WEB SCRAPING ASSINGMENT BEAUTIFUL SOUP -1(2)

NAME – SUBHAM

BATCH – DS2401

Q1-Please visit https://www.cnbc.com/world/?region=world and scrap-

a) headings

b) date

c) News link

Ans)

```
In [32]: !pip install bs4
         !pip install requests
```

```
Requirement already satisfied: bs4 in c:\users\dell\anaconda3\lib\site-packages (0.0.2)
Requirement already satisfied: beautifulsoup4 in c:\users\dell\anaconda3\lib\site-packages (from bs4) (4.12.2)
Requirement already satisfied: soupsieve>1.2 in c:\users\dell\anaconda3\lib\site-packages (from beautifulsoup4->bs4) (2.4)
Requirement already satisfied: requests in c:\users\dell\anaconda3\lib\site-packages (2.31.0)
Requirement already satisfied: charset-normalizer<4,>=2 in c:\users\dell\anaconda3\lib\site-packages (from requests) (2.0.4)
Requirement already satisfied: idna<4,>=2.5 in c:\users\dell\anaconda3\lib\site-packages (from requests) (3.4)
Requirement already satisfied: urllib3<3,>=1.21.1 in c:\users\dell\anaconda3\lib\site-packages (from requests) (1.26.16)
Requirement already satisfied: certifi>=2017.4.17 in c:\users\dell\anaconda3\lib\site-packages (from requests) (2023.7.22)
```

```
In [2]: from bs4 import BeautifulSoup
        import requests
```

```
In [3]: #question 1
        cnbc=requests.get('https://www.cnbc.com/world/?region=world')
        cnbc
```

```
Out[3]: <Response [200]>
```

```
In [5]: cnbc1=BeautifulSoup(cnbc.content)
        cnbc1
```

```
Out[5]: <!DOCTYPE html>
        <html itemscope="" itemtype="https://schema.org/WebPage" lang="en" prefix="og=https://ogp.me/ns#"><head><meta content="max-im
        age-preview:large" name="robots"/><meta content="telephone=no" name="format-detection"/><link href="https://sc.cnbcfm.com/app
        lications/cnbc.com/staticcontent/img/favicon.ico" rel="icon" type="image/x-icon"/><style type="text/css">@charset "UTF-8";.Mo
        dal-modalBackground{background:#000000b3;height:100%;left:0;overflow-y:auto;position:fixed;top:0;transition:background-color
        .4s;width:100%;z-index:100001}.Modal-bottomModal.Modal-modal{background:#f8f8f8;border-radius:3px;bottom:0;box-shadow:5px 5px
        20px #1717171a;display:inline-block;height:528px;left:0;margin-top:0!important;max-width:100%;position:fixed;top:auto;transfo
        rm:none;width:100%}@media (max-width:1019px){.Modal-bottomModal.Modal-modal{height:642px}}@media (max-width:759px){.Modal-bot
        tomModal.Modal-modal{height:100%;position:relative;top:0}}.Modal-modal{background-color:#fff;border-radius:3px;box-shadow:5px
        5px 20px #1717171a;display:inline-block;left:50%;margin-top:10vh;max-width:100%;overflow:auto;position:relative;transform:tra
        nslateX(-50%)}@media (max-width:759px){.Modal-modal{height:100%;left:auto;margin:0;transform:none;width:100%}}.Modal-modalCon
        tents{overflow:auto}@media (max-width:759px){.Modal-modalContents{height:100%}}.Modal-closeButton{color:#a9a9a9;cursor:pointe
        r;position:absolute;right:12px;top:12px}.Modal-closeButton:focus-visible>svg{border:1px solid #071d39;border-radius:4px}.Reca
        ptchaAcknowledgement-acknowledgement{color:#747474;flex:1;font-size:11px;font-weight:600;line-height:15px;margin-bottom:7px;m
        argin-top:7px;width:100%}.RecaptchaAcknowledgement-acknowledgement a{color:#747474;font-weight:500;text-decoration:none}.Reca
        ptchaAcknowledgement-acknowledgement a:hover{color:#747474;text-decoration:underline}.RecaptchaAcknowledgement-acknowledgemen
        t a:active{color:#747474}.RecaptchaAcknowledgement-reCaptchaPadding{margin-top:15px}.RecaptchaAcknowledgement-centerAligned{t
        ext-align:center}.RecaptchaAcknowledgement-leftAligned{text-align:left}.RecaptchaAcknowledgement-rightAligned{text-align:righ
        t}.RecaptchaAcknowledgement-allAccess{margin-top:unset;order:1}.AuthForms-container{margin:0 auto;padding:0 10px;width:458px}
```

```
In [6]: headline=[]
        for i in cnbc1.find_all('div',class_="RiverHeadline-headline RiverHeadline-hasThumbnail"):
            headline.append(i.text)
        headline
```

```
Out[6]: ['Tesla rolls out new incentives in China as price war escalates ',
         "This dividend strategy is swapping out a chip stock winner for Starbucks. Here's why",
         'WTO fails on major reforms, extends digital tariff ban in Abu Dhabi meeting',
         "OpenAI says in memo that Musk's claims 'stem from Elon's regrets' that he's not part of company",
         "Lawyers who voided Elon Musk's pay as excessive want $6 bln fee",
         "Forget cash — it's time to move into fixed income, Franklin Templeton strategist says",
         'U.S. crude touches $80 for first time since November before OPEC+ decision',
         "Ukraine's losses on the battlefield could make the war more dangerous for Russia",
         "Navalny's funeral in pictures: Mourners gather in Moscow as riot police contain crowds",
         'China calls on foreign businesses to share their problems as investment slumps',
         'Indonesia Feb inflation rate beats view on soaring rice, chilli prices ',
         "India 'easily' the fastest growing economy, IMF director says, as GDP growth blows past estimates",
         "Yum China CEO says consumers are growing more 'rational' as rising costs cut dining budgets",
         "OpenAI rival Cohere says some AI startups build Bugatti sports cars, 'We make F-150s'",
         'Reddit seeking a valuation of up to $6.5 billion in IPO',
         'Biden announces U.S. will airdrop food aid into Gaza',
         'Europe is having its worst earnings season in 4 years — with little hope of a quick turnaround',
         'In a bizarre British special election, a pro-Palestinian firebrand just swept to victory',
         'Boeing is in talks to buy back fuselage maker Spirit AeroSystems after spate of quality defects',
         'Nissan, Fisker in advanced talks on investment, partnership, sources tell Reuters']
```

```
In [7]: news_link=[]
        for i in cnbc1.find_all('div',class_="RiverHeadline-headline RiverHeadline-hasThumbnail"):
            news_link.append(i.a['href'])
        news_link
```

