

#### <u>AIM AND OBJECTIVE</u>

TO MAKE AWARENESS ABOUT THE PROGESS AND ACHIEVEMENTS OF ISBO AND TO ACQUIRE NON-TABULAR OR UNSTRUCTURED DATA FROM WEBSITE AND CONVERT IT INTO A USABLE OR STRUCTURED FORMAT, SUCH AS . CSV FILE.

#### Web Scraping Procedure

- \* IMPORT THE NECESSARY LIBRARIES
- import requests
- 2 from bs4 import BeautifulSoup
- 3 import re
  - \* SCLECT A PARTICULAR WEB PAGE TO SCRAPE

1 | url = "https://www.isro.gov.in/Timeline.html"

#### \* INSPECT THE WEB PAGE



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G2



Home About ~

Activities ~

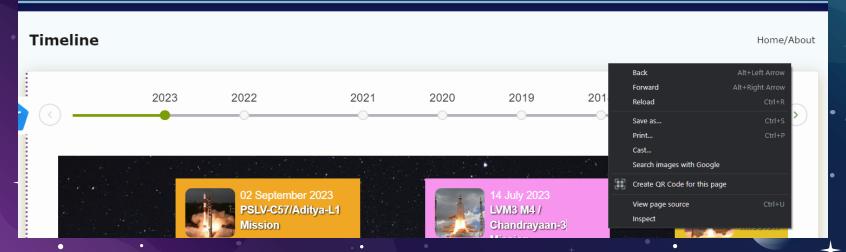
Services ~

Programmes ~

Resources ~

Engage with Us ~

CHANDRAYAAN







#### \* PETCH THE DATA YOU WANT TO RETRIEVE

```
K Lo
          Elements Console Sources Network Performance Memory Application Security
                                                                                                    Performance insights <a> 丛</a>
 <!DOCTYPE html>
 <html lang="en" class=" js">
 ▶ <head> · · · · </head>
 ▼<body onload="renderTimelineBackBtn()" onresize="menuResize()" data-aos-easing="ease-in-out" data-aos-duration="1000" data-aos-delay="0">
    <script src="header/accessibility.js"></script>
   ▶ <figure id="mySidepanel" class="sidepanelAccessibility" style="background:#e1e1e1 !important;display:none;top:50%;width:250px;font-size:10px;font-family:'Open Sans', sans-seri
    f !important;"> • </figure>
   ▶<button id="openbtnAccessibility" class="openbtn" style="left:0 !important;">....</button>
    <script src="assets/accessibility/accessibilityscript.js"></script>
   ▶ <figure id="maskmain"> ··· </figure>
   ▶ <figure id="maskmainread"> ··· </figure>
    <script src="header/navigation.js"></script>
   ▶ <div id="topbar" class="d-flex align-items-center fixed-top"> •• </div> flex
   ▶ <header id="header" class="d-flex align-items-center"> • • < /header> flex
    <!-- ===== Header Ends ====== -->
   ▼<main id="main">
     ▼<div id="menu" class="menu section-bg" style="min-height: 300px;">
       ▼<div class="container aos-init aos-animate" data-aos="fade-up" style="min-width: 100%;">
        ▼<div class="outerDiv">
          \div class="card contentdiv">\omathcolor{\text{div}} \flex
html...js body main#main div#menu.menu.section-bg div.container.aos-init.aos-animate div.outerDiv div.section-title
```

#### \* Bequest HTML PROM WEB PAGE

```
1 req = requests.get(url)
2 cont = req.content
```

### \* CHECK IP THE DATA IS LIABLE TO SCRAPE AND PRETTIFY IT

# \* SELECT THE CLASS AND APPEND THE DATA IN A LIST USING PIND\_ALL

```
date1 = soup.find_all(class_="cd-h-timeline__event-content container")
  2 print(date1)
[<div class="cd-h-timeline event-content container">
<div class="timelines16 timelines responsive" style="background: url(../media_isro/image/timeline/back1.jpg.webp);">
<1i>>
<div style="background: #f0a824;">
<span>02 September 2023</span>
<img alt="
                                PSLV-C57/Aditya-L1 Mission" class="timelineimg" src="/media isro/image/timeline/aditya 11 ti
m.jpg.webp" title="
                        PSLV-C57/Aditya-L1 Mission "/>
<a href="Aditya L1.html?timeline=timeline" title="</pre>
                                                                PSLV-C57/Aditva-L1 Mission ">
                PSLV-C57/Aditya-L1 Mission
<br/>
                                </a>
</div>
```



