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|---|---|
|  | **UNIVERSIDADE ESTÁCIO DE SÁ**<br>POLO DALPLAZA CENTER – SÃO LUÍS/MA<br>DESENVOLVIMENTO FULL STACK - 22.3<br>Relatório da Missão Prática \| Nível 3 \| Mundo 5 |
| Aluno: | Lucas Silva Costa |
| Professor: | Jhonatan Alves |
| Repositório: | https://github.com/LutchasDev/M5-nivel4-main |

## Título da Prática: Dando inteligência ao software

**Objetivos da Prática:**

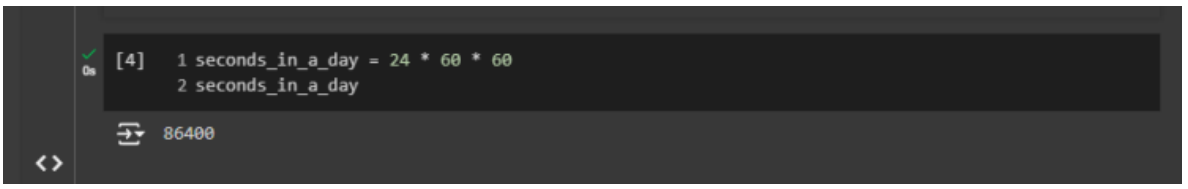
- Configurar o ambiente Google Colab;
- Descrever tarefas diversas relacionadas ao Processamento de Linguagem Natural;
- Descrever o processo de identificação de entidades a partir de textos;
- Descrever o processo de extração de frases-chave a partir de textos;
- Descrever o processo de identificação de linguagem predominante a partir de textos;

## Microatividade 1

### Configurar o ambiente Google Colab

### Procedimentos:

1. Acesse a página do Google Colab: https://colab.google
2. No menu superior direito, seleciona a opção “Open Colab”;
3. Na nova aba aberta no navegador, faça login (botão no canto superior direito) com uma conta Google;
4. Após o login, feche a janela modal exibida, para visualizar o notebook previamente existente “Olá, este é o Colaboratory”;
5. Navegue pela página e repare que existem blocos de texto seguidos de blocos de código. Esses últimos são caracterizados por possuírem uma cor de fundo diferente, em cinza, e por terem uma setinha que pode ser clicada, o que fará com o código contido no bloco seja executado e seu resultado apresentado a seguir. Veja o print abaixo (onde a setinha que permite a execução foi destacada com um quadrado vermelho):




6. Leia os blocos de texto de cada seção e, a seguir, clique para executar os exemplos de código. Isso lhe permitirá um bom entendimento do funcionamento do Google Colab.

## Microatividade 2

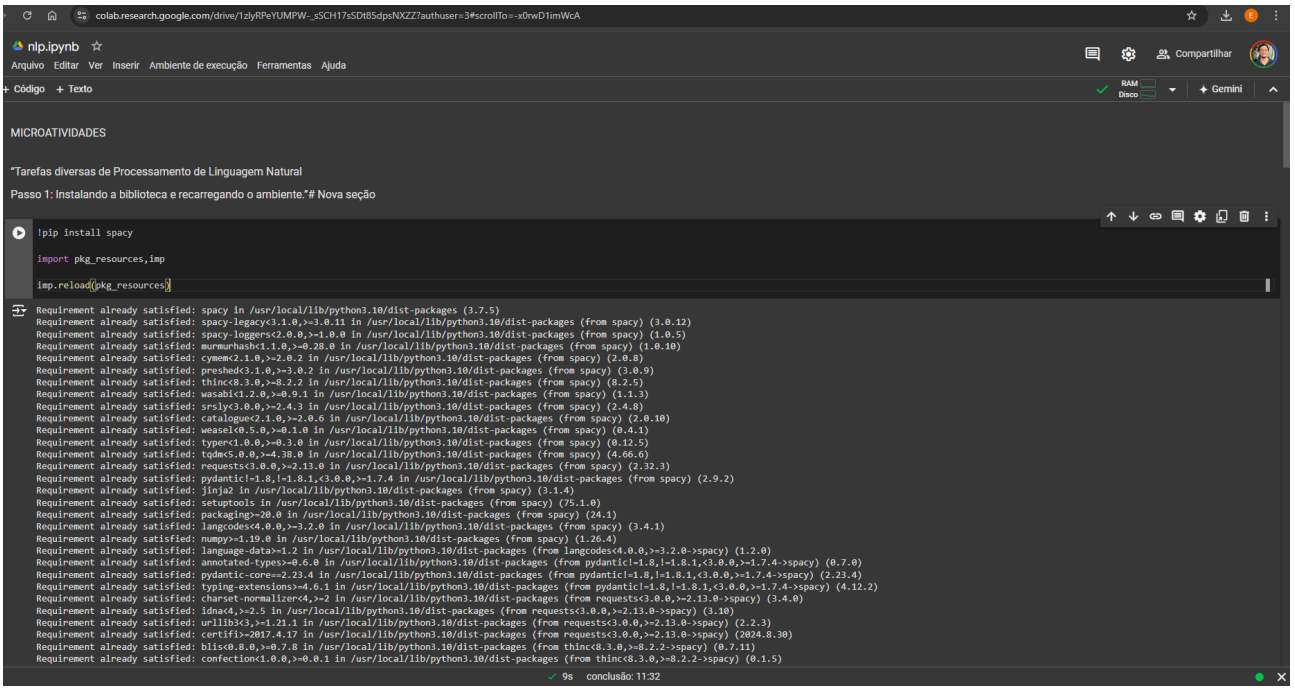
**Descrever tarefas diversas relacionadas ao Processamento de Linguagem Natural**

### Procedimentos:

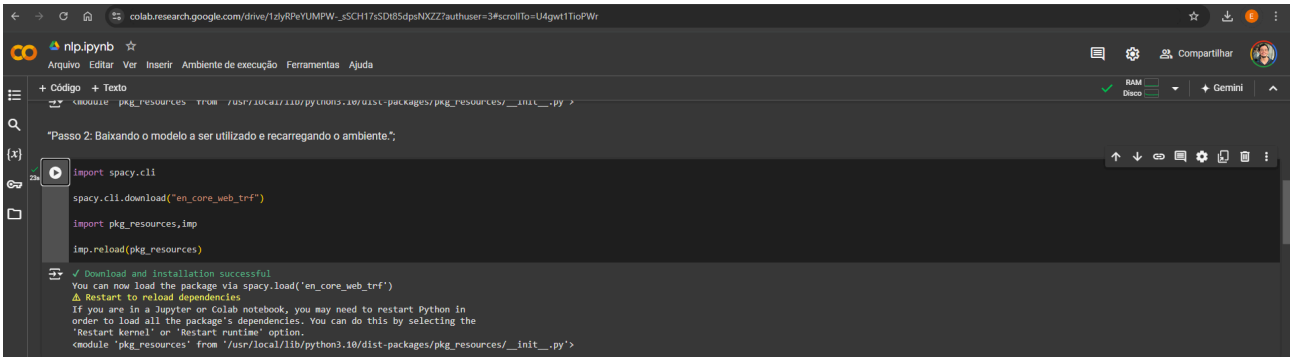
1. Estando logado no Google Colab, clique no menu “Arquivo” e selecione a opção “Novo notebook”;
2. Na nova aba aberta no navegador, dê um nome ao seu notebook, clicando e alterando o nome automaticamente gerado – Untitled0.ipynb – para nlp.ipynb;
3. Na janela de código, clique na opção “+Texto” (destacada no print abaixo) para inserir um bloco de texto;

### Resultado:

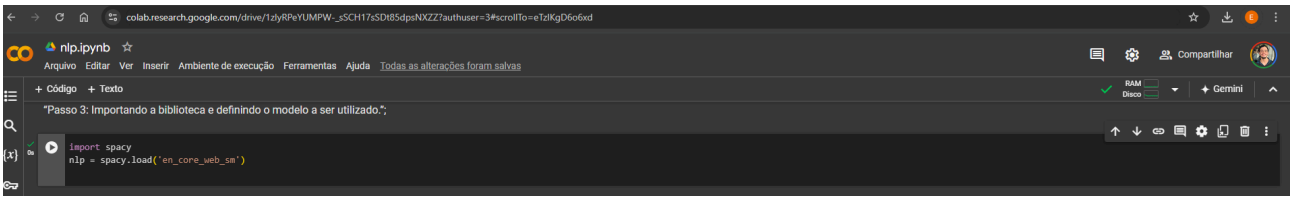
Passo 1:



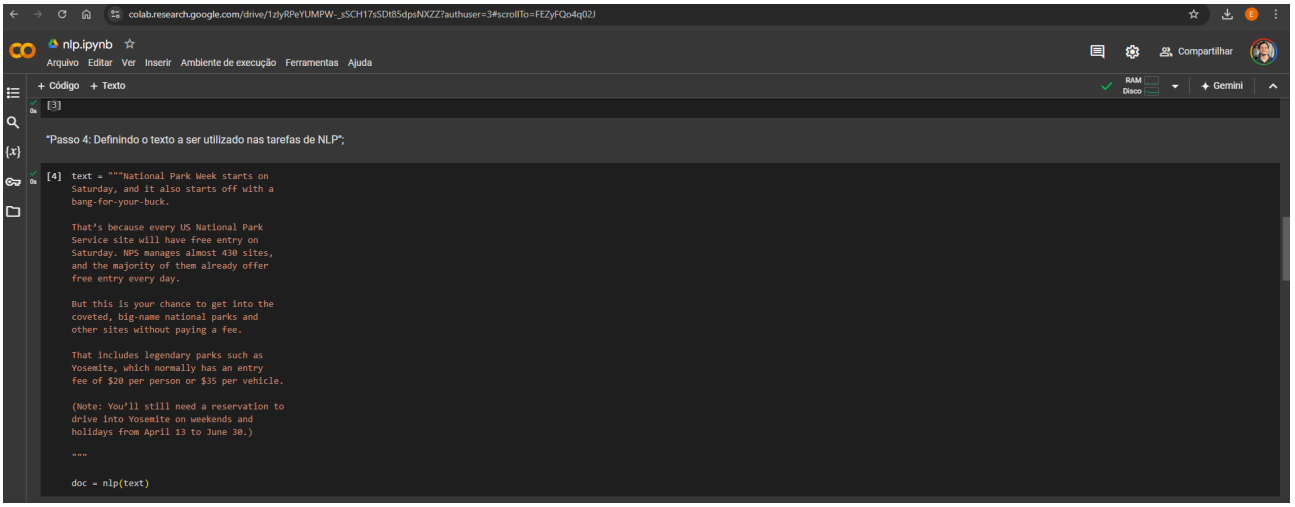

Passo 2:



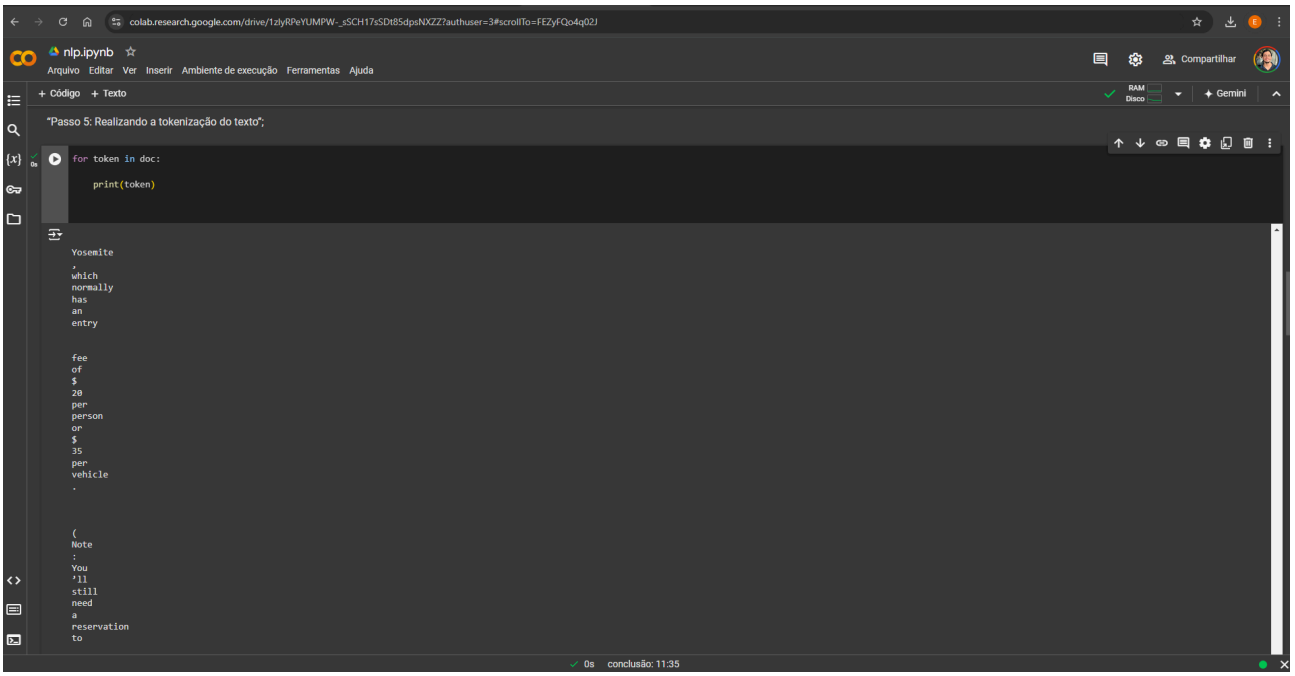
Passo 3:



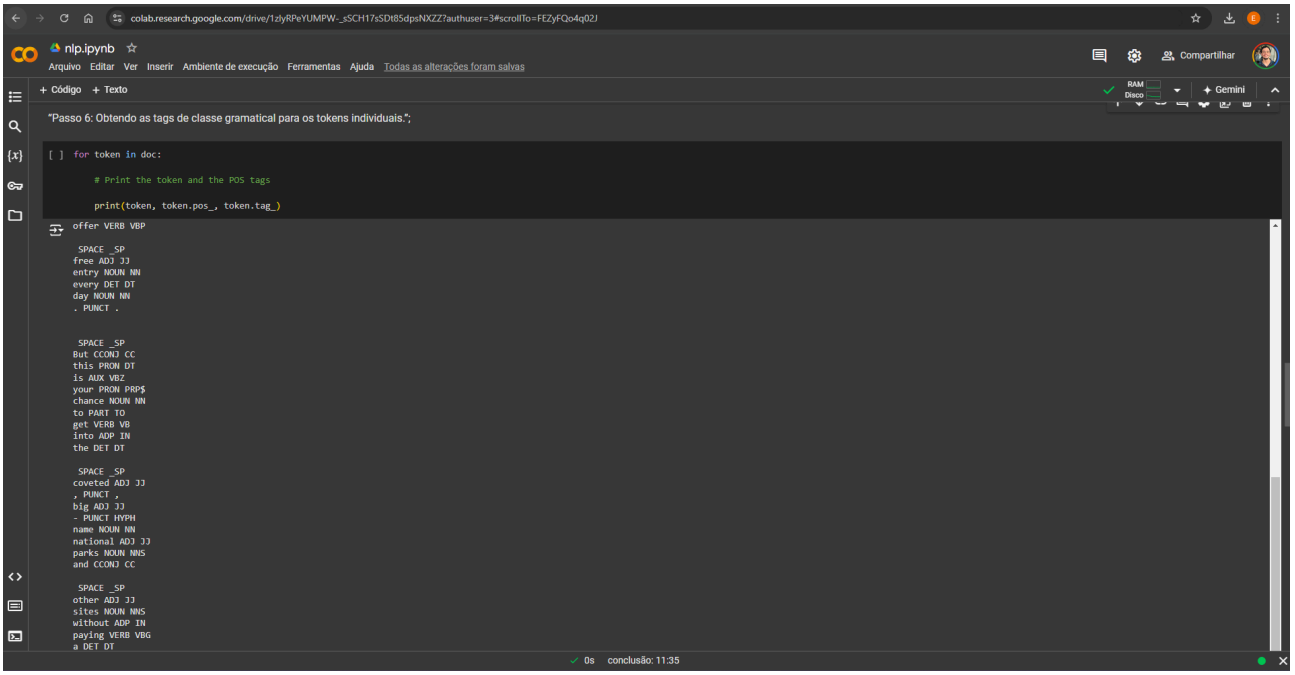

Passo 4:



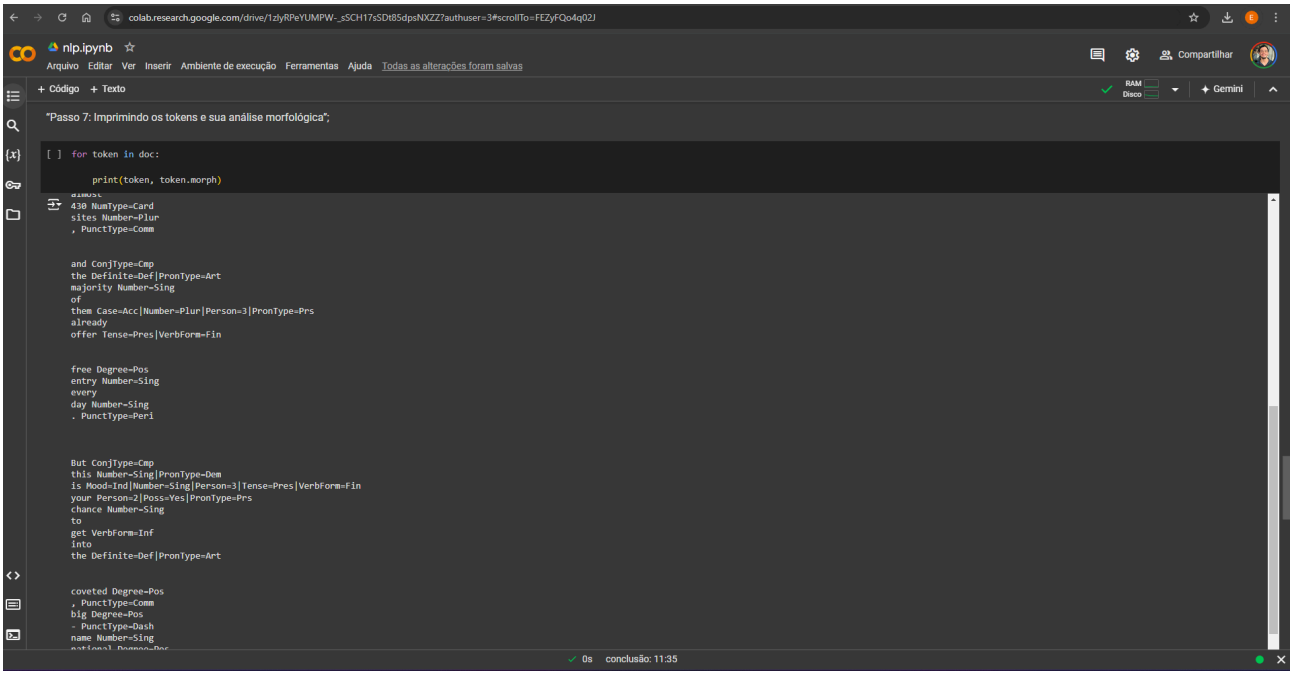

Passo 5:



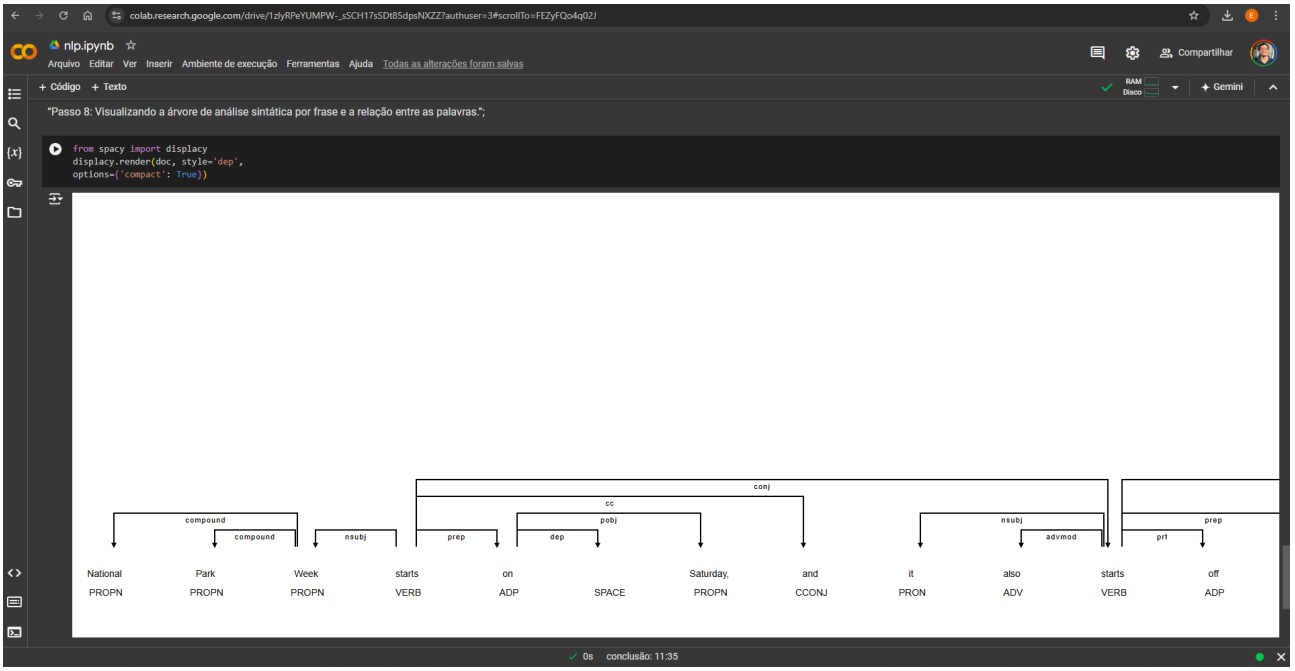
Passo 6:




Passo 7:



Passo 8:


colab.research.google.com/drive/1zlyRPeYUMPW-_sSCH17sSDt85dpsNXZZ?authuser=3#scrollTo=FEZyFQo4q02J
nlp.ipynb
Arquivo Editar Ver Inserir Ambiente de execução Ferramentas Ajuda Todas as alterações foram salvas
Compartilhar
+ Código + Texto
RAM Disco
Gemini
"Passo 8: Visualizando a árvore de análise sintática por frase e a relação entre as palavras.";
from spacy import displacy
displacy.render(doc, style='dep',
options={'compact': True})
conj
cc
compound
compound
nsubj
prep
pobj
dep
nsubj
advmod
prt
prep
National PROPN
Park PROPN
Week PROPN
starts VERB
on ADP
SPACE
Saturday, PROPN
and CCONJ
it PRON
also ADV
starts VERB
off ADP
0s conclusão: 11:35

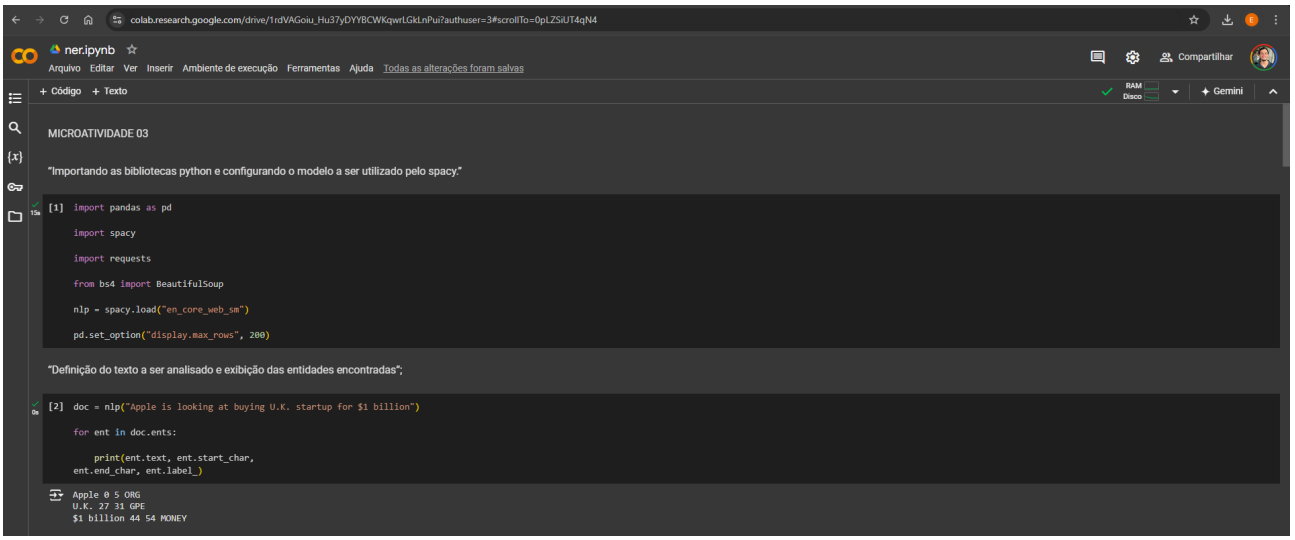
## Microatividade 3

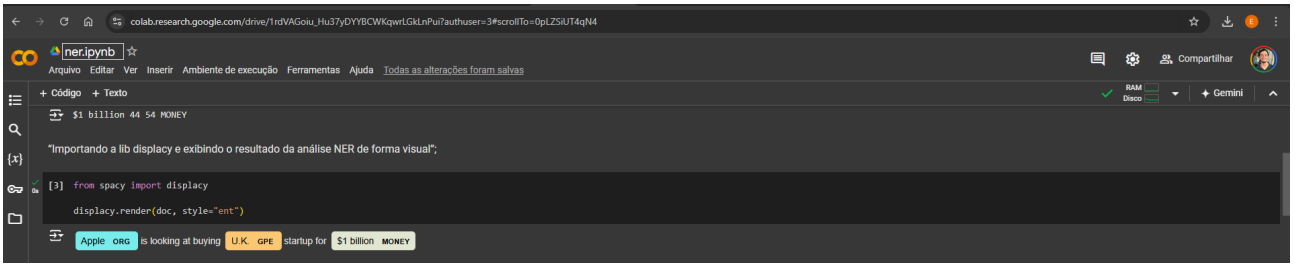
**Descrever o processo de identificação de entidades a partir de textos.**

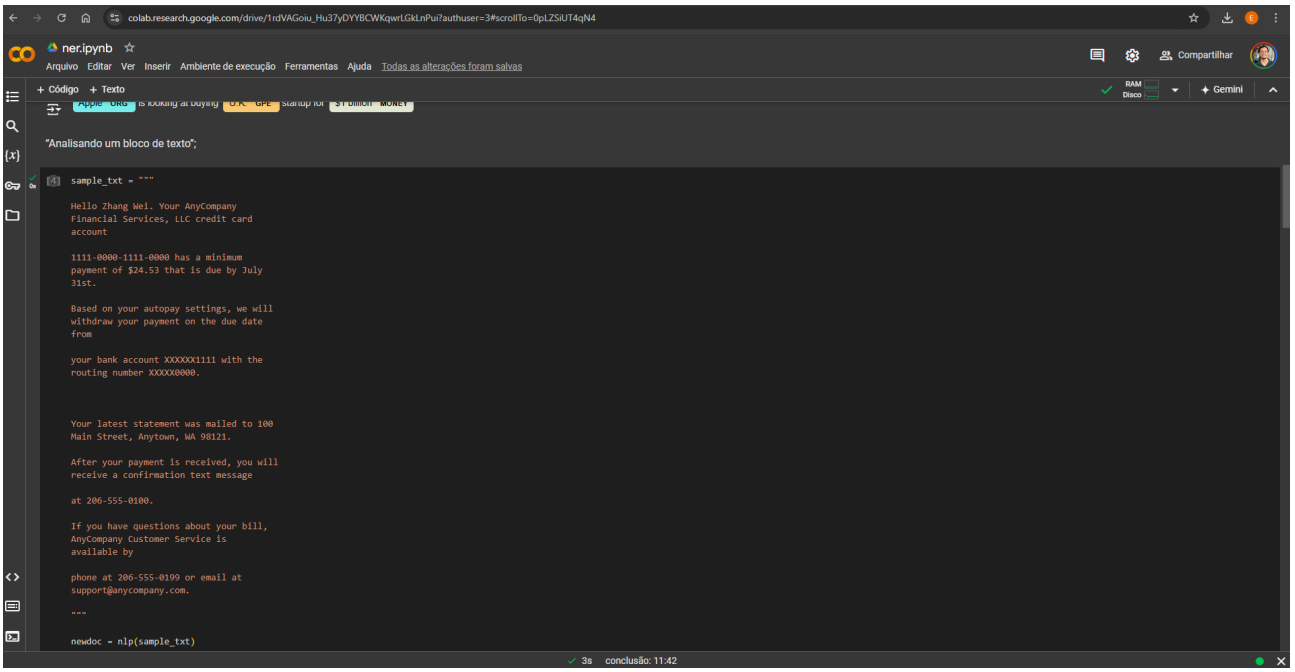
## Procedimentos:

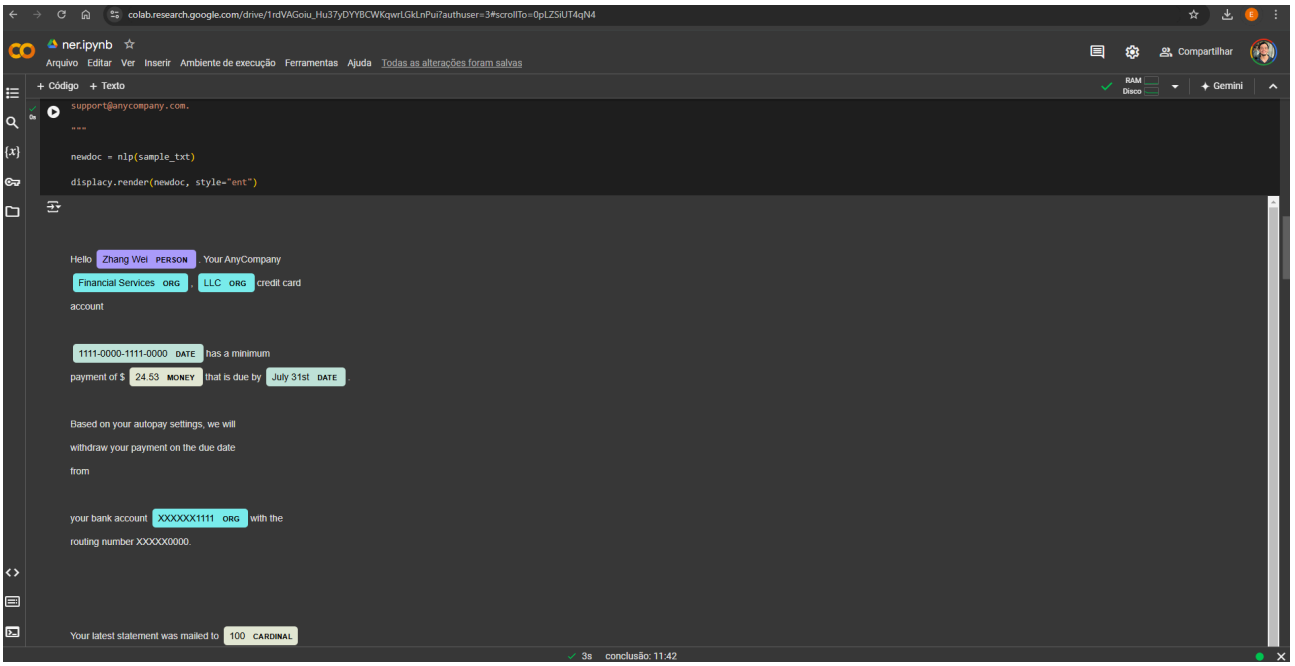
1. Estando logado no Google Colab, clique no menu "Arquivo" e selecione a opção "Novo notebook";
2. Na nova aba aberta no navegador, dê um nome ao seu notebook, clicando e alterando o nome automaticamente gerado – Untitled0.ipynb – para ner.ipynb;
3. Na janela de código, clique na opção "+Texto" (destacada no print abaixo) para inserir um bloco de texto;