Out[7]: ['https://www.cnbc.com/2024/03/02/tesla-rolls-out-new-incentives-in-china-as-price-war-escalates-.html',
         '/pro/',
         'https://www.cnbc.com/2024/03/02/wto-fails-on-major-reforms-extends-digital-tariff-ban-in-abu-dhabi-meeting.html',
         'https://www.cnbc.com/2024/03/01/openai-says-musk-claims-in-lawsuit-stem-from-elons-regrets-hes-out.html',
         'https://www.cnbc.com/2024/03/02/lawyers-who-voided-elon-musks-pay-as-excessive-want-6-bln-fee.html',
         '/pro/',
         'https://www.cnbc.com/2024/03/01/crude-oil-today-wti-brent-jump-as-market-tightens.html',
         'https://www.cnbc.com/2024/03/01/ukraines-losses-on-the-battlefield-raise-more-war-risks-for-russia.html',
         'https://www.cnbc.com/2024/03/01/navalnys-funeral-in-pictures-mourners-gather-in-moscow.html',
         'https://www.cnbc.com/2024/03/01/china-calls-on-foreign-businesses-to-share-their-problems-as-investment-slumps.html',
         'https://www.cnbc.com/2024/03/02/indonesia-feb-inflation-rate-beats-view-on-soaring-rice-chilli-prices-.html',
         'https://www.cnbc.com/2024/03/01/india-easily-fastest-growing-economy-imf-director-says-as-gdp-growth-soars.html',
         'https://www.cnbc.com/2024/03/01/yum-china-ceo-says-consumers-are-growing-more-rational.html',
         'https://www.cnbc.com/2024/03/01/cohere-says-rivals-are-building-bugatti-sports-cars-we-make-f150s.html',
         'https://www.cnbc.com/2024/03/01/reddit-seeking-a-valuation-of-up-to-6point5-billion-in-ipo.html',
         'https://www.cnbc.com/2024/03/01/biden-announces-us-will-airdrop-food-aid-into-gaza.html',
         'https://www.cnbc.com/2024/03/01/europe-is-having-its-worst-earnings-season-since-the-onset-of-covid.html',
         'https://www.cnbc.com/2024/03/01/this-is-for-gaza-middle-east-conflict-defines-bizarre-by-election-in-northern-english-town.html',
         'https://www.cnbc.com/2024/03/01/spirit-aerosystems-boeing.html',
         'https://www.cnbc.com/2024/03/01/nissan-fisker-in-advanced-talks-on-investment-partnership-sources-tell-reuters.html']
```

