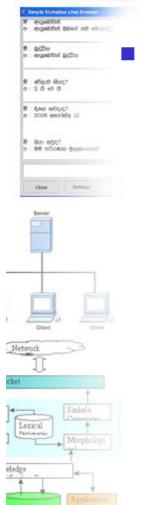
date(A),assert(A),date(Y,M,D),retract(A),
mounth(M,Mo),
string_concat(Y, ' ', Year),
string_concat(Mo, ' ', Month),
string_concat(Year, Month, YM),
string_concat(YM,' ', PYM),
string_concat(PYM, D, P),
string_concat(P, ' fjksod', PD).



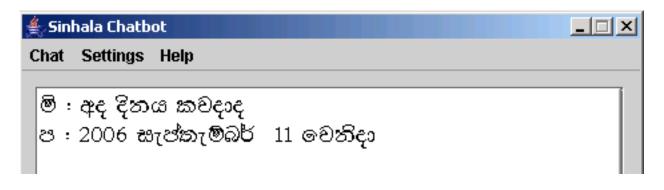


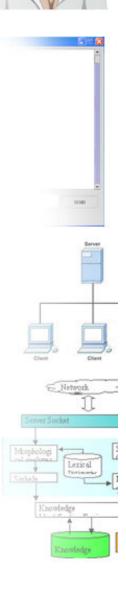
Morphological Generator and Composer generate appropriate Sinhala sentence





Chatbot System Output





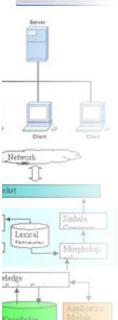


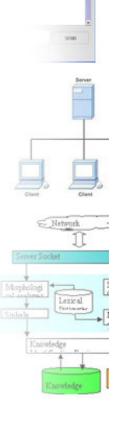
Further work





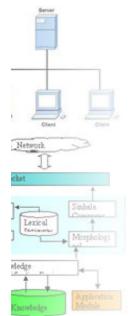
Extending the chatbot to operate on a more specific domain







B equiple foliation class (invested in a companied of a companied



Thank you!





