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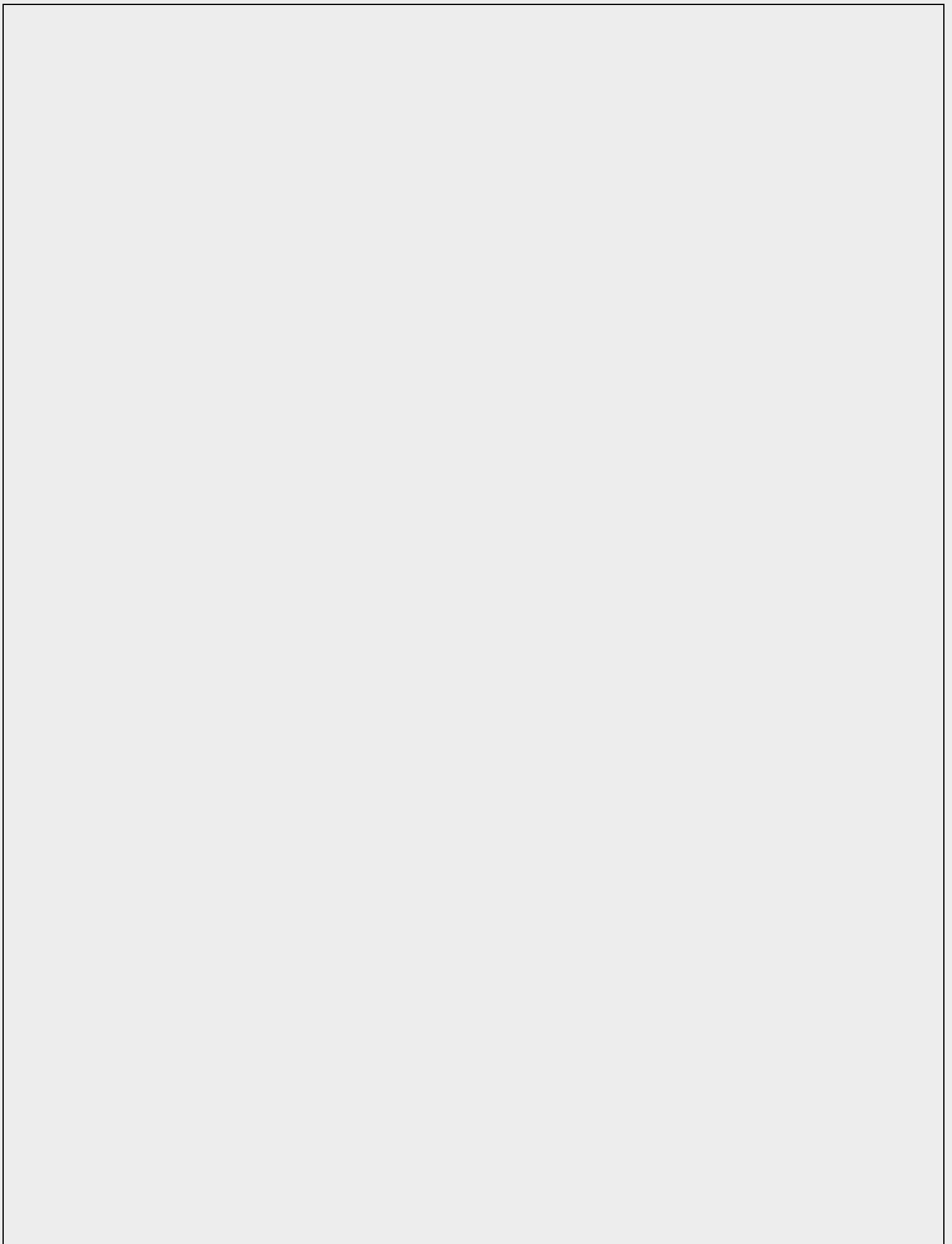
**AI – Artificial Intelligence**

**Team – 03**

**Phase 3 Project**

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# CHATBOT IN PYTHON

**Abstract** - A chatbot is a computer software program that conducts a conversation via auditory or textual methods. This software is used to perform tasks such as quickly responding to users, informing them, helping to purchase products and providing better service to customers. Chatbots are programs that work on Artificial Intelligence (AI) & Machine Learning Platform. Chatbot has become more popular in business groups right now as it can reduce customer service costs and handles multiple users at a time. But yet to accomplish many tasks there is a need to make chatbots as efficient as possible. In this project, we provide the design of a chatbot, which provides a genuine and accurate answer for any query using Artificial Intelligence Markup Language (AIML) and Latent Semantic Analysis (LSA) with python platform.