```
In [8]: date=[]
        for i in cnbc1.find_all('span',class_="RiverByline-datePublished"):
            date.append(i.text)
        date
```

Out[8]: ['4 hours ago', '4 hours ago']

```
In [10]: import pandas as pd
         df1=pd.DataFrame({'headline':headline,'news link':news_link})
         df1
```

Out[10]:

	headline	news link
0	Tesla rolls out new incentives in China as pri...	https://www.cnbc.com/2024/03/02/tesla-rolls-ou...
1	This dividend strategy is swapping out a chip ...	/pro/
2	WTO fails on major reforms, extends digital ta...	https://www.cnbc.com/2024/03/02/wto-fails-on-m...
3	OpenAI says in memo that Musk's claims 'stem f...	https://www.cnbc.com/2024/03/01/openai-says-mu...
4	Lawyers who voided Elon Musk's pay as excessiv...	https://www.cnbc.com/2024/03/02/lawyers-who-vo...
5	Forget cash — it's time to move into fixed inc...	/pro/
6	U.S. crude touches $80 for first time since No...	https://www.cnbc.com/2024/03/01/crude-oil-toda...
7	Ukraine's losses on the battlefield could make...	https://www.cnbc.com/2024/03/01/ukraines-losse...
8	Navalny's funeral in pictures: Mourners gather...	https://www.cnbc.com/2024/03/01/navalnys-funer...
9	China calls on foreign businesses to share the...	https://www.cnbc.com/2024/03/01/china-calls-on...
10	Indonesia Feb inflation rate beats view on soa...	https://www.cnbc.com/2024/03/02/indonesia-feb-...
11	India 'easily' the fastest growing economy, IM...	https://www.cnbc.com/2024/03/01/india-easily-f...
12	Yum China CEO says consumers are growing more ...	https://www.cnbc.com/2024/03/01/yum-china-ceo-...
13	OpenAI rival Cohere says some AI startups buil...	https://www.cnbc.com/2024/03/01/cohere-says-ri...
14	Reddit seeking a valuation of up to $6.5 billi...	https://www.cnbc.com/2024/03/01/reddit-seeking...
15	Biden announces U.S. will airdrop food aid int...	https://www.cnbc.com/2024/03/01/biden-announce...
16	Europe is having its worst earnings season in ...	https://www.cnbc.com/2024/03/01/europe-is-havi...
17	In a bizarre British special election, a pro-P...	https://www.cnbc.com/2024/03/01/this-is-for-ga...