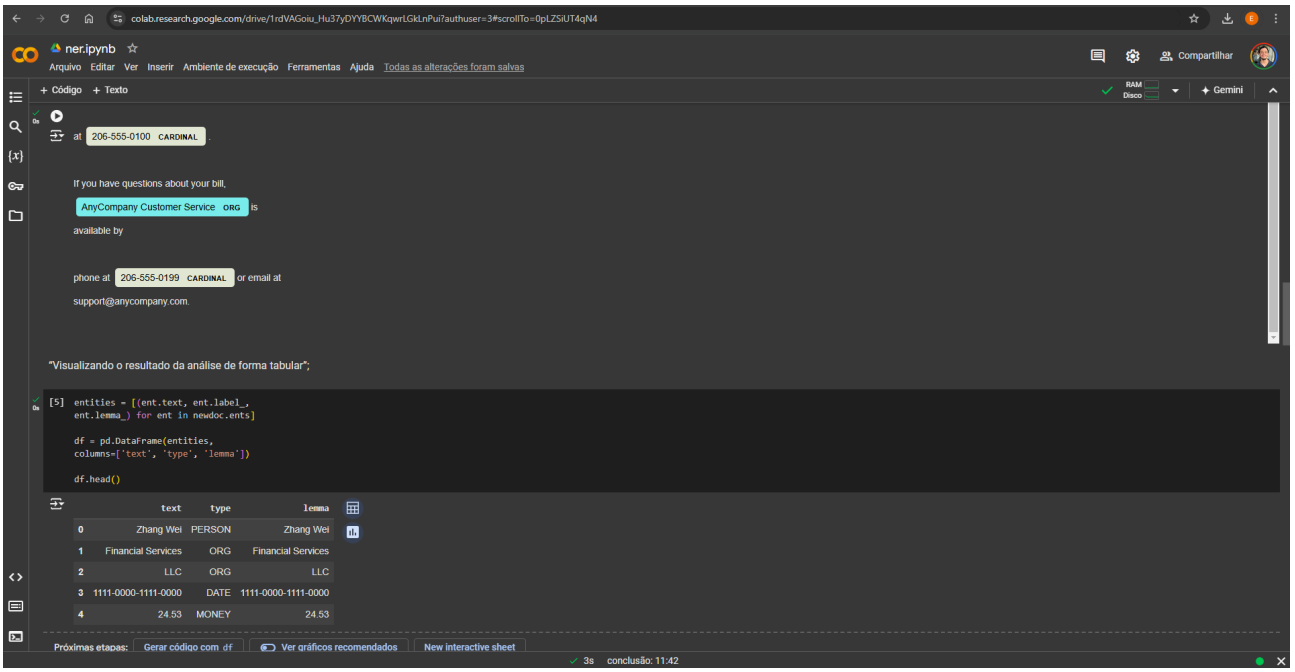
## Resultados:

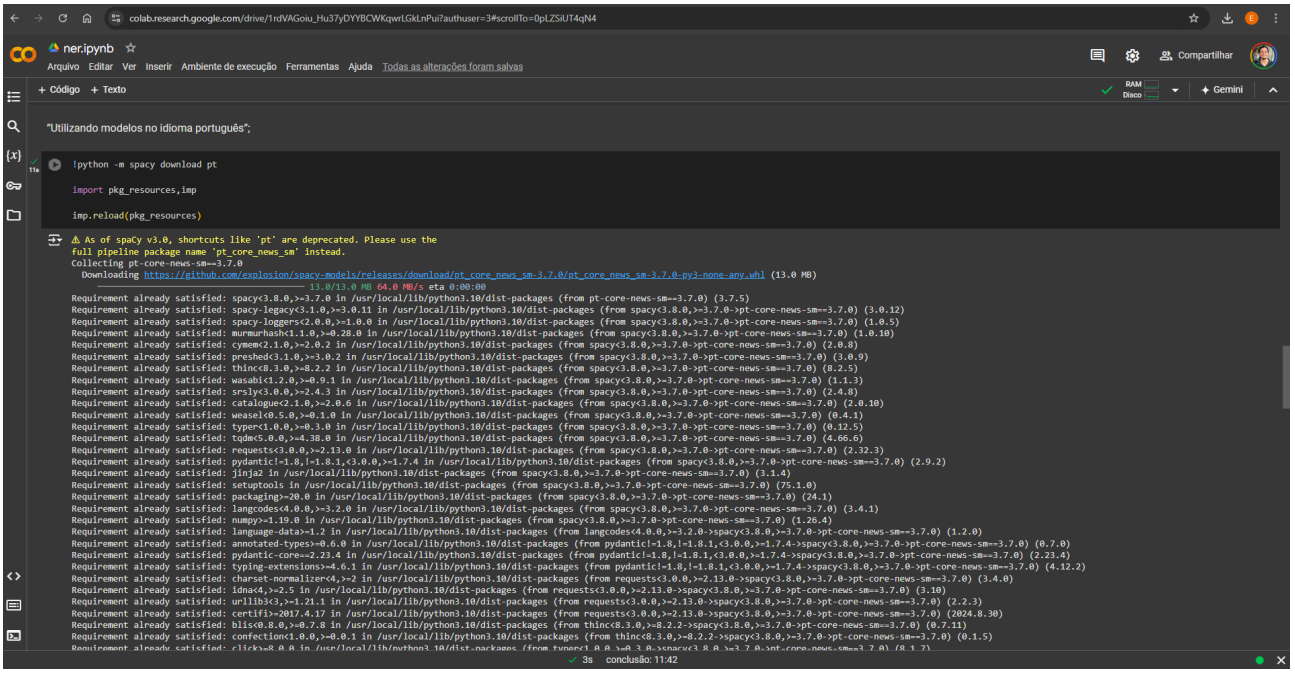


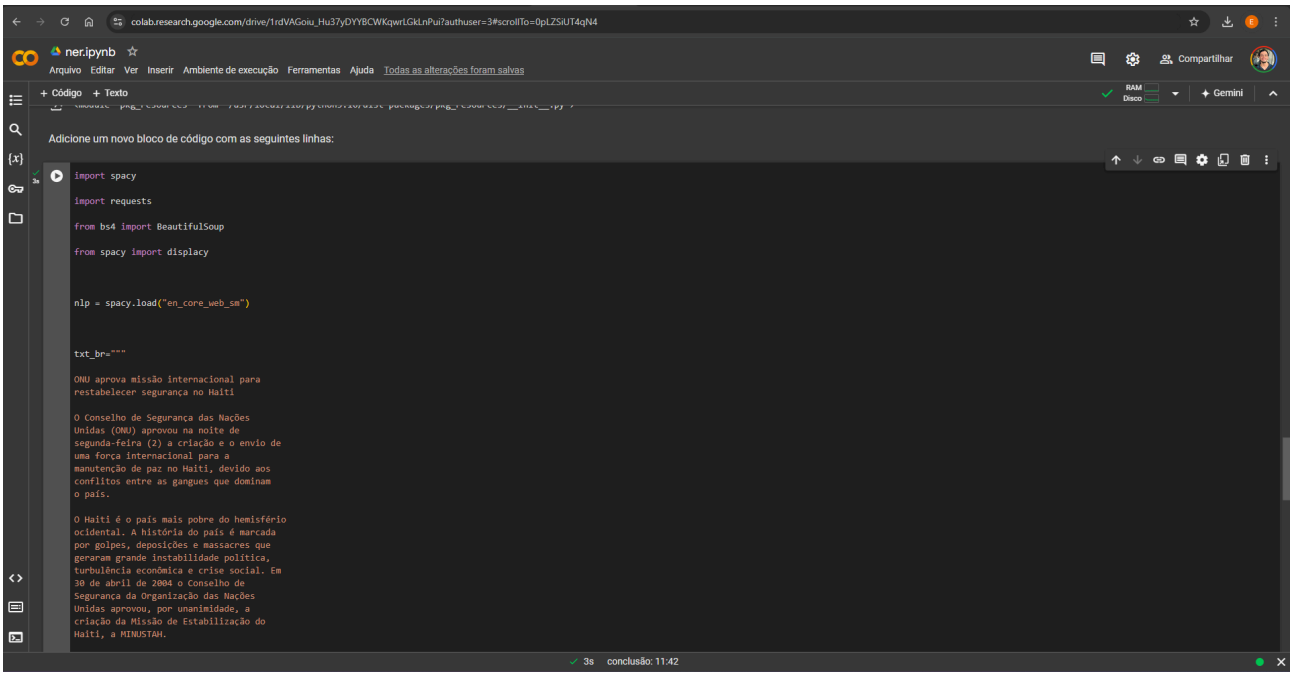



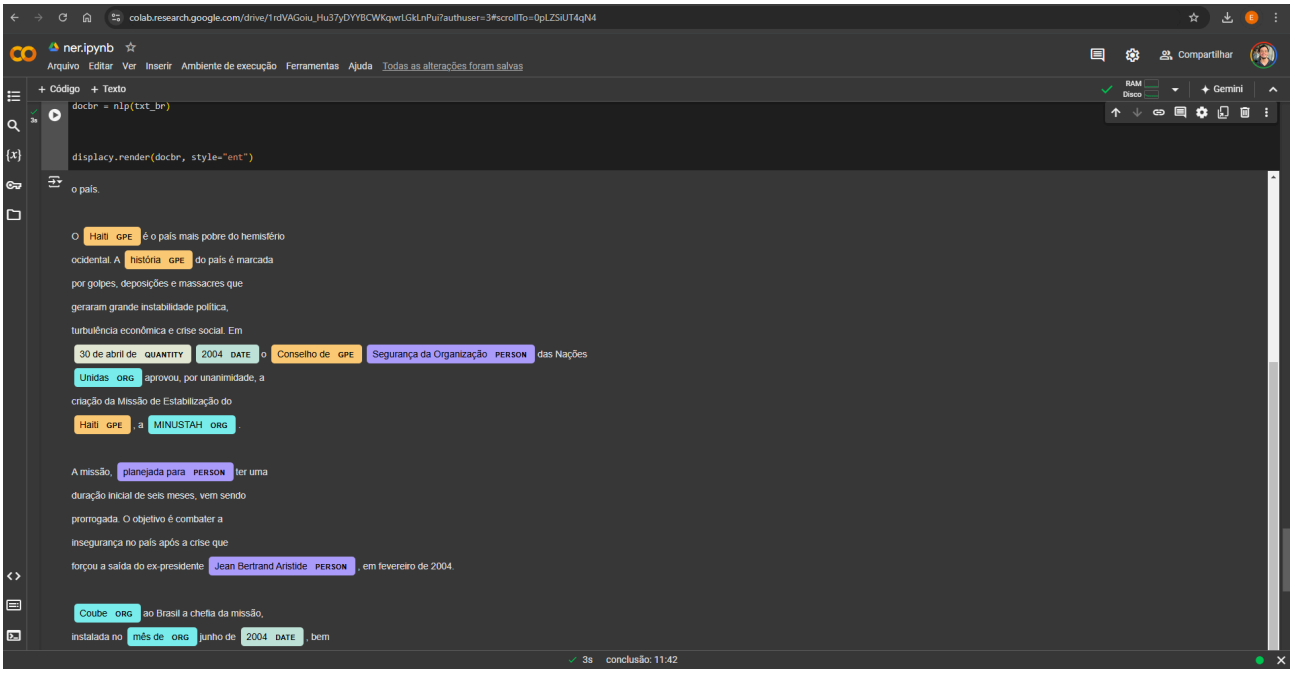

colab.research.google.com/drive/1rdVAGoiu_Hu37yDYYBCWKqwrLGkLnPui?authuser=3#scrollTo=0pLZSiUT4qN4
ner.ipynb
Arquivo Editar Ver Inserir Ambiente de execução Ferramentas Ajuda Todas as alterações foram salvas
Compartilhar
+ Código + Texto
Gemini
"Analisando um bloco de texto";
sample_txt = """
Hello Zhang Wei. Your AnyCompany
Financial Services, LLC credit card
account
1111-0000-1111-0000 has a minimum
payment of $24.53 that is due by July
31st.
Based on your autopay settings, we will
withdraw your payment on the due date
from
your bank account XXXXXX1111 with the
routing number XXXXX0000.
Your latest statement was mailed to 100
Main Street, Anytown, WA 98121.
After your payment is received, you will
receive a confirmation text message
at 206-555-0100.
If you have questions about your bill,
AnyCompany Customer Service is
available by
phone at 206-555-0199 or email at
support@anycompany.com.
"""
newdoc = nlp(sample_txt)
3s conclusão: 11:42


colab.research.google.com/drive/1rdVAGoiu_Hu37yDYYBCWKqwrLGkLnPui?authuser=3#scrollTo=0pLZSiUT4qN4
ner.ipynb
Arquivo Editar Ver Inserir Ambiente de execução Ferramentas Ajuda Todas as alterações foram salvas
Compartilhar
+ Código + Texto
Gemini
support@anycompany.com.
"""
newdoc = nlp(sample_txt)
displacy.render(newdoc, style="ent")
Hello Zhang Wei PERSON . Your AnyCompany
Financial Services ORG , LLC ORG credit card
account
1111-0000-1111-0000 DATE has a minimum
payment of $ 24.53 MONEY that is due by July 31st DATE .
Based on your autopay settings, we will
withdraw your payment on the due date
from
your bank account XXXXXX1111 ORG with the
routing number XXXXX0000.
Your latest statement was mailed to 100 CARDINAL
3s conclusão: 11:42


colab.research.google.com/drive/1rdVAGoiu_Hu37yDYYBCWKqwrLGkLnPui?authuser=3#scrollTo=0pLZSiUT4qN4
ner.ipynb
Arquivo Editar Ver Inserir Ambiente de execução Ferramentas Ajuda Todas as alterações foram salvas
Compartilhar
+ Código + Texto
Gemini
at 206-555-0100 CARDINAL .
If you have questions about your bill,
AnyCompany Customer Service ORG is
available by
phone at 206-555-0199 CARDINAL or email at
support@anycompany.com.
"Visualizando o resultado da análise de forma tabular";
[5] entities = [(ent.text, ent.label_,
ent.lemma_) for ent in newdoc.ents]
df = pd.DataFrame(entities,
columns=['text', 'type', 'lemma'])
df.head()
text type lemma
0 Zhang Wei PERSON Zhang Wei
1 Financial Services ORG Financial Services
2 LLC ORG LLC
3 1111-0000-1111-0000 DATE 1111-0000-1111-0000
4 24.53 MONEY 24.53
Próximas etapas: Gerar código com df
Ver gráficos recomendados
New interactive sheet
3s conclusão: 11:42