**Key Words:** Artificial Intelligence Markup Language (AIML), Latent Semantic Analysis (LSA), Pattern Matching, Chatbot, Flask Web-Framework, HCI

## 1. INTRODUCTION :

A chatbot is an automated software program that interacts with humans. A chatbot is merely a computer program that fundamentally simulates human conversations. A chatbot that functions through AI and machine learning has an artificial neural

network inspired by the neural nodes of the human brain. Chatbots are programs that can do talk like human conversations very easily. For example, Facebook has a machine learning chatbot that creates a platform for companies to interact with their consumers through the Facebook Messenger application. In 2016, chatbots became too popular on Messenger. By the consequences is noted that 2016 was the entire year of chatbots. The software industry is mainly oriented on chatbots. Thousands of chatbots are invented on startups and used by the businesses to improve their customer service, keeping them hanging by a kind communication. According to research, nowadays chatbots are used to solve a number of business tasks across many industries like E-Commerce, Insurance, Banking, Healthcare, Finance, Legal, Telecom, Logistics, Retail, Auto, Leisure, Travel, Sports, Entertainment, Media and many others. Thus that was the moment to look at the chatbots as a new technology in the communication field. Nowadays various companies are using chatbots to answer quickly and efficiently some frequented asking questions from their own customers.

AIML and LSA are used for creating chatbots. Artificial Intelligence Markup Language (AIML) and Latent Semantic Analysis (LSA) are used for developing chatbots, which are used to define general pattern-based queries. This pattern can also be used to give random responses for the same query in the chatbot. LSA is a Latent Semantic Analysis technology in python, which is utilized to discover likenesses between words as vector representation. So that the unanswered queries by AIML will be viewed as a reply by LSA.

## **2. RELATED WORK Chatbots :**

## **Are They Really Useful?**

Author: Bayan Abu Shawar,

Eric Atwell The paper is basically focused on an academic paper highlighting some case studies and including a brief history of chatbots that extends back to the earliest experiments such as ELIZA (c. 1966). The paper is based on making a chatbot using AIML patterns with ALICE.[1]

## **A Web-based Platform for Collection of Human Chatbot Interactions :**

Author: Lue Lin, Luis Fdo. D'Haro, and Rafael Banchs

The paper presents a chatbot design which is work on the web-based framework. Lue Line, Luis Fernando D'Haro and Rafael E. Banchs in HAI 2016 proposed the Web Chat which was a crowd-sourced initiative that could collect and annotate human chatbot interactions. [12]

## **The anatomy of ALICE :**

Author: Wallace, Richard S.

In this paper, Dr. Richard S. Wallace proposed the technical presentation of Artificial Linguistic Internet Computer Entity (A.L.I.C.E.) as well as Artificial Intelligence Markup Language (A.I.M.L.), which are set in the background by philosophical and historical ruminations occurring on human consciousness. [13]

## **CHARLIE: An AIML-based Chatterbot as an Interface in INES :**

Author: Mikic, Burguillo, Llamas, Rodríguez,

Rodríguez The paper focuses on the description of this chatbot called CHARLIE (CHAtteR Learning Interface Entity). CHARLIE can communicate with students in natural language and answer general or domain-specific questions. The student can also request questionnaires or free questions from the bot to test their knowledge.[10]

## **An e-business chatbot using AIML and LSA**

Author: N. Thomas

In this paper, Thomas T provided the way by which the chatbot is planned in a manner that for a single template, it gives irregular responses. LSA based inquiries are giving the right reactions to random responses. [18]

## **3. ARTIFICIAL INTELLIGENCE MARKUP LANGUAGE :**

Extensible Markup Language (XML) is the base for the derivation of Artificial Intelligence Markup Language (AIML). It has a class of data object called an AIML object that describes the behavior of computer programs. It consists of units or tag called topics and categories. In AIML, categories are basic units of knowledge. There each category consists of a pattern that contains input and template which contain the answer of chatbot based on queries. To build a Chatbot, mainly a flexible, easy to understand and universal language is needed which will be AIML. AIML, a derivative of XML, is one of the widely used approaches that satisfy the

requirements based on general queries. AIML represents the knowledge put into Chatbots and is based on the software technology developed for A.L.I.C.E. (the Artificial Linguistic Internet Computer Entity). It has the ability to characterize the type of data object and describe partial conductance of the programs that it processes. These objects consist of two units: topics and categories. Thus the data contained in these categories are either parsed or unparsed. The purpose of the AIML language is to simplify the job of conversational modeling, in a “stimulus-response” process. It is also a mark-up language based on XML and depends on tags which are the identifiers that make snippets of codes to send commands into the Chatbot. The data object class is defined in AIML as an AIML object, and the responsibility of these objects is modeling conversational patterns. Each AIML object is the language tag that associates with a language command using patterns. The general structure of AIML objects is put forward by List of parameters the most important object among the AIML objects is category, pattern, and template.