```python
In [22]: headline1=[]
         for i in cnbc1.find_all('a',class_="LatestNews-headline"):
             headline1.append(i.text)
         headline1
```

Out[22]: ["OpenAI says in memo that Musk's claims 'stem from Elon's regrets' that he's gone",
 'Waymo wins approval to expand robotaxi service in Los Angeles, San Francisco Peninsula',
 'CEO explains why RadNet is piloting mammogram screenings in Walmart stores',
 "Cramer's Lightning Round: 'Not recommending' Global Net Lease",
 "Cramer's week ahead: Watch for earnings from Target, CrowdStrike, Kroger and more",
 'Super Micro joining S&P 500 after stock price soars more than 20-fold in 2 years',
 'Change Healthcare sets up a new electronic prescription service and funding program',
 'Lockheed Martin looks to acquire spacecraft maker Terran Orbital for $600M',
 'Google Gemini head removes social media profiles after AI product launch',
 'Reddit seeking a valuation of up to $6.5 billion in IPO',
 'NASA shuts down satellite refueling project after Maxar is cited for poor performance',
 'Fed Chair Powell and jobs data take center stage next week on Wall Street',
 "Here are the Nasdaq's most beloved stocks that are expected to rally",
 "What worked and didn't work this week from AI and cyber to consumer and gaming",
 "Judge rejects AstraZeneca's challenge to Medicare drug price negotiations",
 'What to know about this hot AI stock up nearly 800% in the past year',
 'Dell shares have best day since return to stock market in 2018',
 "Appliances don't last like they used to, experts say. Consider this before getting repair",
 'Co-defendant in Sen. Bob Menendez corruption case pleads guilty',
 'Stocks making the biggest moves midday: Spirit AeroSystems, Zscaler and more',
 'These are the most overbought stocks with the market at a record',
 'AI startup Cohere says some rivals build Bugatti sports cars, \'We make F150s\'",
 'CVS and Walgreens to start selling abortion pill mifepristone this month\xa0',
 '7 places to retire abroad and live comfortably on as little as $1,000/month',
 'Couple earns up to $70,000 a month, but still feels stressed about money',
 "Wall Street is worried about NYCB's loan losses and deposits as stock sinks ",
 'This dividend strategy is swapping out chip stock winner for Starbucks',
 'The U.S. national debt is rising by $1 trillion about every 100 days',

```python
In [23]: dates=[]
         for i in cnbc1.find_all('time',class_="LatestNews-timestamp"):
             dates.append(i.text)
         dates
```

Out[23]: ['4 Hours Ago',
 '7 Hours Ago',
 '7 Hours Ago',
 '7 Hours Ago',
 '8 Hours Ago',
 '8 Hours Ago',
 '8 Hours Ago',
 '9 Hours Ago',
 '9 Hours Ago',
 '10 Hours Ago',
 '11 Hours Ago',
 '11 Hours Ago',
 '12 Hours Ago',
 '12 Hours Ago',
 '12 Hours Ago',
 '13 Hours Ago',
 '13 Hours Ago',
 '13 Hours Ago',
 '13 Hours Ago',
 '13 Hours Ago',
 '14 Hours Ago',
 '14 Hours Ago',
 '14 Hours Ago',
 '14 Hours Ago',
 '14 Hours Ago',
 '14 Hours Ago',
 '14 Hours Ago',
 '15 Hours Ago',
 '15 Hours Ago']