colab.research.google.com/drive/1rdVAGoiu_Hu37yDYYBCWKqwrLGkLnPui?authuser=3#scrollTo=0pLZSiUT4qN4
ner.ipynb
Arquivo Editar Ver Inserir Ambiente de execução Ferramentas Ajuda Todas as alterações foram salvas
Compartilhar
+ Código + Texto
Gemini
"Utilizando modelos no idioma português";
!python -m spacy download pt
import pkg_resources,imp
imp.reload(pkg_resources)
⚠ As of spaCy v3.0, shortcuts like 'pt' are deprecated. Please use the
full pipeline package name 'pt_core_news_sm' instead.
Collecting pt-core-news-sm==3.7.0
Downloading https://github.com/explosion/spacy-models/releases/download/pt_core_news_sm-3.7.0/pt_core_news_sm-3.7.0-py3-none-any.whl (13.0 MB)
13.0/13.0 MB 64.0 MB/s eta 0:00:00
Requirement already satisfied: spacy<3.8.0,>=3.7.0 in /usr/local/lib/python3.10/dist-packages (from pt-core-news-sm==3.7.0) (3.7.5)
Requirement already satisfied: spacy-legacy<3.1.0,>=3.0.11 in /usr/local/lib/python3.10/dist-packages (from spacy<3.8.0,>=3.7.0->pt-core-news-sm==3.7.0) (3.0.12)
Requirement already satisfied: spacy-loggers<2.0.0,>=1.0.0 in /usr/local/lib/python3.10/dist-packages (from spacy<3.8.0,>=3.7.0->pt-core-news-sm==3.7.0) (1.0.5)
Requirement already satisfied: murmurhash<1.1.0,>=0.28.0 in /usr/local/lib/python3.10/dist-packages (from spacy<3.8.0,>=3.7.0->pt-core-news-sm==3.7.0) (1.0.10)
Requirement already satisfied: cymem<2.1.0,>=2.0.2 in /usr/local/lib/python3.10/dist-packages (from spacy<3.8.0,>=3.7.0->pt-core-news-sm==3.7.0) (2.0.8)
Requirement already satisfied: preshed<3.1.0,>=3.0.2 in /usr/local/lib/python3.10/dist-packages (from spacy<3.8.0,>=3.7.0->pt-core-news-sm==3.7.0) (3.0.9)
Requirement already satisfied: thinc<8.3.0,>=8.2.2 in /usr/local/lib/python3.10/dist-packages (from spacy<3.8.0,>=3.7.0->pt-core-news-sm==3.7.0) (8.2.5)
Requirement already satisfied: wasabi<1.2.0,>=0.9.1 in /usr/local/lib/python3.10/dist-packages (from spacy<3.8.0,>=3.7.0->pt-core-news-sm==3.7.0) (1.1.3)
Requirement already satisfied: srsly<3.0.0,>=2.4.3 in /usr/local/lib/python3.10/dist-packages (from spacy<3.8.0,>=3.7.0->pt-core-news-sm==3.7.0) (2.4.8)
Requirement already satisfied: catalogue<2.1.0,>=2.0.6 in /usr/local/lib/python3.10/dist-packages (from spacy<3.8.0,>=3.7.0->pt-core-news-sm==3.7.0) (2.0.10)
Requirement already satisfied: weasel<0.5.0,>=0.1.0 in /usr/local/lib/python3.10/dist-packages (from spacy<3.8.0,>=3.7.0->pt-core-news-sm==3.7.0) (0.4.1)
Requirement already satisfied: typer<1.0.0,>=0.3.0 in /usr/local/lib/python3.10/dist-packages (from spacy<3.8.0,>=3.7.0->pt-core-news-sm==3.7.0) (0.12.5)
Requirement already satisfied: tqdm<5.0.0,>=4.38.0 in /usr/local/lib/python3.10/dist-packages (from spacy<3.8.0,>=3.7.0->pt-core-news-sm==3.7.0) (4.66.6)
Requirement already satisfied: requests<3.0.0,>=2.13.0 in /usr/local/lib/python3.10/dist-packages (from spacy<3.8.0,>=3.7.0->pt-core-news-sm==3.7.0) (2.32.3)
Requirement already satisfied: pydantic!=1.8,!=1.8.1,<3.0.0,>=1.7.4 in /usr/local/lib/python3.10/dist-packages (from spacy<3.8.0,>=3.7.0->pt-core-news-sm==3.7.0) (2.9.2)
Requirement already satisfied: jinja2 in /usr/local/lib/python3.10/dist-packages (from spacy<3.8.0,>=3.7.0->pt-core-news-sm==3.7.0) (3.1.4)
Requirement already satisfied: setuptools in /usr/local/lib/python3.10/dist-packages (from spacy<3.8.0,>=3.7.0->pt-core-news-sm==3.7.0) (75.1.0)
Requirement already satisfied: packaging>=20.0 in /usr/local/lib/python3.10/dist-packages (from spacy<3.8.0,>=3.7.0->pt-core-news-sm==3.7.0) (24.1)
Requirement already satisfied: langcodes<4.0.0,>=3.2.0 in /usr/local/lib/python3.10/dist-packages (from spacy<3.8.0,>=3.7.0->pt-core-news-sm==3.7.0) (3.4.1)
Requirement already satisfied: numpy>=1.19.0 in /usr/local/lib/python3.10/dist-packages (from spacy<3.8.0,>=3.7.0->pt-core-news-sm==3.7.0) (1.26.4)
Requirement already satisfied: language-data>=1.2 in /usr/local/lib/python3.10/dist-packages (from langcodes<4.0.0,>=3.2.0->spacy<3.8.0,>=3.7.0->pt-core-news-sm==3.7.0) (1.2.0)
Requirement already satisfied: annotated-types>=0.6.0 in /usr/local/lib/python3.10/dist-packages (from pydantic!=1.8,!=1.8.1,<3.0.0,>=1.7.4->spacy<3.8.0,>=3.7.0->pt-core-news-sm==3.7.0) (0.7.0)
Requirement already satisfied: pydantic-core==2.23.4 in /usr/local/lib/python3.10/dist-packages (from pydantic!=1.8,!=1.8.1,<3.0.0,>=1.7.4->spacy<3.8.0,>=3.7.0->pt-core-news-sm==3.7.0) (2.23.4)
Requirement already satisfied: typing-extensions>=4.6.1 in /usr/local/lib/python3.10/dist-packages (from pydantic!=1.8,!=1.8.1,<3.0.0,>=1.7.4->spacy<3.8.0,>=3.7.0->pt-core-news-sm==3.7.0) (4.12.2)
Requirement already satisfied: charset-normalizer<4,>=2 in /usr/local/lib/python3.10/dist-packages (from requests<3.0.0,>=2.13.0->spacy<3.8.0,>=3.7.0->pt-core-news-sm==3.7.0) (3.4.0)
Requirement already satisfied: idna<4,>=2.5 in /usr/local/lib/python3.10/dist-packages (from requests<3.0.0,>=2.13.0->spacy<3.8.0,>=3.7.0->pt-core-news-sm==3.7.0) (3.10)
Requirement already satisfied: urllib3<3,>=1.21.1 in /usr/local/lib/python3.10/dist-packages (from requests<3.0.0,>=2.13.0->spacy<3.8.0,>=3.7.0->pt-core-news-sm==3.7.0) (2.2.3)
Requirement already satisfied: certifi>=2017.4.17 in /usr/local/lib/python3.10/dist-packages (from requests<3.0.0,>=2.13.0->spacy<3.8.0,>=3.7.0->pt-core-news-sm==3.7.0) (2024.8.30)
Requirement already satisfied: blis<0.8.0,>=0.7.8 in /usr/local/lib/python3.10/dist-packages (from thinc<8.3.0,>=8.2.2->spacy<3.8.0,>=3.7.0->pt-core-news-sm==3.7.0) (0.7.11)
Requirement already satisfied: confection<1.0.0,>=0.0.1 in /usr/local/lib/python3.10/dist-packages (from thinc<8.3.0,>=8.2.2->spacy<3.8.0,>=3.7.0->pt-core-news-sm==3.7.0) (0.1.5)
3s conclusão: 11:42


colab.research.google.com/drive/1rdVAGoiu_Hu37yDYYBCWKqwrLGkLnPui?authuser=3#scrollTo=0pLZSiUT4qN4
ner.ipynb
Arquivo Editar Ver Inserir Ambiente de execução Ferramentas Ajuda Todas as alterações foram salvas
Compartilhar
+ Código + Texto
Gemini
Adicione um novo bloco de código com as seguintes linhas:
import spacy
import requests
from bs4 import BeautifulSoup
from spacy import displacy
nlp = spacy.load("en_core_web_sm")
txt_br="""
ONU aprova missão internacional para
restabelecer segurança no Haiti
O Conselho de Segurança das Nações
Unidas (ONU) aprovou na noite de
segunda-feira (2) a criação e o envio de
uma força internacional para a
manutenção de paz no Haiti, devido aos
conflitos entre as gangues que dominam
o país.
O Haiti é o país mais pobre do hemisfério
ocidental. A história do país é marcada
por golpes, deposições e massacres que
geraram grande instabilidade política,
turbulência econômica e crise social. Em
30 de abril de 2004 o Conselho de
Segurança da Organização das Nações
Unidas aprovou, por unanimidade, a
criação da Missão de Estabilização do
Haiti, a MINUSTAH.
3s conclusão: 11:42


colab.research.google.com/drive/1rdVAGoiu_Hu37yDYYBCWKqwrLGkLnPui?authuser=3#scrollTo=0pLZSiUT4qN4
ner.ipynb
Arquivo Editar Ver Inserir Ambiente de execução Ferramentas Ajuda Todas as alterações foram salvas
Compartilhar
+ Código + Texto
Gemini
docbr = nlp(txt_br)
displacy.render(docbr, style="ent")
o país.
O Haiti GPE é o país mais pobre do hemisfério
ocidental. A história GPE do país é marcada
por golpes, deposições e massacres que
geraram grande instabilidade política,
turbulência econômica e crise social. Em
30 de abril de QUANTITY 2004 DATE o Conselho de GPE Segurança da Organização PERSON das Nações
Unidas ORG aprovou, por unanimidade, a
criação da Missão de Estabilização do
Haiti GPE , a MINUSTAH ORG .
A missão, planejada para PERSON ter uma
duração inicial de seis meses, vem sendo
prorrogada. O objetivo é combater a
insegurança no país após a crise que
forçou a saída do ex-presidente Jean Bertrand Aristide PERSON , em fevereiro de 2004.
Coube ORG ao Brasil a chefia da missão,
instalada no mês de ORG junho de 2004 DATE , bem
3s conclusão: 11:42

## Microatividade 4

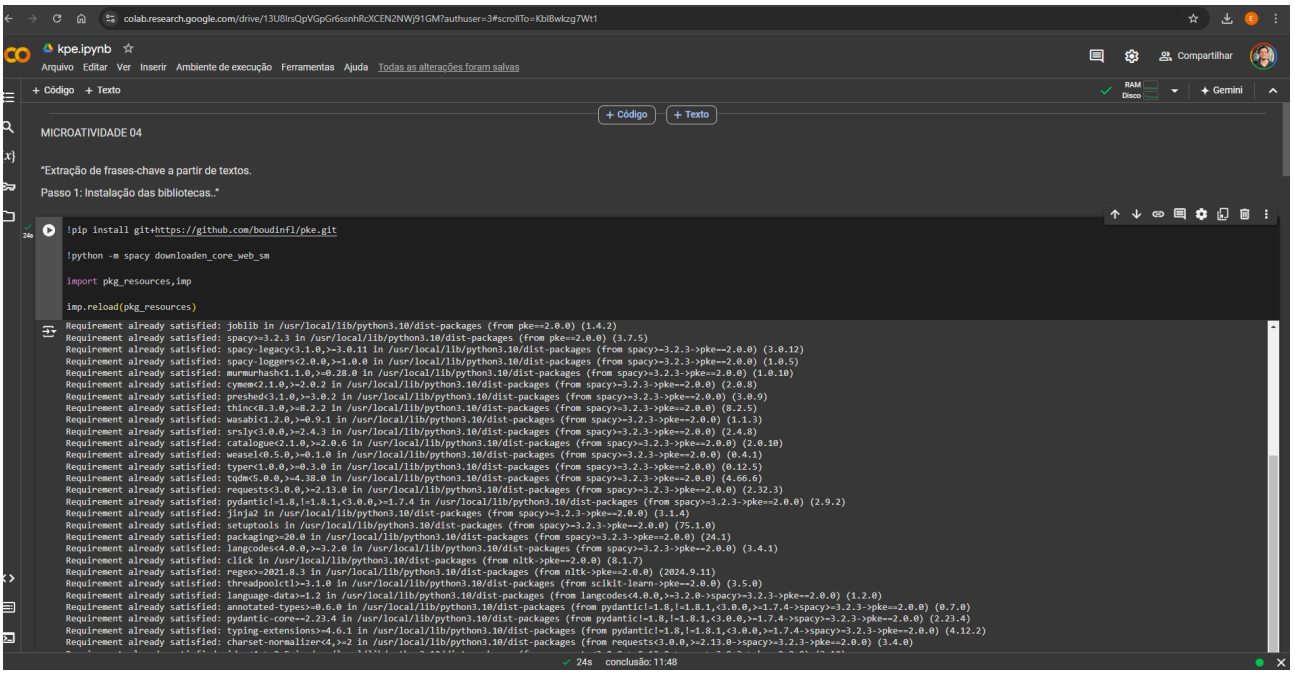
### Descrever o processo de extração de frases-chave a partir de textos

### Procedimentos:

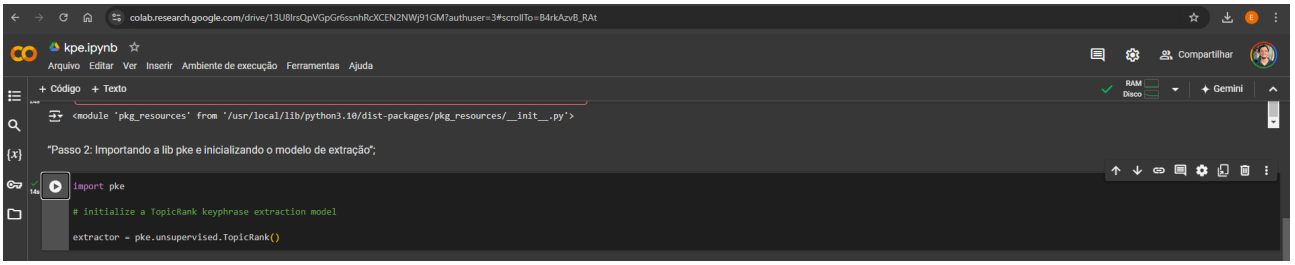
1. Estando logado no Google Colab, clique no menu “Arquivo” e selecione a opção “Novo notebook”;
2. Na nova aba aberta no navegador, dê um nome ao seu notebook, clicando e alterando o nome automaticamente gerado – Untitled0.ipynb – para kpe.ipynb;
3. Na janela de código, clique na opção “+Texto” (destacada no print abaixo) para inserir um bloco de texto;

### Resultado:

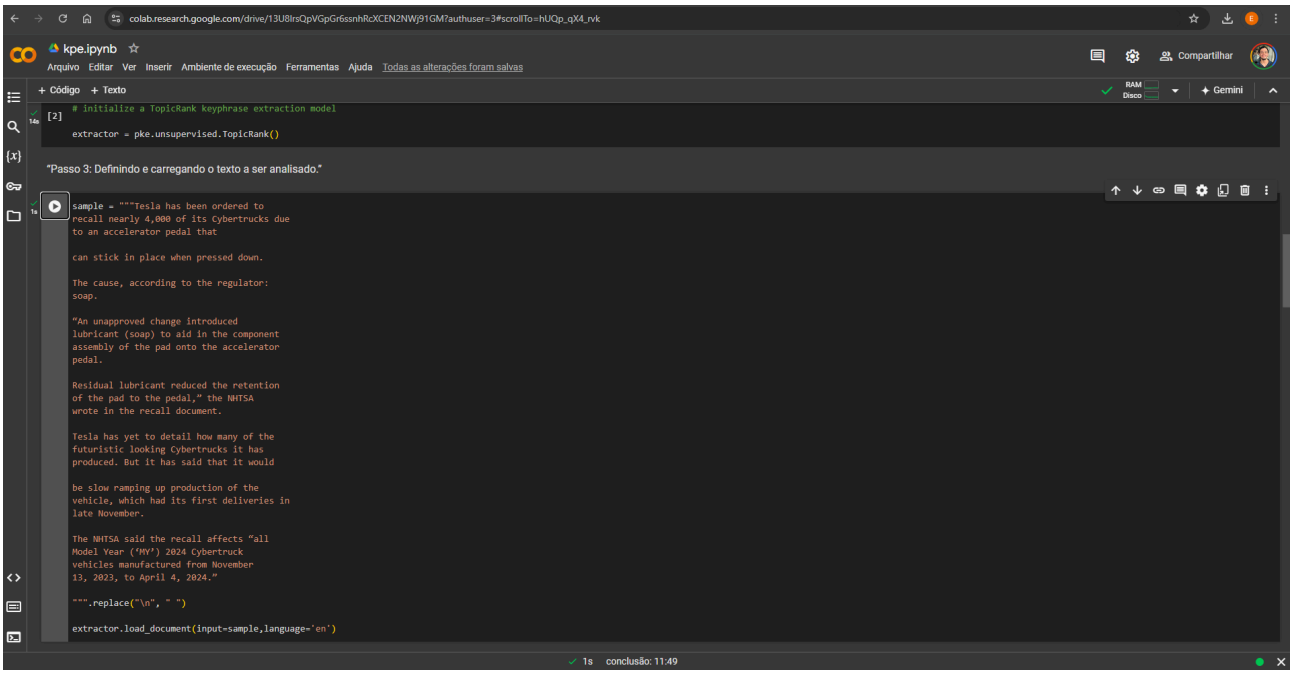
Passo 1:



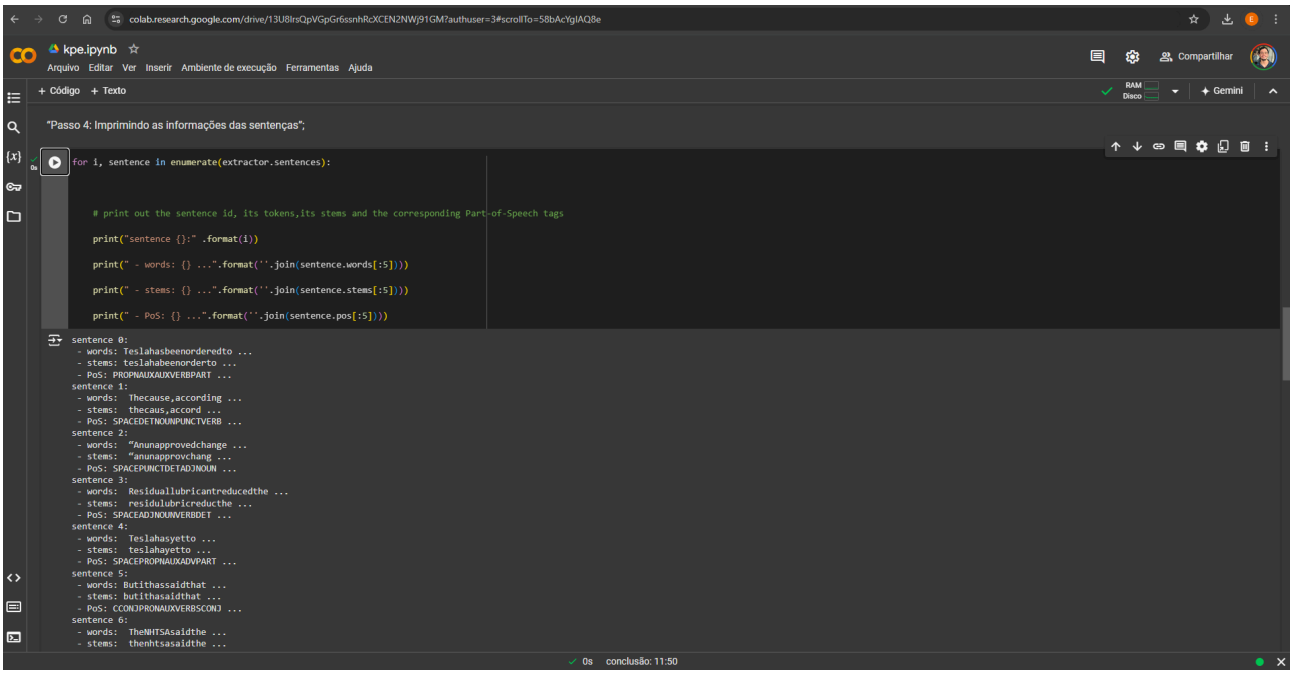

Passo 2:



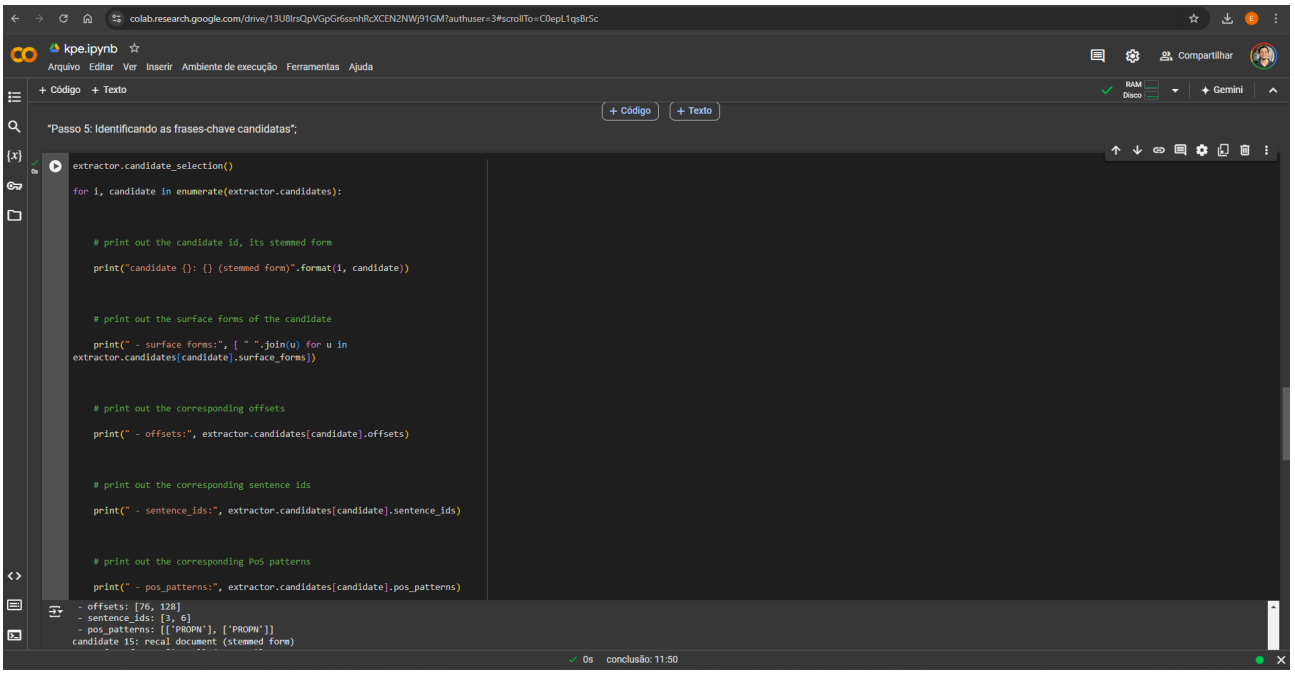
Passo 3:

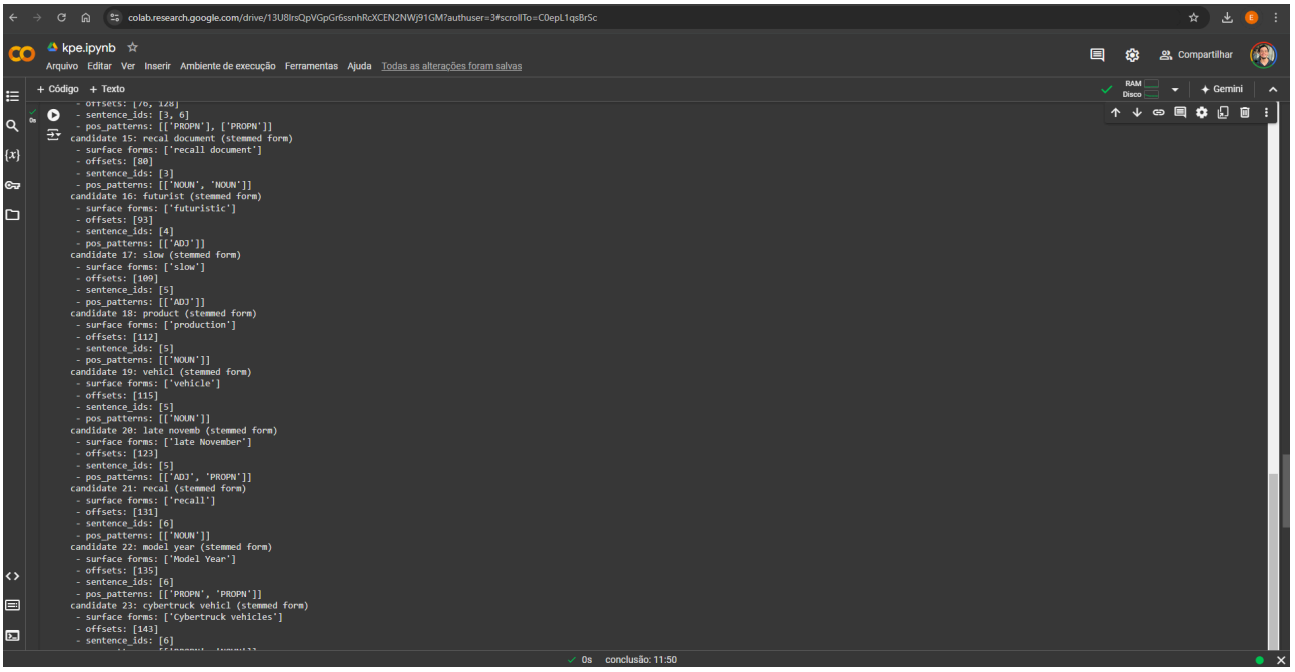



Passo 4:

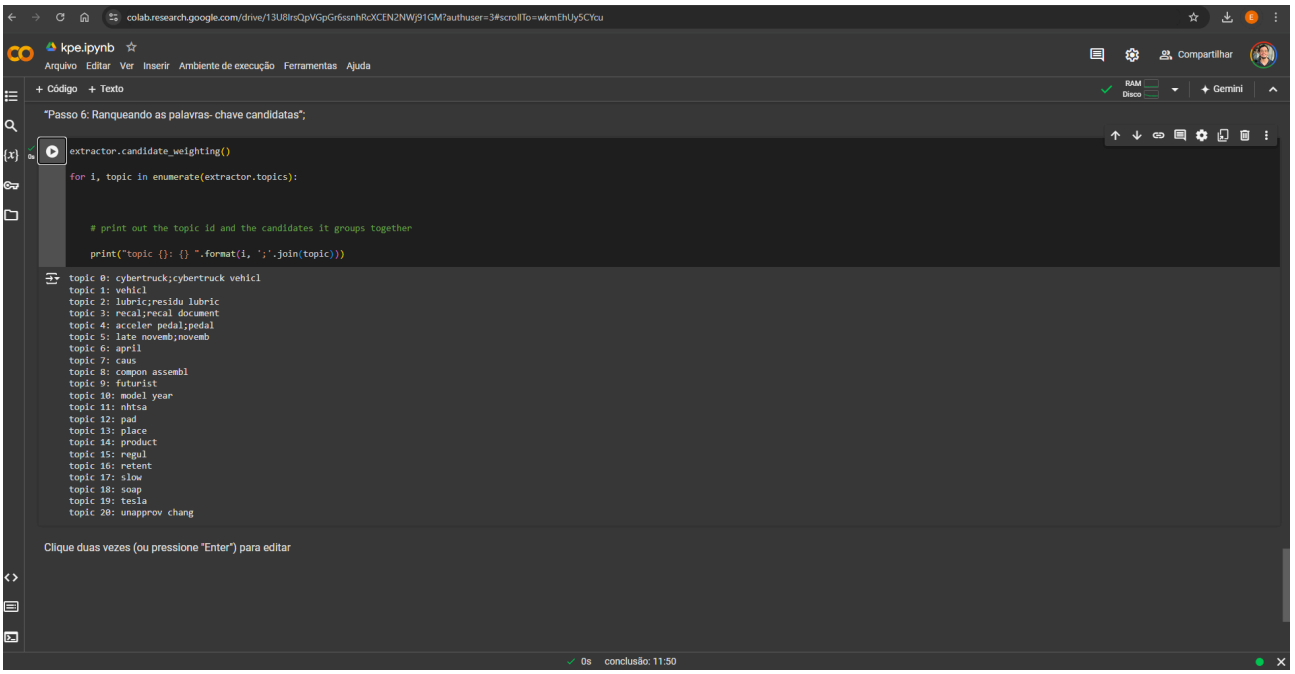


Passo 5:


colab.research.google.com/drive/13U8lrsQpVGpGr6ssnhRcXCEN2NWj91GM?authuser=3#scrollTo=C0epL1qsBr5c
kpe.ipynb
Arquivo Editar Ver Inserir Ambiente de execução Ferramentas Ajuda
Compartilhar
+ Código + Texto
Gemini
"Passo 5: Identificando as frases-chave candidatas";
extractor.candidate_selection()
for i, candidate in enumerate(extractor.candidates):
# print out the candidate id, its stemmed form
print("candidate {}: {} (stemmed form)".format(i, candidate))
# print out the surface forms of the candidate
print(" - surface forms:", [ " ".join(u) for u in extractor.candidates[candidate].surface_forms])
# print out the corresponding offsets
print(" - offsets:", extractor.candidates[candidate].offsets)
# print out the corresponding sentence ids
print(" - sentence_ids:", extractor.candidates[candidate].sentence_ids)
# print out the corresponding PoS patterns
print(" - pos_patterns:", extractor.candidates[candidate].pos_patterns)
- offsets: [76, 128]
- sentence_ids: [3, 6]
- pos_patterns: [['PROPN'], ['PROPN']]
candidate 15: recal document (stemmed form)
0s conclusão: 11:50


colab.research.google.com/drive/13U8lrsQpVGpGr6ssnhRcXCEN2NWj91GM?authuser=3#scrollTo=C0epL1qsBr5c
kpe.ipynb
Arquivo Editar Ver Inserir Ambiente de execução Ferramentas Ajuda Todas as alterações foram salvas
Compartilhar
+ Código + Texto
Gemini
- sentence_ids: [3, 6]
- pos_patterns: [['PROPN'], ['PROPN']]
candidate 15: recal document (stemmed form)
- surface forms: ['recall document']
- offsets: [80]
- sentence_ids: [3]
- pos_patterns: [['NOUN', 'NOUN']]
candidate 16: futurist (stemmed form)
- surface forms: ['futuristic']
- offsets: [93]
- sentence_ids: [4]
- pos_patterns: [['ADJ']]
candidate 17: slow (stemmed form)
- surface forms: ['slow']
- offsets: [109]
- sentence_ids: [5]
- pos_patterns: [['ADJ']]
candidate 18: product (stemmed form)
- surface forms: ['production']
- offsets: [112]
- sentence_ids: [5]
- pos_patterns: [['NOUN']]
candidate 19: vehicl (stemmed form)
- surface forms: ['vehicle']
- offsets: [115]
- sentence_ids: [5]
- pos_patterns: [['NOUN']]
candidate 20: late novemb (stemmed form)
- surface forms: ['late November']
- offsets: [123]
- sentence_ids: [5]
- pos_patterns: [['ADJ', 'PROPN']]
candidate 21: recal (stemmed form)
- surface forms: ['recall']
- offsets: [131]
- sentence_ids: [6]
- pos_patterns: [['NOUN']]
candidate 22: model year (stemmed form)
- surface forms: ['Model Year']
- offsets: [135]
- sentence_ids: [6]
- pos_patterns: [['PROPN', 'PROPN']]
candidate 23: cybertruck vehicl (stemmed form)
- surface forms: ['Cybertruck vehicles']
- offsets: [143]
- sentence_ids: [6]
0s conclusão: 11:50

