**PROJECT REPORT using C++**

**BTECH CSE-7B**

**By**

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OBJECTIVE/ PROBLEM STATEMENT

The objective of my project is coding in C++ to enable Natural Language processing via chatbot.

The chatbot greets the user, asks them about their name, asks them about how they are feeling and bids farewell.

The chatbot is interactive and answers to the user's text based on their mood.

SCOPE OF PROJECT

Intelligent enough to understand the patterns and put across answers that are appropriate and relevant, chatbots have come a long way. With efficient chatbot development practices, they can be made capable of literally engulfing and processing whatever information comes their way. They learn and develop a predictive analytical capability just like humans.

Eventually, all they need is a stimulus.

Simple chatbots were capable of matching a text string and offering an answer only when the exact match is found. When we said chatbots have come a long way, we actually meant it. The advanced chatbots today have a learning curve powered by artificial intelligence and are leading them to be of great significance.

The purpose of the chat application is to allow users to be able to chat with each other, like a normal chat application.

The users will be able to chat with each other, most likely only from user to user, no group chatting will be developed, unless there is time to do so.

SPECIFICATION OF APPLICATION FUNCTIONALITIES

Generally speaking, a bot is a piece of software designed to perform an automated task. And a chatbot is supposed to conduct a conversation with a human using textual or auditory methods. Chatbots simulate how a human would behave as a conversational partner and thus can answer questions and carry the conversation.

The program or similar algorithms can be used to cultivate highly intelligent robots which may be able to communicate with users using voice.

This can also be applied as a 24/7 help centre chat on various websites.

The chatbots can answer user’s queries and provide them with feasible solutions to their problems.

Chatbot applications streamline interactions between people and services, enhancing customer experience. At the same time, they offer companies new opportunities to improve the customers engagement process and operational efficiency by reducing the typical cost of customer service.

**ALGORITHMS IMPLEMENTED**

#algorithm\_AIC

Void AIC:: delay()

{

}

Void AIC:: check()

String declaration

{Case\_conversion()

If(string\_compare)

{

//Program flows forward

}

Else

{

Check(s); //program loops back

}

}

Void AIC::greet()

{case\_conversion()

If(string\_compare)

{

Print(statement1);

Input()

If(string\_compare)

{

print(statment1.1);

exit(0)

}

Else{

Print(statement2.1)

Exit(0);

}

}

Else if(string\_compare)

{

print(statement2);

Input()

If(string\_compare)

{

print(statment1.1);

exit(0)

}

Else{

Print(statement2.1)

Exit(0);

}

}

Else if(string\_compare)

{

Print(statement3

Input()

If(string\_compare)

{

print(statment1.1);

exit(0)

}

Else{

Print(statement2.1)

Exit(0);

}

}

Else

{

//program reverts back

}

}

int AIC:: main()

{

clscr()

string declaration;

print(“you’ve entered a chatbot”);

input;

check(string);

greet(string);

return(0);

}

**Source code**

#include<string>

#include<ctime>

#include<iostream>

#include<algorithm>

using namespace std;

void delay(unsigned int mseconds)

{

clock\_t goal = mseconds + clock();

while (goal > clock());

}

void check(string s){

string w;

transform(s.begin(),s.end(),s.begin(),::tolower);

if(s=="hello" || s=="hi" || s=="hey")

{

delay(3000);

cout<<"\n \t \t HELLO!! What can I call you?? \n";

getline(cin,s);

delay(3000);

cout<<"\n \t \t HELLO "<<s<<". Nice name!! It was nice meeting you!! \n \n";

getline(cin,w);

}

else{

delay(3000);

cout<<"\n \t \t I'm sorry. I don't get what you're trying to say cuz i'm string sensitive. Try with HELLO or Hello or hello or hi or HI \n \n";

string s;

getline(cin,s);

check(s);

}

}

void greet(string w)

{

transform(w.begin(),w.end(),w.begin(),::tolower);

if(w=="g")

{

delay(3000);

cout<<"\n \t \t YAYYYY!!! I am so glad for you. Keep smiling. CYA LATER \n";

getline(cin,w);

if(w=="bye")

{ delay(3000);

cout<<"\n \t \t bye<3 \n";

exit(0);

}

else{delay(3000);

cout<<"\n \t \tI would love to but i don't know how to talk beyond that so,bye \n";

exit(0);

}

}

else if(w=="o")

{

delay(3000);

cout<<"\n \t \t Hey. Don't worry, you'll be happier very soon. You are amazing. I hope I made you feel good in some way. CYA LATER :)\n \n";

getline(cin,w);

if(w=="bye")

{delay(3000);

cout<<"\n \t \t bye<3 \n";

exit(0);

}

else{delay(3000);

cout<<"\n \t \t As much as I would love to but i don't know how to talk beyond that so,bye \n";

exit(0);

}

}

else if(w=="s")

{

delay(3000);

cout<<"\n \t \t HEY... Don't lose hope. Things will get better. Try doing things that you love, have a chocolate(if you're not allergic). These activities release serotonin which makes humans happy. It was great talking to you. CYA SOON \n \n";

getline(cin,w);

if(w=="bye")

{ delay(3000);

cout<<"\n \t \t bye<3 \n ";

exit(0);

}

else{

delay(3000);

cout<<"\n \t \t As much as I would love to but i don't know how to talk beyond that so,bye \n";

exit(0);