```
In [24]: news_link1=[]
         for i in cnbc1.find_all('div',class_="LatestNews-headlineWrapper"):
             news_link1.append(i.a['href'])
         news_link1
```

Out[24]: ['https://www.cnbc.com/2024/03/01/openai-says-musk-claims-in-lawsuit-stem-from-elons-regrets-hes-out.html',
          'https://www.cnbc.com/2024/03/01/waymo-approved-to-expand-robotaxi-service-in-los-angeles-sf-peninsula.html',
          'https://www.cnbc.com/2024/03/01/ceo-explains-why-radnet-is-piloting-mammogram-screenings-in-walmart-stores.html'
          'https://www.cnbc.com/2024/03/01/cramers-lightning-round-not-recommending-global-net-lease.html',
          'https://www.cnbc.com/2024/03/01/cramers-week-ahead-earnings-from-target-crowdstrike-and-kroger.html',
          'https://www.cnbc.com/2024/03/01/super-micro-joining-sp-500-after-20-fold-jump-in-stock-in-two-years.html',
          'https://www.cnbc.com/2024/03/01/change-healthcare-new-electronic-prescription-tool-amid-cyberattack.html',
          'https://www.cnbc.com/2024/03/01/lockheed-martin-looks-to-acquire-terran-orbital-for-about-600-million.html',
          'https://www.cnbc.com/2024/03/01/google-gemini-head-removes-social-media-profiles-after-product-launch.html',
          'https://www.cnbc.com/2024/03/01/reddit-seeking-a-valuation-of-up-to-6point5-billion-in-ipo.html',
          'https://www.cnbc.com/2024/03/01/nasa-shuts-down-maxar-led-osam-1-satellite-refueling-project.html',
          '/pro/',
          '/pro/',
          '/investingclub/',
          'https://www.cnbc.com/2024/03/01/medicare-drug-price-negotiations-judge-rejects-astrazeneca-challenge.html',
          '/pro/',
          'https://www.cnbc.com/2024/03/01/dell-shares-have-best-day-since-return-to-stock-market-in-2018.html',
          'https://www.cnbc.com/2024/03/01/household-appliances-cost-more-but-dont-last-like-they-used-to.html',
          'https://www.cnbc.com/2024/03/01/co-defendant-in-sen-bob-menendez-corruption-case-pleads-guilty.html',
          'https://www.cnbc.com/2024/03/01/stocks-making-the-biggest-moves-midday-spr-zs-dell-amd-and-more.html',
          '/pro/',
          'https://www.cnbc.com/2024/03/01/cohere-says-rivals-are-building-bugatti-sports-cars-we-make-f150s.html',
          'https://www.cnbc.com/2024/03/01/cvs-walgreens-to-start-selling-abortion-pill-mifepristone-this-month-.html',
          'https://www.cnbc.com/2024/03/01/us-news-world-report-most-affordable-places-retire-abroad.html',
          'https://www.cnbc.com/2024/03/01/why-couple-worth-1point3-million-dollars-still-feels-broke.html',
          'https://www.cnbc.com/2024/03/01/wall-street-worries-about-nycbs-loan-losses-and-deposit-levels.html',
          '/pro/',
          'https://www.cnbc.com/2024/03/01/the-us-national-debt-is-rising-by-1-trillion-about-every-100-days.html',
          '/investingclub/',
```

```
In [25]: df2=pd.DataFrame({'headline':headline1,'date/time':dates,'news link':news_link1})
         df2
```

Out[25]:

	headline	date/time	news link
0	OpenAI says in memo that Musk's claims 'stem f...	4 Hours Ago	https://www.cnbc.com/2024/03/01/openai-says-mu...
1	Waymo wins approval to expand robotaxi service...	7 Hours Ago	https://www.cnbc.com/2024/03/01/waymo-approved...
2	CEO explains why RadNet is piloting mammogram ...	7 Hours Ago	https://www.cnbc.com/2024/03/01/ceo-explains-w...
3	Cramer's Lightning Round: 'Not recommending' G...	7 Hours Ago	https://www.cnbc.com/2024/03/01/cramers-lightn...
4	Cramer's week ahead: Watch for earnings from T...	8 Hours Ago	https://www.cnbc.com/2024/03/01/cramers-week-a...
5	Super Micro joining S&P 500 after stock price ...	8 Hours Ago	https://www.cnbc.com/2024/03/01/super-micro-jo...
6	Change Healthcare sets up a new electronic pre...	8 Hours Ago	https://www.cnbc.com/2024/03/01/change-healthc...
7	Lockheed Martin looks to acquire spacecraft ma...	9 Hours Ago	https://www.cnbc.com/2024/03/01/lockheed-marti...
8	Google Gemini head removes social media profil...	9 Hours Ago	https://www.cnbc.com/2024/03/01/google-gemini-...
9	Reddit seeking a valuation of up to $6.5 billi...	10 Hours Ago	https://www.cnbc.com/2024/03/01/reddit-seeking...
10	NASA shuts down satellite refueling project af...	11 Hours Ago	https://www.cnbc.com/2024/03/01/nasa-shuts-dow...
11	Fed Chair Powell and jobs data take center sta...	11 Hours Ago	/pro/
12	Here are the Nasdaq's most beloved stocks that...	12 Hours Ago	/pro/
13	What worked and didn't work this week from AI ...	12 Hours Ago	/investingclub/
14	Judge rejects AstraZeneca's challenge to Medic...	12 Hours Ago	https://www.cnbc.com/2024/03/01/medicare-drug-...
15	What to know about this hot AI stock up nearly...	13 Hours Ago	/pro/
16	Dell shares have best day since return to stoc...	13 Hours Ago	https://www.cnbc.com/2024/03/01/dell-shares-ha...
17	Appliances don't last like they used to, exper...	13 Hours Ago	https://www.cnbc.com/2024/03/01/household-appl...
18	Co-defendant in Sen. Bob Menendez corruption c...	13 Hours Ago	https://www.cnbc.com/2024/03/01/co-defendant-i...