Passo 6:


colab.research.google.com/drive/13U8lrsQpVGpGr6ssnhRcXCEN2NWj91GM?authuser=3#scrollTo=wkmEhUy5CYcu
kpe.ipynb
Arquivo Editar Ver Inserir Ambiente de execução Ferramentas Ajuda
Compartilhar
+ Código + Texto
RAM
Disco
Gemini
"Passo 6: Ranqueando as palavras- chave candidatas";
extractor.candidate_weighting()
for i, topic in enumerate(extractor.topics):
# print out the topic id and the candidates it groups together
print("topic {}: {} ".format(i, ';'.join(topic)))
topic 0: cybertruck;cybertruck vehicl
topic 1: vehicl
topic 2: lubric;residu lubric
topic 3: recal;recal document
topic 4: acceler pedal;pedal
topic 5: late novemb;novemb
topic 6: april
topic 7: caus
topic 8: compon assembl
topic 9: futurist
topic 10: model year
topic 11: nhtsa
topic 12: pad
topic 13: place
topic 14: product
topic 15: regul
topic 16: retent
topic 17: slow
topic 18: soap
topic 19: tesla
topic 20: unapprov chang
Clique duas vezes (ou pressione "Enter") para editar
0s conclusão: 11:50

## Microatividade 5

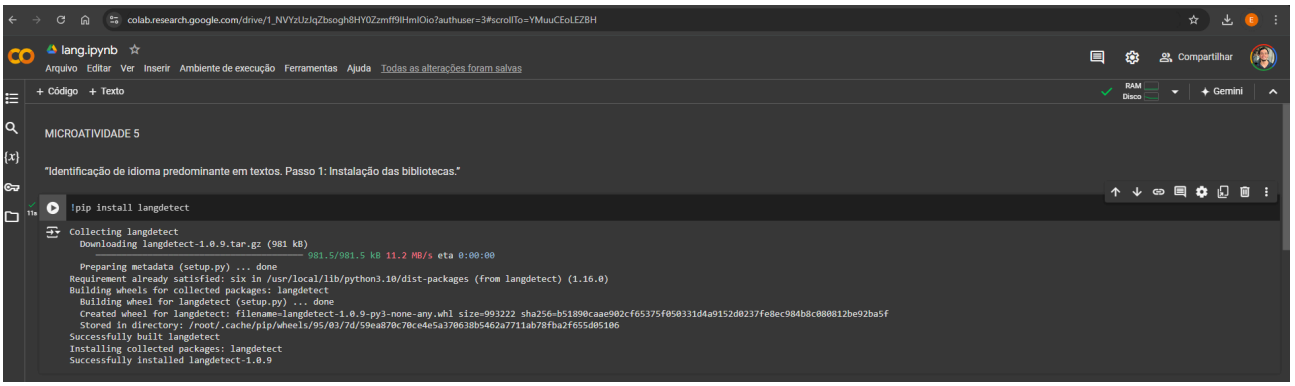
### Descrever o processo de identificação de linguagem predominante a partir de textos

### Procedimentos:

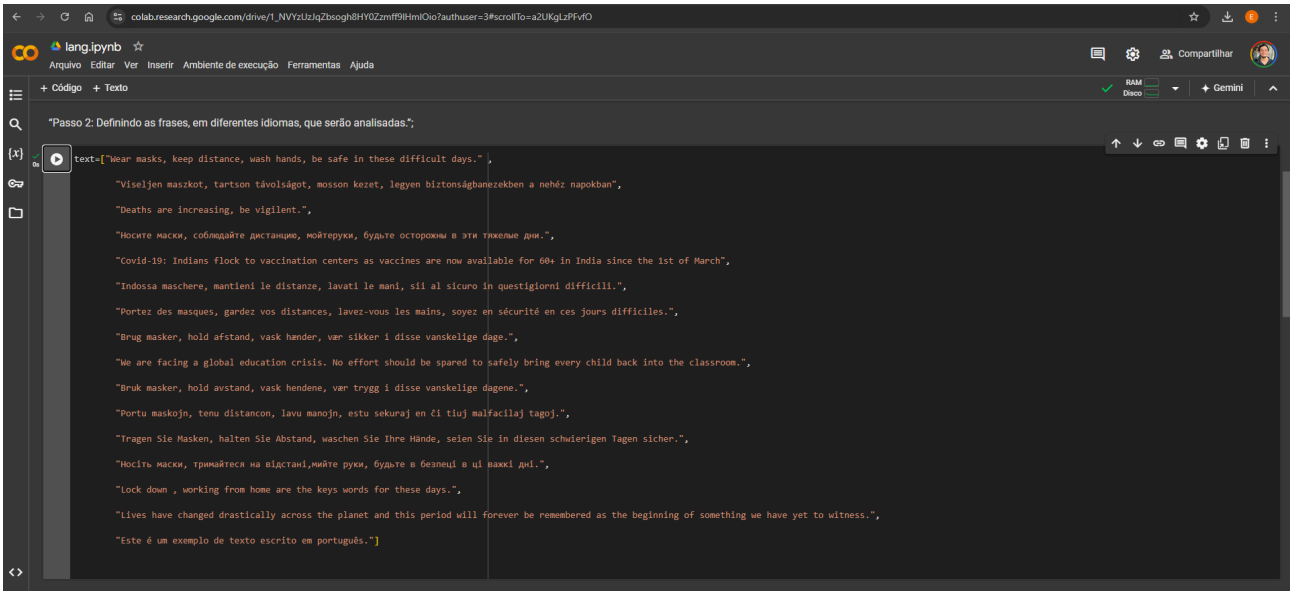
1. Estando logado no Google Colab, clique no menu “Arquivo” e selecione a opção “Novo notebook”;
2. Na nova aba aberta no navegador, dê um nome ao seu notebook, clicando e alterando o nome automaticamente gerado – Untitled0.ipynb – para lang.ipynb;
3. Na janela de código, clique na opção “+Texto” (destacada no print abaixo) para inserir um bloco de texto;

### Resultado:

Passo 1:

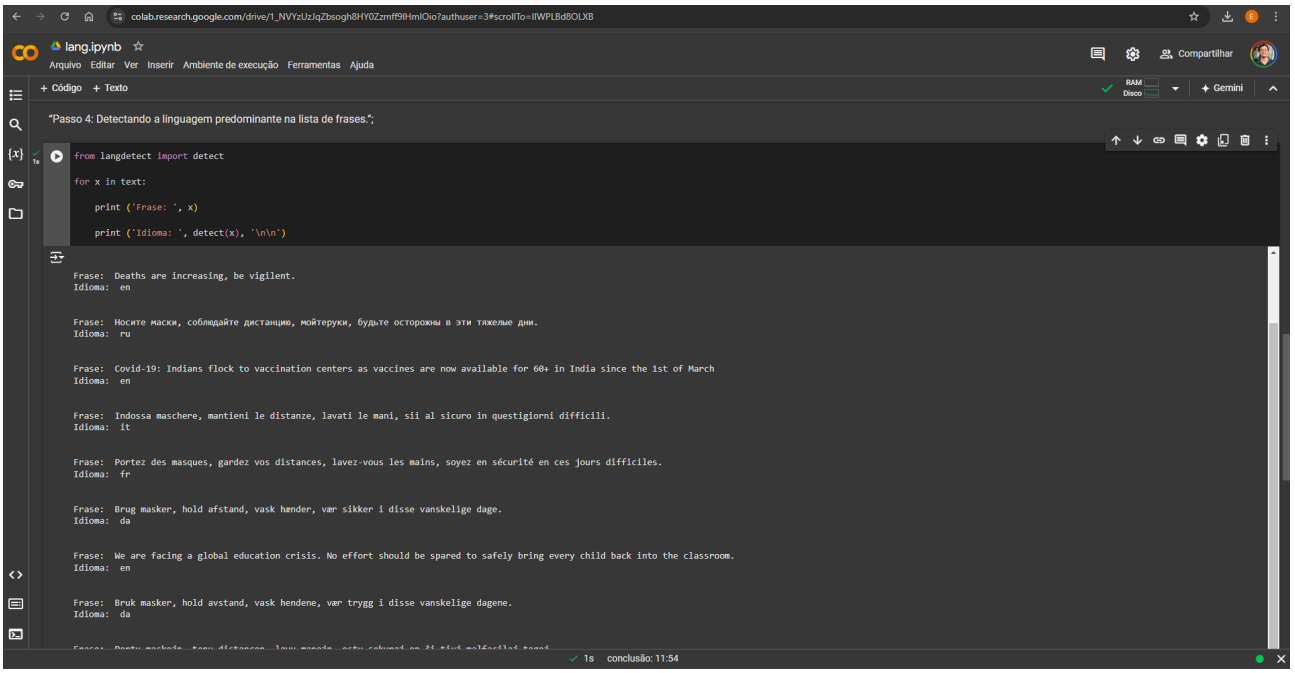


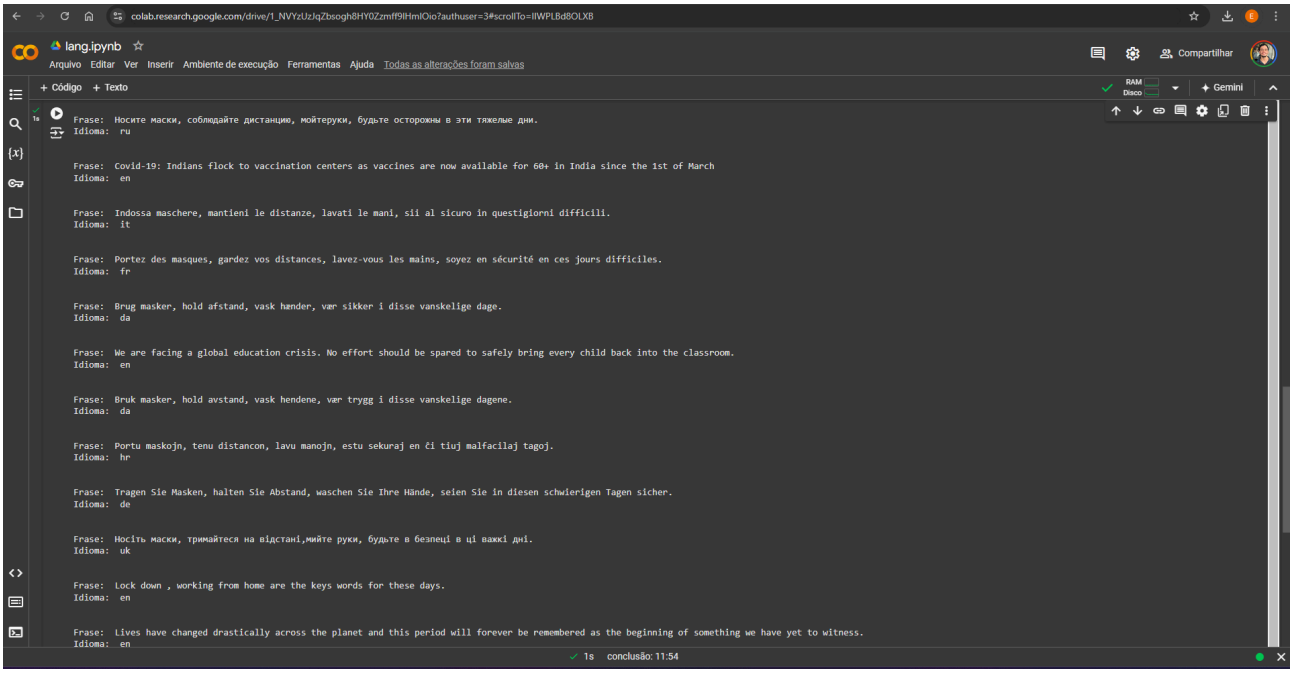

Passo 2:



Passo 3:


Passo 4:



# MISSÃO PRÁTICA

## Dando Inteligência ao Software 💻

### Contextualização

Recentemente a empresa em que você trabalha, como Analista de Data Science, foi contratada por uma grande empresa interessada em abrir, no Brasil, centros de treinamento esportivos vinculados a grandes clubes de futebol da Inglaterra. Nesse contexto, a empresa contratante deseja saber a percepção das pessoas em relação aos clubes citados, i.e., de uma forma geral, qual o sentimento delas, expressos através de textos publicados em redes sociais, sobre os mesmos.

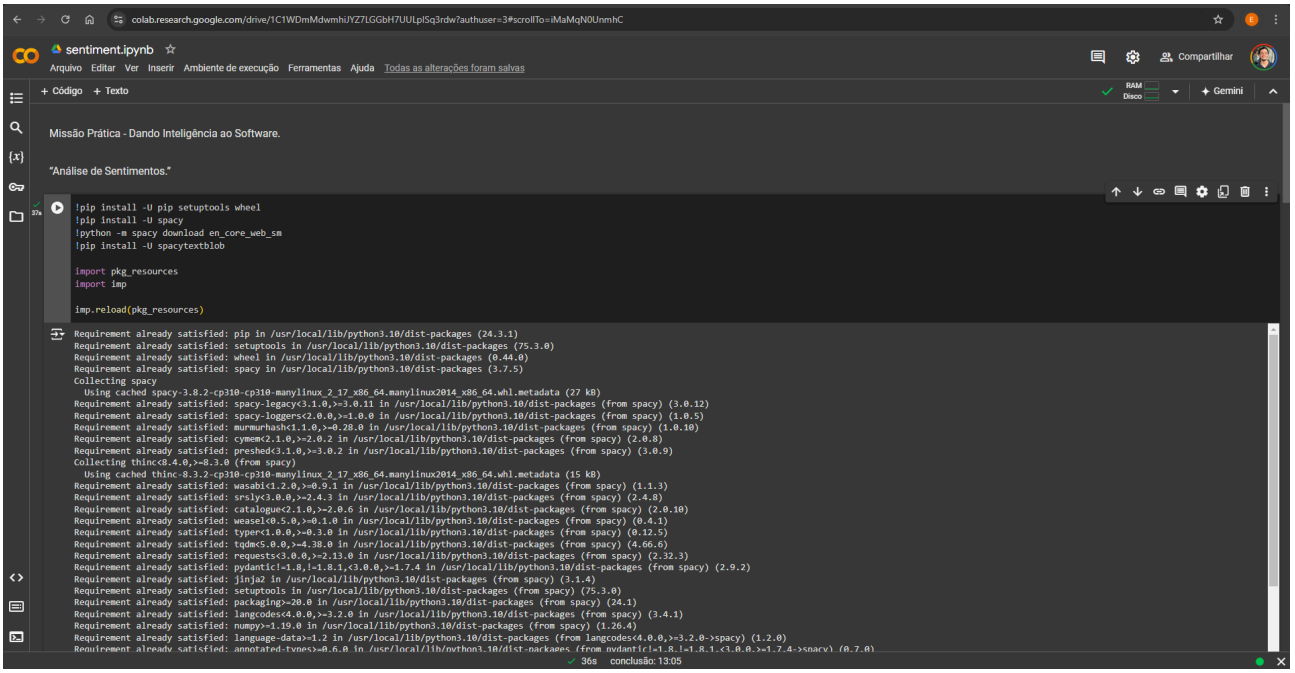
Para essa atividade você deverá aplicar a Analise de Sentimentos, tarefa de Processamento de Linguagem Natural com uso de Machine Learning. Todo o passo-a-passo necessário para a atividade é descrito a seguir.