}

}

else

{

delay(3000);

cout<<"\n \t \t Tell me How do you feel today?? Type G for good, O for okay and S for sad \n \n";

getline(cin,w);

greet(w);

}

}

int main()

{ system("cls");

string s;

string w;

string r;

cout<<"---------you've entered a chatbot. say 'hi' to start a conversation--------- \n";

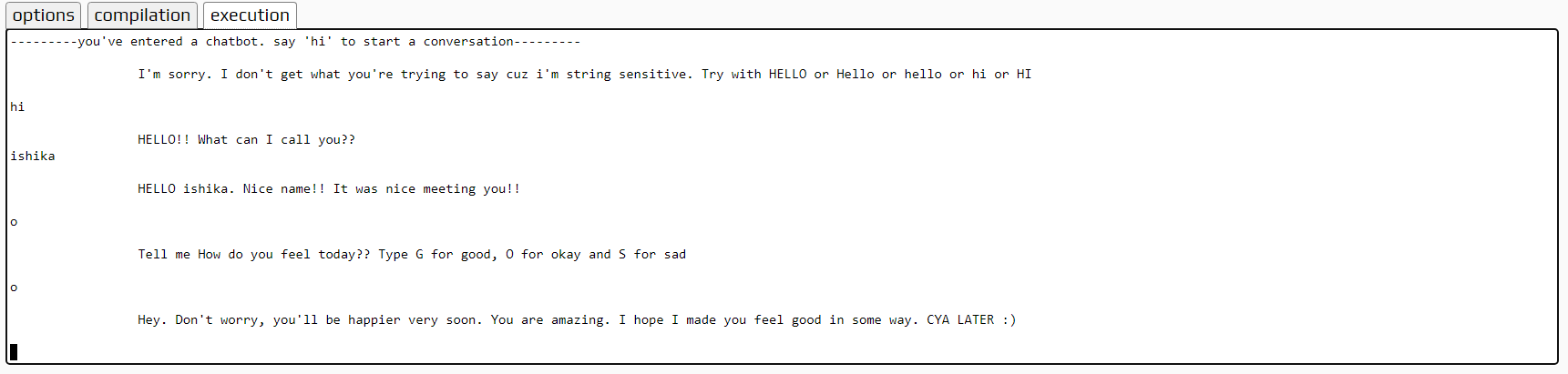
check(s);

greet(w);

return 0;

}

OUTPUT

****

HARDWARE AND SOFTWARE ENVIRONMENT

The program was coded on a windows 10 32 bits software with AMD Ryzen processor.

The application used for the same was code::blocks. Code::blocks has certain varying syntax for some specific functions like delay and cls.

You might not get the desired output on other softwares without subtle changes in the code.

TECHNOLOGY USED- C++

RESULTS, ALGORITHM COMPLEXITY ANALYSIS AND DISCUSSION

The algorithm of our project consisted of 5 important functions. The functions were as follows:-

⦁ Delay(): The delay function is built in the ctime library in c++. We call the delay function after making a void delay() where we typecast clock to the system clock and further adding a while loop which will return true only if the system clock exceeds by certain milliseconds. Therefore, the time complexity shown by this function is O(n) where n is the number of clock cycles.

⦁ If-else if-else and nested if-else: Our algorithm consists of many if-elseif-else and nested if-else functions. While if-else-if have a complexity of O(n) nested if-else has time complexity of O(n+m).

⦁ String transform tolower(): A transform function is introduced in our code where the compiler first converts the user’s input into lower case from beginning to end of the string and further compares. The conversion happens linearly and hence the complexity is O(n)

⦁ String compare(): String compare function is used in our code to compare the string input from the user with some predefined words from beginning to the end of the string linearly. Therefore, the complexity is at O(n).

⦁ Recursion: In case a user gives an input that is foreign to our code, it gives an apology text and calls the function again to give the user another chance until the input is understandable to it. Therefore, the complexity is O(n).

Therefore, the complexity of the overall code is O(n+m).

LIMITATIONS/ CONSTRAINTS OF THE PROJECT

The project is made on C++ which isn’t a very supportive environment for AI.

This project and its derivatives can be performed on python with lesser lines of code and higher scope.

Other cons of chatbots include:

⦁ Limited Responses for Customers. Although using chatbots may provide faster customer service overall, they aren't perfect

⦁ Customers Could Become Frustrated. Because many chatbots work from a limited database, they can't improvise.

⦁ Complex Chatbots Could Cost More.

⦁ Not All Business Can Use Chatbots.

CONCLUSION AND FUTURE EXTENSION OF THE PROJECT

Same as functionalities-

The future of chatbots is that businesses will automate simple payments and allow users to pay directly over live chat or Facebook Messenger apps.

The instant process makes the customer happy and improves customer satisfaction.

MasterCard has also launched a chatbot, especially for customer payments.

LIST OF PROJECT DELIVERABLES

1. Engineering report
2. Faster response time
3. New knowledge
4. New experience
5. Better customer service

REFERENCES

AI and Web-Based Human-Like Interactive University Chatbot (UNIBOT)

LIST OF ABBREVIATIONS

1. Natural Language Understanding (NLU) and Natural Language Processing (NLP)
2. Natural Language Processing (NLP)
3. Machine Learning (ML)
4. Artificial Intelligence (AI)
5. Deep Learning (DL)
6. Messaging as a Platform (MaaP)
7. Conversation as a Platform (CaaP)
8. Application to Person (A2P)