Q2-Please visit https://www.keaipublishing.com/en/journals/artificial-intelligence-in-agriculture/most-downloaded-articles/ and scrap-

a) Paper title

b) date

c) Author

Ans)

```
In [26]: #question 2
         keai=requests.get('https://www.keaipublishing.com/en/journals/artificial-intelligence-in-agriculture/most-downloaded-articles/')
         keai
```

```
Out[26]: <Response [200]>
```

```
In [27]: keai1=BeautifulSoup(keai.content)
         keai1
```

```
Out[27]: <!DOCTYPE html>
         <html lang="en-GB">
         <head>
         <meta charset="utf-8"/>
         <meta content="width=device-width, initial-scale=1, shrink-to-fit=no" name="viewport"/>
         <meta content="ie=edge" http-equiv="X-UA-Compatible"/><script type="text/javascript">window.NREUM||(NREUM={});NREUM.info =
         {"beacon":"bam.eu01.nr-data.net","errorBeacon":"bam.eu01.nr-data.net","licenseKey":"NRJS-70b3f9b2c6f17cc4471","applicationI
         D":"304294210","transactionName":"MhBSZQoZXxEDUkdRWQtafWc7V3MHEUFcU1M1GlRyFxZFEA1dX11ESjdVQggXWgcyXlc=","queueTime":0,"applic
         ationTime":46,"agent":"","atts":""}</script><script type="text/javascript">(window.NREUM||(NREUM={})).init={privacy:{cookies_
         enabled:true},ajax:{deny_list:["bam.eu01.nr-data.net"]},distributed_tracing:{enabled:true}};(window.NREUM||(NREUM={})).loader
         _config={agentID:"322544468",accountID:"2916063",trustKey:"2916063",xpid:"Vg8GV1ZVCxADVFVQDgUFV1Q=",licenseKey:"NRJS-70b3f9b2
         c6f17cc4471",applicationID:"304294210"};window.NREUM||(NREUM={}),__nr_require=function(t,e,n){function r(n){if(!e[n]){var o=e
         [n]={exports:{}};t[n][0].call(o.exports,function(e){var o=t[n][1][e];return r(o||e)},o,o.exports)}return e[n].exports}if("fun
         ction"==typeof __nr_require)return __nr_require;for(var o=0;o<n.length;o++)r(n[o]);return r}({1:[function(t,e,n){function r
         (t){try{s.console&&console.log(t)}catch(e){}}var o,i=t("ee"),a=t(31),s={};try{o=localStorage.getItem("__nr_flags").split
         (","),console&&"function"==typeof console.log&&(s.console=!0,o.indexOf("dev")!==-1&&(s.dev=!0),o.indexOf("nr_dev")!==-1&&(s.n
         rDev=!0))}catch(c){}s.nrDev&&i.on("internal-error",function(t){r(t.stack)}),s.dev&&i.on("fn-err",function(t,e,n){r(n.stac
         k)}),s.dev&&(r("NR AGENT IN DEVELOPMENT MODE"),r("flags: "+a(s,function(t,e){return t}).join(", ")))},{}],2:[function(t,e,n)
         {function r(t,e,n,r,s){try{l?l-=1:o(s||new UncaughtException(t,e,n),!0)}catch(f){try{i("ierr",[f,c.now(),!0])}catch(d){}}retu
```

```
In [28]: paper_title=[]
         for i in keai1.find_all('h2',class_="h5 article-title"):
             paper_title.append(i.text.replace('\n\r\n                        ','').replace('\r\n                    \n',''))
         paper_title
```

```
Out[28]: ['Implementation of artificial intelligence in agriculture for optimisation of irrigation and application of pesticides and her
          bicides',
          'Review of agricultural IoT technology',
          'A comprehensive review on automation in agriculture using artificial intelligence',
          'Automation and digitization of agriculture using artificial intelligence and internet of things',
          'Applications of electronic nose (e-nose) and electronic tongue (e-tongue) in food quality-related properties determination: A
          review',
          'Fruit ripeness classification: A survey',
          'A review of imaging techniques for plant disease detection',
          'Deep learning based computer vision approaches for smart agricultural applications',
          'Comparison of CNN-based deep learning architectures for rice diseases classification',
          'Transfer Learning for Multi-Crop Leaf Disease Image Classification using Convolutional Neural Network VGG',
          'Plant disease detection using hybrid model based on convolutional autoencoder and convolutional neural network',
          'Machine learning in nutrient management: A review',