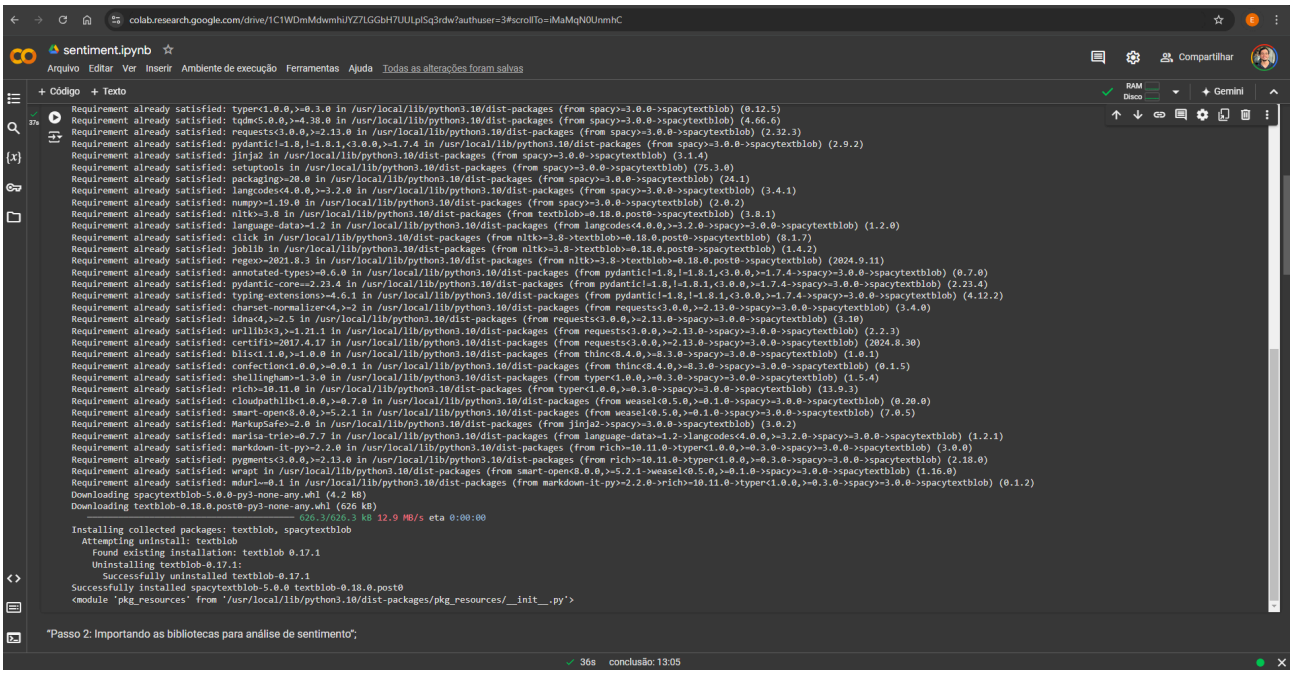
### Roteiro:

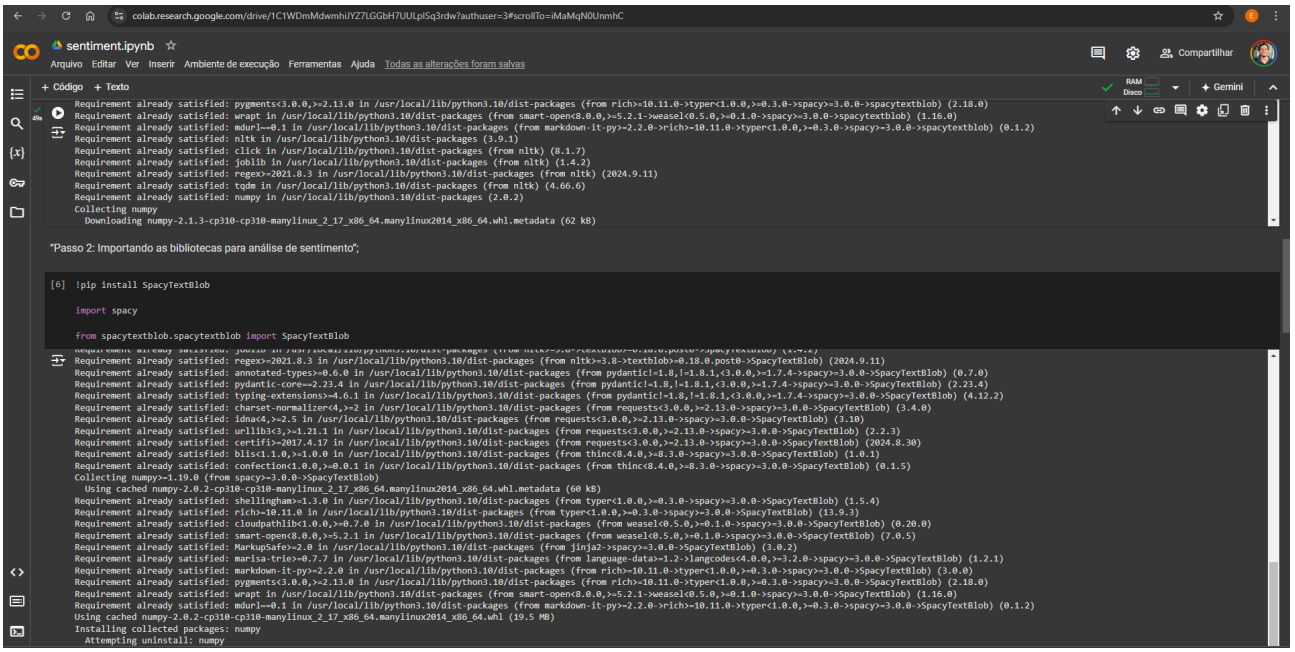
1. Estando logado no Google Colab, clique no menu "Arquivo" e selecione a opção "Novo notebook";
2. Na nova aba aberta no navegador, dê um nome ao seu notebook, clicando e alterando o nome automaticamente gerado – Untitled0.ipynb – para sentiment.ipynb;
3. Na janela de código, clique na opção "+Texto" (destacada no print abaixo) para inserir um bloco de texto;
4. No bloco de texto, insira um texto que explique o que será executado, a seguir, no bloco de código a ser inserido. Segue uma sugestão, que pode ser complementada posteriormente por você:
5. Insira um novo bloco de texto com o conteúdo: "Passo 1: Instalando as bibliotecas e recarregando o ambiente";
6. Insira um bloco de código com o conteúdo abaixo:
7. Execute o código acima. Durante o processo, caso receba, na tela, a mensagem dizendo que a sessão precisa ser reiniciada, clique no respectivo botão;
8. Insira um novo bloco de texto com o conteúdo: "Passo 2: Importando as bibliotecas para análise de sentimento";
9. Insira um bloco de código com as linhas abaixo e execute:
10. Insira um novo bloco de texto com o conteúdo: "Passo 3: Definindo o modelo e a pipeline a serem utilizadas na análise";
11. Crie um bloco de código com as linhas abaixo e execute:
12. Insira um novo bloco de texto com o conteúdo: "Passo 4: Definindo o texto inicial a ser analisado para verificação/validação da biblioteca";

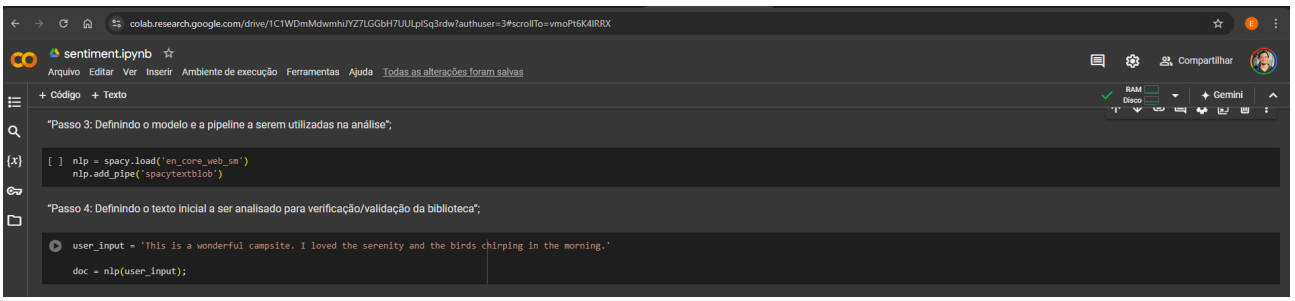
13. Crie um bloco de código com o conteúdo abaixo e o execute:
14. Insira um novo bloco de texto com o conteúdo: “Passo 5: Exibindo o resultado da primeira análise (um range entre -1 [avaliação negativa] e 1 [avaliação positiva]”;
15. Crie um bloco de código com as linhas abaixo e o execute:
16. Insira um novo bloco de texto com o conteúdo: “Passo 6: Definindo a lista de tweets a serem analisadas”;
17. Insira um bloco de código com as linhas abaixo e execute:
18. Insira um novo bloco de texto com o conteúdo: “Passo 7: Analisando os tweets”;
19. Insira e executa o bloco de código abaixo:
20. Por fim, caso queira, você poderá salvar uma cópia do código no Google Drive ou no Github. Tais opções encontram-se disponíveis a partir do menu Arquivo.

## Resultado:




colab.research.google.com/drive/1C1WDmMdwmhiJYZ7LGGbH7UULpISq3rdw?authuser=3#scrollTo=iMaMqN0UnmhC
sentiment.ipynb
Arquivo Editar Ver Inserir Ambiente de execução Ferramentas Ajuda Todas as alterações foram salvas
Compartilhar
+ Código + Texto
Gemini
Requirement already satisfied: typer<1.0.0,>=0.3.0 in /usr/local/lib/python3.10/dist-packages (from spacy>=3.0.0->spacytextblob) (0.12.5)
Requirement already satisfied: tqdm<5.0.0,>=4.38.0 in /usr/local/lib/python3.10/dist-packages (from spacy>=3.0.0->spacytextblob) (4.66.6)
Requirement already satisfied: requests<3.0.0,>=2.13.0 in /usr/local/lib/python3.10/dist-packages (from spacy>=3.0.0->spacytextblob) (2.32.3)
Requirement already satisfied: pydantic!=1.8,!=1.8.1,<3.0.0,>=1.7.4 in /usr/local/lib/python3.10/dist-packages (from spacy>=3.0.0->spacytextblob) (2.9.2)
Requirement already satisfied: jinja2 in /usr/local/lib/python3.10/dist-packages (from spacy>=3.0.0->spacytextblob) (3.1.4)
Requirement already satisfied: setuptools in /usr/local/lib/python3.10/dist-packages (from spacy>=3.0.0->spacytextblob) (75.3.0)
Requirement already satisfied: packaging>=20.0 in /usr/local/lib/python3.10/dist-packages (from spacy>=3.0.0->spacytextblob) (24.1)
Requirement already satisfied: langcodes<4.0.0,>=3.2.0 in /usr/local/lib/python3.10/dist-packages (from spacy>=3.0.0->spacytextblob) (3.4.1)
Requirement already satisfied: numpy>=1.19.0 in /usr/local/lib/python3.10/dist-packages (from spacy>=3.0.0->spacytextblob) (2.0.2)
Requirement already satisfied: nltk>=3.8 in /usr/local/lib/python3.10/dist-packages (from textblob>=0.18.0.post0->spacytextblob) (3.8.1)
Requirement already satisfied: language-data>=1.2 in /usr/local/lib/python3.10/dist-packages (from langcodes<4.0.0,>=3.2.0->spacy>=3.0.0->spacytextblob) (1.2.0)
Requirement already satisfied: click in /usr/local/lib/python3.10/dist-packages (from nltk>=3.8->textblob>=0.18.0.post0->spacytextblob) (8.1.7)
Requirement already satisfied: joblib in /usr/local/lib/python3.10/dist-packages (from nltk>=3.8->textblob>=0.18.0.post0->spacytextblob) (1.4.2)
Requirement already satisfied: regex>=2021.8.3 in /usr/local/lib/python3.10/dist-packages (from nltk>=3.8->textblob>=0.18.0.post0->spacytextblob) (2024.9.11)
Requirement already satisfied: annotated-types>=0.6.0 in /usr/local/lib/python3.10/dist-packages (from pydantic!=1.8,!=1.8.1,<3.0.0,>=1.7.4->spacy>=3.0.0->spacytextblob) (0.7.0)
Requirement already satisfied: pydantic-core==2.23.4 in /usr/local/lib/python3.10/dist-packages (from pydantic!=1.8,!=1.8.1,<3.0.0,>=1.7.4->spacy>=3.0.0->spacytextblob) (2.23.4)
Requirement already satisfied: typing-extensions>=4.6.1 in /usr/local/lib/python3.10/dist-packages (from pydantic!=1.8,!=1.8.1,<3.0.0,>=1.7.4->spacy>=3.0.0->spacytextblob) (4.12.2)
Requirement already satisfied: charset-normalizer<4,>=2 in /usr/local/lib/python3.10/dist-packages (from requests<3.0.0,>=2.13.0->spacy>=3.0.0->spacytextblob) (3.4.0)
Requirement already satisfied: idna<4,>=2.5 in /usr/local/lib/python3.10/dist-packages (from requests<3.0.0,>=2.13.0->spacy>=3.0.0->spacytextblob) (3.10)
Requirement already satisfied: urllib3<3,>=1.21.1 in /usr/local/lib/python3.10/dist-packages (from requests<3.0.0,>=2.13.0->spacy>=3.0.0->spacytextblob) (2.2.3)
Requirement already satisfied: certifi>=2017.4.17 in /usr/local/lib/python3.10/dist-packages (from requests<3.0.0,>=2.13.0->spacy>=3.0.0->spacytextblob) (2024.8.30)
Requirement already satisfied: blis<1.1.0,>=1.0.0 in /usr/local/lib/python3.10/dist-packages (from thinc<8.4.0,>=8.3.0->spacy>=3.0.0->spacytextblob) (1.0.1)
Requirement already satisfied: confection<1.0.0,>=0.0.1 in /usr/local/lib/python3.10/dist-packages (from thinc<8.4.0,>=8.3.0->spacy>=3.0.0->spacytextblob) (0.1.5)
Requirement already satisfied: shellingham>=1.3.0 in /usr/local/lib/python3.10/dist-packages (from typer<1.0.0,>=0.3.0->spacy>=3.0.0->spacytextblob) (1.5.4)
Requirement already satisfied: rich>=10.11.0 in /usr/local/lib/python3.10/dist-packages (from typer<1.0.0,>=0.3.0->spacy>=3.0.0->spacytextblob) (13.9.3)
Requirement already satisfied: cloudpathlib<1.0.0,>=0.7.0 in /usr/local/lib/python3.10/dist-packages (from weasel<0.5.0,>=0.1.0->spacy>=3.0.0->spacytextblob) (0.20.0)
Requirement already satisfied: smart-open<8.0.0,>=5.2.1 in /usr/local/lib/python3.10/dist-packages (from weasel<0.5.0,>=0.1.0->spacy>=3.0.0->spacytextblob) (7.0.5)
Requirement already satisfied: MarkupSafe>=2.0 in /usr/local/lib/python3.10/dist-packages (from jinja2->spacy>=3.0.0->spacytextblob) (3.0.2)
Requirement already satisfied: marisa-trie>=0.7.7 in /usr/local/lib/python3.10/dist-packages (from language-data>=1.2->langcodes<4.0.0,>=3.2.0->spacy>=3.0.0->spacytextblob) (1.2.1)
Requirement already satisfied: markdown-it-py>=2.2.0 in /usr/local/lib/python3.10/dist-packages (from rich>=10.11.0->typer<1.0.0,>=0.3.0->spacy>=3.0.0->spacytextblob) (3.0.0)
Requirement already satisfied: pygments<3.0.0,>=2.13.0 in /usr/local/lib/python3.10/dist-packages (from rich>=10.11.0->typer<1.0.0,>=0.3.0->spacy>=3.0.0->spacytextblob) (2.18.0)
Requirement already satisfied: wrapt in /usr/local/lib/python3.10/dist-packages (from smart-open<8.0.0,>=5.2.1->weasel<0.5.0,>=0.1.0->spacy>=3.0.0->spacytextblob) (1.16.0)
Requirement already satisfied: mdurl~=0.1 in /usr/local/lib/python3.10/dist-packages (from markdown-it-py>=2.2.0->rich>=10.11.0->typer<1.0.0,>=0.3.0->spacy>=3.0.0->spacytextblob) (0.1.2)
Downloading spacytextblob-5.0.0-py3-none-any.whl (4.2 kB)
Downloading textblob-0.18.0.post0-py3-none-any.whl (626 kB)
626.3/626.3 kB 12.9 MB/s eta 0:00:00
Installing collected packages: textblob, spacytextblob
Attempting uninstall: textblob
Found existing installation: textblob 0.17.1
Uninstalling textblob-0.17.1:
Successfully uninstalled textblob-0.17.1
Successfully installed spacytextblob-5.0.0 textblob-0.18.0.post0
<module 'pkg_resources' from '/usr/local/lib/python3.10/dist-packages/pkg_resources/__init__.py'>
"Passo 2: Importando as bibliotecas para análise de sentimento";
36s conclusão: 13:05