<category>

<pattern>User Input</pattern>

<template>

Corresponding Response to input

</template>

</category>

#### **4. SYSTEM DESIGN :**

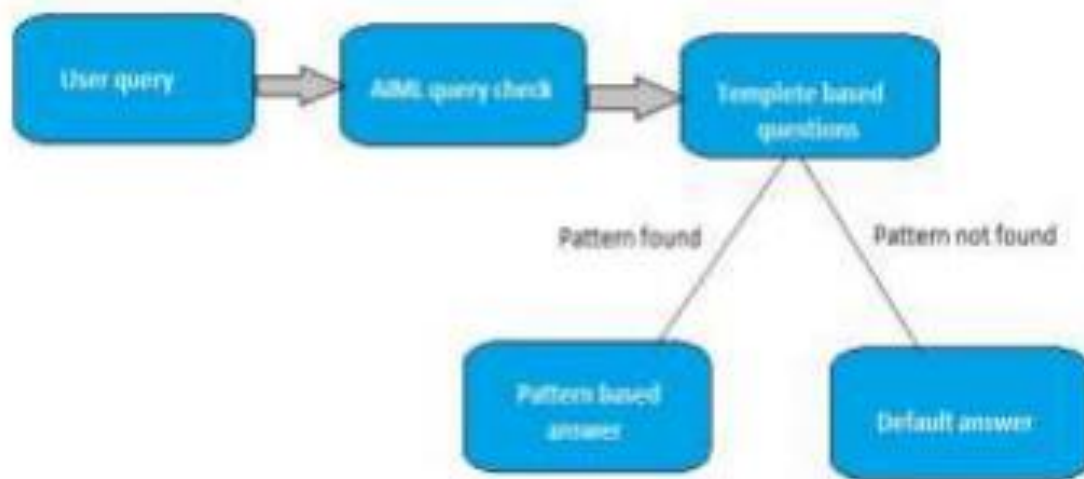
Systems design is the process of defining the architecture, components, modules, interfaces, and data for a given system to satisfy specified requirements. Systems design could be the application of various systems theory to product development. There is some overlap with the disciplines of systems analysis, systems architecture and system designing.

A chatbot is a computer program, which is designed to simulate a conversation with human users using patterns, especially over the internet. They are our online assistants that offer different services through chatting over the internet. To build artificial intelligence chatbots through Python, you will require an AIML package (Artificial Intelligence Markup Language). First, we need to create a standard startup file without any pattern and load aiml b in the kernel. Add random response patterns that would make dialogue interesting.

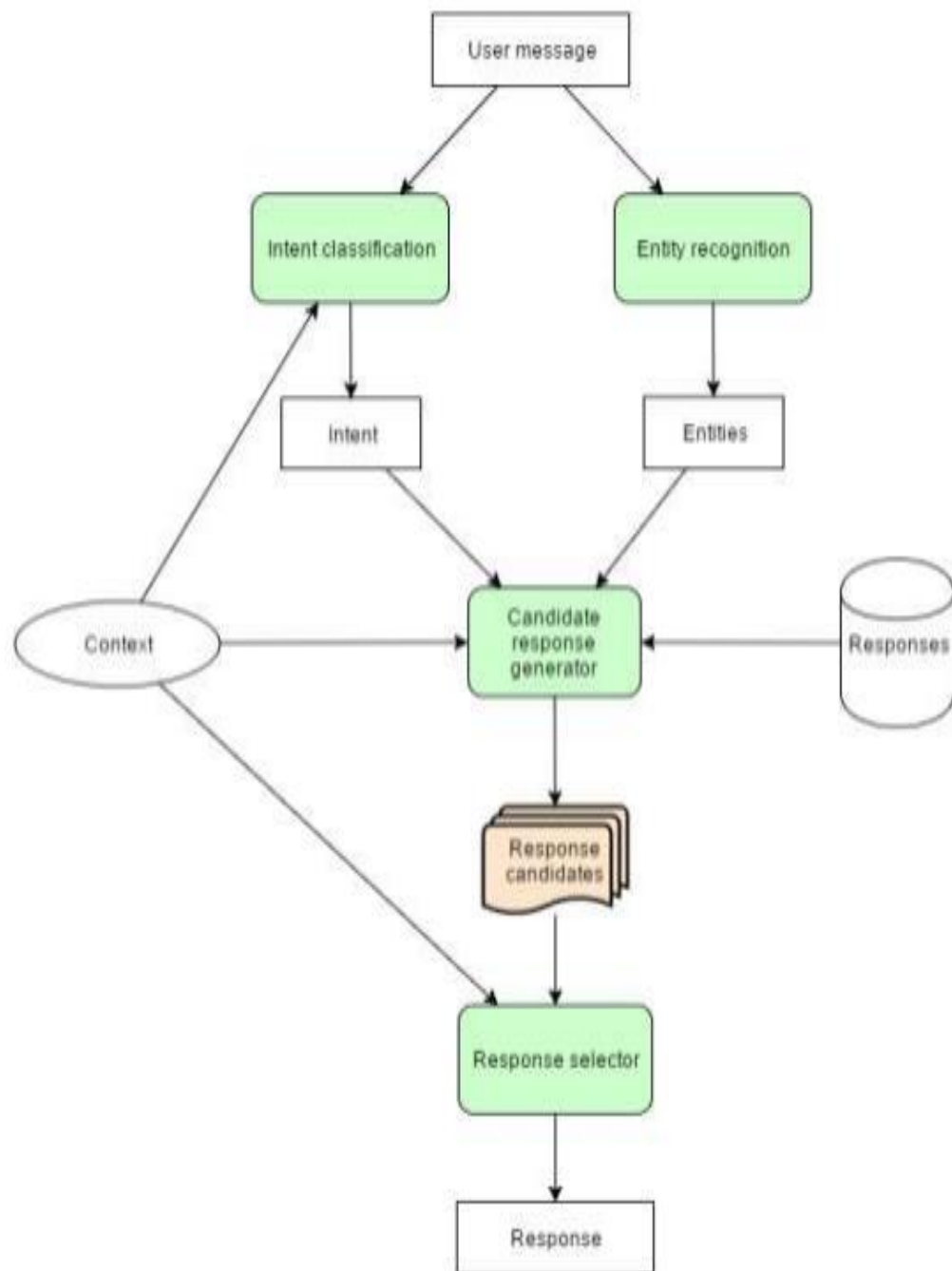
Now, to code your own AIML files, look for some files which are available beforehand. For example, browse all among files from the Alice Bot website. The startup file we will be creating will act as a separate entity. As a result of which, we will have more AIML files without a source code