          'DeepRice: A deep learning and deep feature based classification of Rice leaf disease subtypes',
          'How artificial intelligence uses to achieve the agriculture sustainability: Systematic review',
          'Machine learning for weed-plant discrimination in agriculture 5.0: An in-depth review',
          'Examining the interplay between artificial intelligence and the agri-food industry',
          'Deep convolutional neural network models for weed detection in polyhouse grown bell peppers',
          'A systematic review of machine learning techniques for cattle identification: Datasets, methods and future directions',
          'A review on computer vision systems in monitoring of poultry: A welfare perspective',
          'Crop diagnostic system: A robust disease detection and management system for leafy green crops grown in an aquaponics facilit
          y',
          'Artificial cognition for applications in smart agriculture: A comprehensive review',
          'Explainable artificial intelligence and interpretable machine learning for agricultural data analysis',
          'Blockchain: A new safeguard for agri-foods',
          'Study on body temperature detection of pig based on infrared technology: A review',
          'Vision Intelligence for Smart Sheep Farming: Applying Ensemble Learning to Detect Sheep Breeds']
```

```
In [29]: date=[]
         for i in keai1.find_all('p',class_="article-date"):
             date.append(i.text)
         date
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Out[29]: ['2020',
          '2022',
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          '2020',
          'December 2023',
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          '2022',
          '2020',
          'March 2019',
          'March 2024']
```

```
In [30]: authors=[]
         for i in keai1.find_all('p',class_="article-authors"):
             authors.append(i.text)
         authors
```

```
Out[30]: [' Tanha Talaviya |  Dhara Shah |  Nivedita Patel |  Hiteshri Yagnik |  Manan Shah',
          ' Jinyuan Xu |  Baoxing Gu |  Guangzhao Tian',
          ' Kirtan Jha |  Aalap Doshi |  Poojan Patel |  Manan Shah',
          ' A. Subeesh |  C.R. Mehta',
          ' Juzhong Tan |  Jie Xu',
          ' Matteo Rizzo |  Matteo Marcuzzo |  Alessandro Zangari |  Andrea Gasparetto |  Andrea Albarelli',
          ' Vijai Singh |  Namita Sharma |  Shikha Singh',
          ' V.G. Dhanya |  A. Subeesh |  N.L. Kushwaha |  Dinesh Kumar Vishwakarma |  T. Nagesh Kumar |  G. Ritika |  A.N. Singh',
          ' Md Taimur Ahad |  Yan Li |  Bo Song |  Touhid Bhuiyan',
          ' Ananda S. Paymode |  Vandana B. Malode',
          ' Punam Bedi |  Pushkar Gole',
          ' Oumnia Ennaji |  Leonardus Vergütz |  Achraf El Allali',
          ' P. Isaac Ritharson |  Kumudha Raimond |  X. Anitha Mary |  Jennifer Eunice Robert |  Andrew J',
          ' Vilani Sachithra |  L.D.C.S. Subhashini',
          ' Filbert H. Juwono |  W.K. Wong |  Seema Verma |  Neha Shekhawat |  Basil Andy Lease |  Catur Apriono',
          ' Abderahman Rejeb |  Karim Rejeb |  Suhaiza Zailani |  John G. Keogh |  Andrea Appolloni',
          ' A. Subeesh |  S. Bhole |  K. Singh |  N.S. Chandel |  Y.A. Rajwade |  K.V.R. Rao |  S.P. Kumar |  D. Jat',
          ' Md Ekramul Hossain |  Muhammad Ashad Kabir |  Lihong Zheng |  Dave L. Swain |  Shawn McGrath |  Jonathan Medway',
          ' Cedric Okinda |  Innocent Nyalala |  Tchalla Korohou |  Celestine Okinda |  Jintao Wang |  Tracy Achieng |  Patrick Wamalwa |  Tai Mang |  Mingxia Shen',
          ' R. Abbasi |  P. Martinez |  R. Ahmad',
          ' Misbah Pathan |  Nivedita Patel |  Hiteshri Yagnik |  Manan Shah',
          ' Masahiro Ryo',
          ' Jie Xu |  Shuang Guo |  David Xie |  Yaxuan Yan',
          ' Zaiqin Zhang |  Hang Zhang |  Tonghai Liu',
          ' Galib Muhammad Shahriar Himel |  Md. Masudul Islam |  Mijanur Rahaman']
```

```
In [31]: import pandas as pd
         df=pd.DataFrame({'paper title':paper_title,'date':date,'authors':authors})
         df
```