colab.research.google.com/drive/1C1WDmMdwmhiJYZ7LGGbH7UULpISq3rdw?authuser=3#scrollTo=iMaMqN0UnmhC
sentiment.ipynb
Arquivo Editar Ver Inserir Ambiente de execução Ferramentas Ajuda Todas as alterações foram salvas
Compartilhar
+ Código + Texto
Gemini
Requirement already satisfied: pygments<3.0.0,>=2.13.0 in /usr/local/lib/python3.10/dist-packages (from rich>=10.11.0->typer<1.0.0,>=0.3.0->spacy>=3.0.0->spacytextblob) (2.18.0)
Requirement already satisfied: wrapt in /usr/local/lib/python3.10/dist-packages (from smart-open<8.0.0,>=5.2.1->weasel<0.5.0,>=0.1.0->spacy>=3.0.0->spacytextblob) (1.16.0)
Requirement already satisfied: mdurl~=0.1 in /usr/local/lib/python3.10/dist-packages (from markdown-it-py>=2.2.0->rich>=10.11.0->typer<1.0.0,>=0.3.0->spacy>=3.0.0->spacytextblob) (0.1.2)
Requirement already satisfied: nltk in /usr/local/lib/python3.10/dist-packages (3.9.1)
Requirement already satisfied: click in /usr/local/lib/python3.10/dist-packages (from nltk) (8.1.7)
Requirement already satisfied: joblib in /usr/local/lib/python3.10/dist-packages (from nltk) (1.4.2)
Requirement already satisfied: regex>=2021.8.3 in /usr/local/lib/python3.10/dist-packages (from nltk) (2024.9.11)
Requirement already satisfied: tqdm in /usr/local/lib/python3.10/dist-packages (from nltk) (4.66.6)
Requirement already satisfied: numpy in /usr/local/lib/python3.10/dist-packages (2.0.2)
Collecting numpy
Downloading numpy-2.1.3-cp310-cp310-manylinux_2_17_x86_64.manylinux2014_x86_64.whl.metadata (62 kB)
"Passo 2: Importando as bibliotecas para análise de sentimento";
[6] !pip install SpacyTextBlob
import spacy
from spacytextblob.spacytextblob import SpacyTextBlob
Requirement already satisfied: regex>=2021.8.3 in /usr/local/lib/python3.10/dist-packages (from nltk>=3.8->textblob>=0.18.0.post0->spacytextblob) (2024.9.11)
Requirement already satisfied: annotated-types>=0.6.0 in /usr/local/lib/python3.10/dist-packages (from pydantic!=1.8,!=1.8.1,<3.0.0,>=1.7.4->spacy>=3.0.0->SpacyTextBlob) (0.7.0)
Requirement already satisfied: pydantic-core==2.23.4 in /usr/local/lib/python3.10/dist-packages (from pydantic!=1.8,!=1.8.1,<3.0.0,>=1.7.4->spacy>=3.0.0->SpacyTextBlob) (2.23.4)
Requirement already satisfied: typing-extensions>=4.6.1 in /usr/local/lib/python3.10/dist-packages (from pydantic!=1.8,!=1.8.1,<3.0.0,>=1.7.4->spacy>=3.0.0->SpacyTextBlob) (4.12.2)
Requirement already satisfied: charset-normalizer<4,>=2 in /usr/local/lib/python3.10/dist-packages (from requests<3.0.0,>=2.13.0->spacy>=3.0.0->SpacyTextBlob) (3.4.0)
Requirement already satisfied: idna<4,>=2.5 in /usr/local/lib/python3.10/dist-packages (from requests<3.0.0,>=2.13.0->spacy>=3.0.0->SpacyTextBlob) (3.10)
Requirement already satisfied: urllib3<3,>=1.21.1 in /usr/local/lib/python3.10/dist-packages (from requests<3.0.0,>=2.13.0->spacy>=3.0.0->SpacyTextBlob) (2.2.3)
Requirement already satisfied: certifi>=2017.4.17 in /usr/local/lib/python3.10/dist-packages (from requests<3.0.0,>=2.13.0->spacy>=3.0.0->SpacyTextBlob) (2024.8.30)
Requirement already satisfied: blis<1.1.0,>=1.0.0 in /usr/local/lib/python3.10/dist-packages (from thinc<8.4.0,>=8.3.0->spacy>=3.0.0->SpacyTextBlob) (1.0.1)
Requirement already satisfied: confection<1.0.0,>=0.0.1 in /usr/local/lib/python3.10/dist-packages (from thinc<8.4.0,>=8.3.0->spacy>=3.0.0->SpacyTextBlob) (0.1.5)
Collecting numpy>=1.19.0 (from spacy>=3.0.0->SpacyTextBlob)
Using cached numpy-2.0.2-cp310-cp310-manylinux_2_17_x86_64.manylinux2014_x86_64.whl.metadata (60 kB)
Requirement already satisfied: shellingham>=1.3.0 in /usr/local/lib/python3.10/dist-packages (from typer<1.0.0,>=0.3.0->spacy>=3.0.0->SpacyTextBlob) (1.5.4)
Requirement already satisfied: rich>=10.11.0 in /usr/local/lib/python3.10/dist-packages (from typer<1.0.0,>=0.3.0->spacy>=3.0.0->SpacyTextBlob) (13.9.3)
Requirement already satisfied: cloudpathlib<1.0.0,>=0.7.0 in /usr/local/lib/python3.10/dist-packages (from weasel<0.5.0,>=0.1.0->spacy>=3.0.0->SpacyTextBlob) (0.20.0)
Requirement already satisfied: smart-open<8.0.0,>=5.2.1 in /usr/local/lib/python3.10/dist-packages (from weasel<0.5.0,>=0.1.0->spacy>=3.0.0->SpacyTextBlob) (7.0.5)
Requirement already satisfied: MarkupSafe>=2.0 in /usr/local/lib/python3.10/dist-packages (from jinja2->spacy>=3.0.0->SpacyTextBlob) (3.0.2)
Requirement already satisfied: marisa-trie>=0.7.7 in /usr/local/lib/python3.10/dist-packages (from language-data>=1.2->langcodes<4.0.0,>=3.2.0->spacy>=3.0.0->SpacyTextBlob) (1.2.1)
Requirement already satisfied: markdown-it-py>=2.2.0 in /usr/local/lib/python3.10/dist-packages (from rich>=10.11.0->typer<1.0.0,>=0.3.0->spacy>=3.0.0->SpacyTextBlob) (3.0.0)
Requirement already satisfied: pygments<3.0.0,>=2.13.0 in /usr/local/lib/python3.10/dist-packages (from rich>=10.11.0->typer<1.0.0,>=0.3.0->spacy>=3.0.0->SpacyTextBlob) (2.18.0)
Requirement already satisfied: wrapt in /usr/local/lib/python3.10/dist-packages (from smart-open<8.0.0,>=5.2.1->weasel<0.5.0,>=0.1.0->spacy>=3.0.0->SpacyTextBlob) (1.16.0)
Requirement already satisfied: mdurl~=0.1 in /usr/local/lib/python3.10/dist-packages (from markdown-it-py>=2.2.0->rich>=10.11.0->typer<1.0.0,>=0.3.0->spacy>=3.0.0->SpacyTextBlob) (0.1.2)
Using cached numpy-2.0.2-cp310-cp310-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (19.5 MB)
Installing collected packages: numpy
Attempting uninstall: numpy


colab.research.google.com/drive/1C1WDmMdwmhiJYZ7LGGbH7UULpISq3rdw?authuser=3#scrollTo=vmoPt6K4IRRX
sentiment.ipynb
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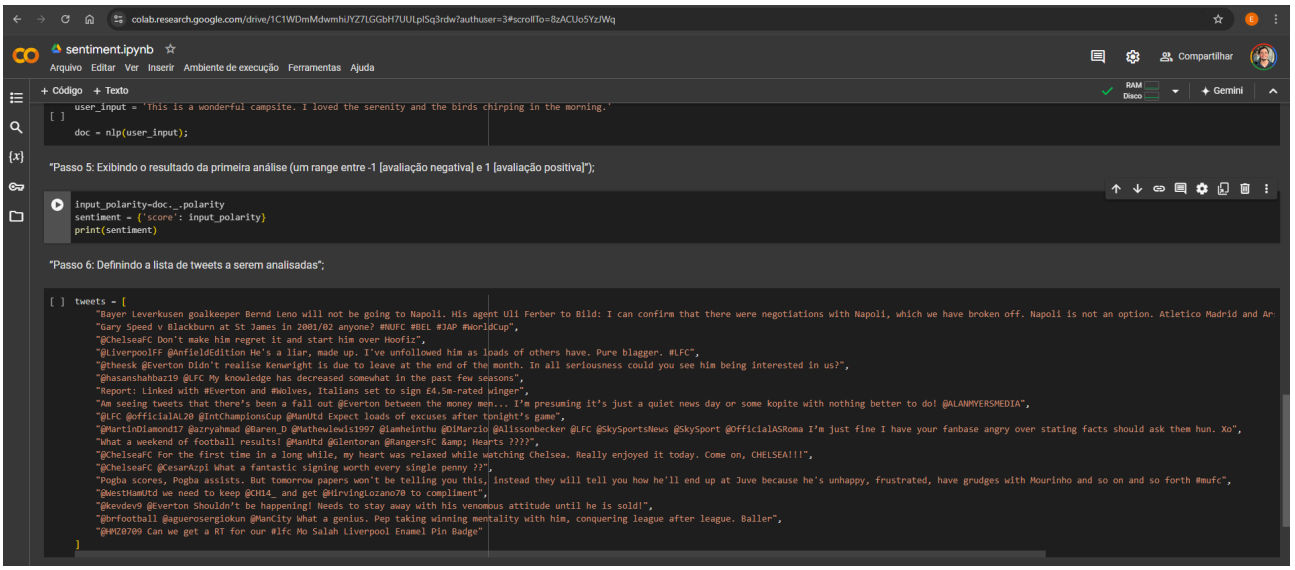
"Passo 3: Definindo o modelo e a pipeline a serem utilizadas na análise";
[ ] nlp = spacy.load('en_core_web_sm')
nlp.add_pipe('spacytextblob')
"Passo 4: Definindo o texto inicial a ser analisado para verificação/validação da biblioteca";
user_input = 'This is a wonderful campsite. I loved the serenity and the birds chirping in the morning.'
doc = nlp(user_input);


colab.research.google.com/drive/1C1WDmMdwmhiJYZ7LGGbH7UULpISq3rdw?authuser=3#scrollTo=8zACUo5YzJWq
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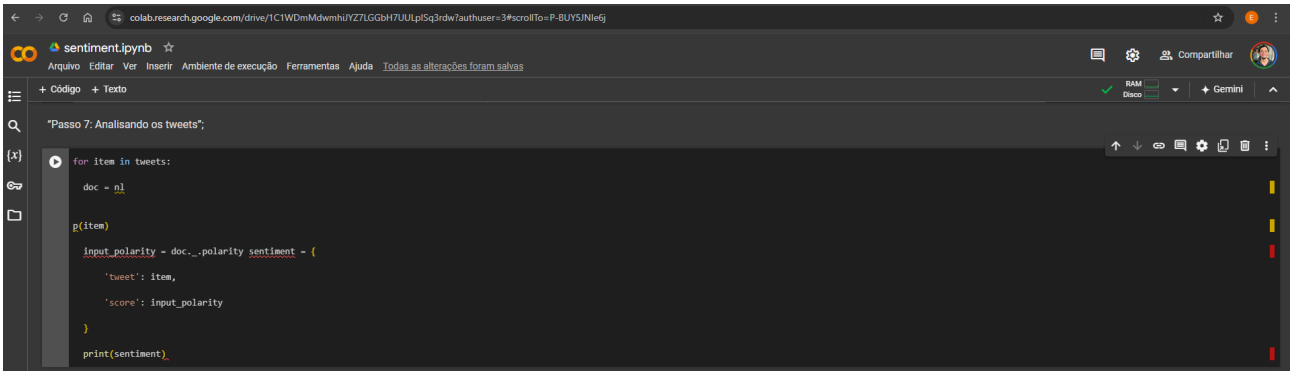
user_input = 'This is a wonderful campsite. I loved the serenity and the birds chirping in the morning.'
doc = nlp(user_input);
"Passo 5: Exibindo o resultado da primeira análise (um range entre -1 [avaliação negativa] e 1 [avaliação positiva]");
input_polarity=doc._.polarity
sentiment = {'score': input_polarity}
print(sentiment)
"Passo 6: Definindo a lista de tweets a serem analisadas";
tweets = [
"Bayer Leverkusen goalkeeper Bernd Leno will not be going to Napoli. His agent Uli Ferber to Bild: I can confirm that there were negotiations with Napoli, which we have broken off. Napoli is not an option. Atletico Madrid and Ar
"Gary Speed v Blackburn at St James in 2001/02 anyone? #NUFC #BEL #JAP #WorldCup",
"@ChelseaFC Don't make him regret it and start him over Hoofiz",
"@LiverpoolFF @AnfieldEdition He's a liar, made up. I've unfollowed him as loads of others have. Pure blagger. #LFC",
"@theesk @Everton Didn't realise Kenwright is due to leave at the end of the month. In all seriousness could you see him being interested in us?",
"@hasanshahbaz19 @LFC My knowledge has decreased somewhat in the past few seasons",
"Report: Linked with #Everton and #Wolves, Italians set to sign £4.5m-rated winger",
"Am seeing tweets that there's been a fall out @Everton between the money men... I'm presuming it's just a quiet news day or some kopite with nothing better to do! @ALANMYERSMEDIA",
"@LFC @officialAL20 @IntChampionsCup @ManUtd Expect loads of excuses after tonight's game",
"@MartinDiamond17 @azryahmad @Baren_D @Mathewlewis1997 @lamheinthu @DiMarzio @Alissonbecker @LFC @SkySportsNews @SkySport @OfficialASRoma I'm just fine I have your fanbase angry over stating facts should ask them hun. Xo",
"What a weekend of football results! @ManUtd @Glentoran @RangersFC & Hearts ????",
"@ChelseaFC For the first time in a long while, my heart was relaxed while watching Chelsea. Really enjoyed it today. Come on, CHELSEA!!!",
"@ChelseaFC @CesarAzpi What a fantastic signing worth every single penny ??",
"Pogba scores, Pogba assists. But tomorrow papers won't be telling you this, instead they will tell you how he'll end up at Juve because he's unhappy, frustrated, have grudges with Mourinho and so on and so forth #mufc",
"@WestHamUtd we need to keep @CH14_ and get @HirvingLozano70 to compliment",
"@kevdev9 @Everton Shouldn't be happening! Needs to stay away with his venomous attitude until he is sold!",
"@bfootball @aguerosergiokun @ManCity What a genius. Pep taking winning mentality with him, conquering league after league. Baller",
"@HM20709 Can we get a RT for our #lfc Mo Salah Liverpool Enamel Pin Badge"
]


colab.research.google.com/drive/1C1WDmMdwmhiJYZ7LGGbH7UULpISq3rdw?authuser=3#scrollTo=P-BUYSJNIe6j
sentiment.ipynb
Arquivo Editar Ver Inserir Ambiente de execução Ferramentas Ajuda Todas as alterações foram salvas
Compartilhar
+ Código + Texto
Gemini
"Passo 7: Analisando os tweets";
for item in tweets:
doc = nl
p(item)
input_polarity = doc._.polarity sentiment = {
'tweet': item,
'score': input_polarity
}
print(sentiment)