modification. The program will start running when there are enough AIML files for loading. This was an introduction to how to make AI chatbot using Python. Now, let's proceed further and see which particular library can be implemented for building an AI Chatbot.



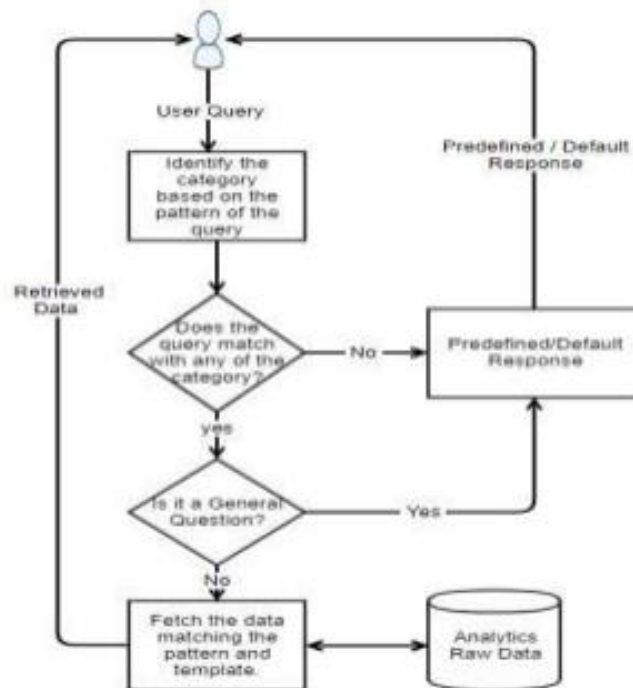
## **System Architecture**



**System Module**

## 5. PROPOSED SYSTEM :

In this work, we have developed an interactive chatbot using the Flask framework in python, and the workflow of the proposed framework is shown in Fig-5.1. User discussion, as a rule, begins with the simple welcome or general questions. User inquiries are first taken care of by AIML check, to check whether the entered inquiry is AIML script or not. AIML is characterized by general inquiries, queries, and welcome which is replied by utilizing AIML formats. Once the bot-user types in the query in the chatbot, the AIML developed chatbot will identify the category that contains the query pattern. Here the bot-user is expected to type in the query in a predefined pattern. Once the query pattern is matched, the template of the category that contains the response is sent back to the bot-user.



**Proposed Model**

## 6. IMPLEMENTATION :

This section covers the design and implementation of a different module of the bot, which contains the design of the PYTHON module, the Translator API and the AIML module.



Fig 6.1: Implementation



Fig 6.2: Chatbot Interface



remember past conversations and learn from them to answer new ones. The challenge would be conversing with the various multiple bot users and multiple users.

As future work, we can make a chatbot that is based on AIML and LSA. This technology will enable a client to interact with a chatbot in a more natural fashion. We can enhance the discussion by including and changing patterns and templates for general client queries using AIML and the right response are given more often than LSA.

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