Out[31]:

	paper title	date	authors
0	Implementation of artificial intelligence in a...	2020	Tanha Talaviya | Dhara Shah | Nivedita Pate...
1	Review of agricultural IoT technology	2022	Jinyuan Xu | Baoxing Gu | Guangzhao Tian
2	A comprehensive review on automation in agricu...	June 2019	Kirtan Jha | Aalap Doshi | Poojan Patel | ...
3	Automation and digitization of agriculture usi...	2021	A. Subeesh | C.R. Mehta
4	Applications of electronic nose (e-nose) and e...	2020	Juzhong Tan | Jie Xu
5	Fruit ripeness classification: A survey	March 2023	Matteo Rizzo | Matteo Marcuzzo | Alessandro...
6	A review of imaging techniques for plant disea...	2020	Vijai Singh | Namita Sharma | Shikha Singh
7	Deep learning based computer vision approaches...	2022	V.G. Dhanya | A. Subeesh | N.L. Kushwaha | ...
8	Comparison of CNN-based deep learning architec...	September 2023	Md Taimur Ahad | Yan Li | Bo Song | Touhid...
9	Transfer Learning for Multi-Crop Leaf Disease ...	2022	Ananda S. Paymode | Vandana B. Malode
10	Plant disease detection using hybrid model bas...	2021	Punam Bedi | Pushkar Gole
11	Machine learning in nutrient management: A review	September 2023	Oumnia Ennaji | Leonardus Vergütz | Achraf ...
12	DeepRice: A deep learning and deep feature bas...	March 2024	P. Isaac Ritharson | Kumudha Raimond | X. A...
13	How artificial intelligence uses to achieve th...	June 2023	Vilani Sachithra | L.D.C.S. Subhashini
14	Machine learning for weed–plant discrimination...	December 2023	Filbert H. Juwono | W.K. Wong | Seema Verma...
15	Examining the interplay between artificial int...	2022	Abderahman Rejeb | Karim Rejeb | Suhaiza Za...
16	Deep convolutional neural network models for w...	2022	A. Subeesh | S. Bhole | K. Singh | N.S. Ch...
17	A systematic review of machine learning techni...	2022	Md Ekramul Hossain | Muhammad Ashad Kabir | ...
18	A review on computer vision systems in monitor...	2020	Cedric Okinda | Innocent Nyalala | Tchalla ...