### \* GET THE TEXT OF THOSE DATA AND APPEND IN A LIST

list2=[]

```
for i in date1:
     list2.append(i.get text())
  print(list2)
['\n\n\n\n\n02 September 2023\n\n\n
                       \tPSLV-C57/Aditva-L1 Mission \n
                                                                 \n\n\n\n\n30 July 2023\n
\n\n \tPSLV-C56/DS-SAR Mission \n
                                          \n\n\n\n\14 July 2023\n\n\n\tLVM3 M4 / Chandrayaan-3 Missi
on \n
                       \n \n \n \n \SLV-F12/NVS-01 Mission \n
                                                                               n n
\n\n22 April 2023\n\n\n PSLV-C55/TeLEOS-2 Mission\n
                                                      \n\n\n\n\n\ April 2023\n\n\
Reusable Launch Vehicle Autonomous Landing Mission (RLV LEX) \n
                                                             LVM3 M3 / OneWeb India-2 Mission \n
                                           SSLV-D2/EOS-07 MISSION\n
                                    PSLV-C54/EOS-06 Mission\n
                                    LVM3
M2 / OneWeb India-1 Mission\n
                                       \n\n\n\n07 August 2022\n\nSSLV-D1/EOS-02 Mission \n\n\n\n30 Ju
n 2022\n\nPSLV-C53/DS-E0 Mission \n\n\n\n\n\2022\nGSAT-24\n\n\n\n\14 February 2022\n\nPSLV-C52/EOS-04\n\n\n\n\n\n\n
LV-C47/Cartosat-3\n\n\n\n\n22 July 2019\n\GSLV-Mk III-M1/Chandrayaan-2\n\n\n\n\n22 May 2019\nPSLV-C46/RISAT-2B\n\n\n\n01 Apr
\n\n\n\n', "\n\n\n\n\n\19 December 2018\nGSLV-F11/GSAT-7A\n\n\n\n05 December 2018\nGSAT-11 - India's heaviest communication
\n\n\n\n29 November 2018\nPSLV-C43/HysIS\n\n\n\n14 November 2018\nGSLV MkIII-D2 successfully launches\n
GSAT-29\n\n\n\n16 Sep 2018\nPSLV-C42 Mission\n\n\n\n\n 12 Apr 2018\nPSLV-C41/IRNSS-1I\n\n\n\n 29 Mar 2018\nGSLV-F08/GSAT-6A
\n \n \n \n \   Jan 2018\nPSLV-C40 / Cartosat-2 Series Satellite\n
                                                              Mission\n\n\n\n\n\n\n\n\n\n\n
```

#### \* Remove \n using split runction

```
1 list3 = []
  2 for i in range(0,len(list2)):
        list3.append(list2[i].split("\n"))
   print(list3)
             '', '', '02 September 2023', '', '', ' \tPSLV-C57/Aditya-L1 Mission ', '
 ', '', '', '30 July 2023', '', '', \tPSLV-C56/DS-SAR Mission', '
'14 July 2023', '', '', ' \tLVM3 M4 / Chandrayaan-3 Mission ', '
2023', '', '', ' GSLV-F12/NVS-01 Mission', '
V-C55/TeLEOS-2 Mission', '
Reusable Launch Vehicle Autonomous Landing Mission (RLV LEX) '
                                                 LVM3 M3 / OneWeb India-2 Mission ',
   ''. '', '10 February 2023'
                                                                          SSLV-D2/EOS-07 MISSION',
                                                                                    '', '26 November 2022', '', '', '
PSLV-C54/EOS-06 Mission',
                                                                                      '07 August 2022', '', 'SSLV-D1/EOS-02
LVM3 M2 / OneWeb India-1 Mission', '
Mission ', '', '', '', '30 Jun 2022', '', 'PSLV-C53/DS-EO Mission
        '14 February 2022', '', 'PSLV-C52/EOS-04', '',
                                                                '', '28 February 2021', '', 'PSLV-C51/ Amazonia-1',
```



#### \* Remove \t using split punction

```
1 | list4 = []
  for i in range(0,len(list3)):
       for n in range(0,len(list3[i])):
           list4.append(list3[i][n].split("\t"))
   print(list4)
                        [''], ['02 September 2023'], [''], [''], [' ', 'PSLV-C57/Aditya-L1 Mission '], ['
                             '30 July 2023'], [''], [''], ['
                                                             ', 'PSLV-C56/DS-SAR Mission '], ['
                             '14 July 2023'], [''], [''], [' ', 'LVM3 M4 / Chandrayaan-3 Mission '], ['
                           ['29 May 2023'], [''], [''], [' GSLV-F12/NVS-01 Mission'], ['
                                                         PSLV-C55/TeLEOS-2 Mission'], ['
                         '22 April 2023'], [''], [''],
                       ['02 April 2023'], [''], [''], [
                                                                                          Reusable Launch Vehicle Autonomous
Landing Mission (RLV LEX) '], ['
                                                                            '], [''], [''], ['26 March 2023'], [''], [''], ['
LVM3 M3 / OneWeb India-2 Mission '], ['
                                                                      '], [''], [''], [''], ['10 February 2023'],
                                               SSLV-D2/EOS-07 MISSION'], ['
                                                          PSLV-C54/EOS-06 Mission'], ['
[''], [''], [''], [''], ['23 October 2022'], [''], [''], ['
                                      '], [''], [''], [''], [''], ['07 August 2022'], [''], ['SSLV-D1/EOS-02 Mission '],
                       ['30 Jun 2022'], [''], ['PSLV-C53/DS-E0 Mission '], [''], [''], [''], [''], ['23 Jun 2022'], ['GSAT-2
                         ], ['14 February 2022'], [''], ['PSLV-C52/EOS-04'], [''], [''], [''], [''], [''], [''], [''],
                             [''], [''], [''], [''], [''], [''], [''], ['12 August 2021
                         '28 February 2021'], [''], ['PSLV-C51/ Amazonia-1'], [''], [''], [''], [''], [''], [''], [''],
```

# \* APPEND THE NOT NULL VALUES (exception:spaces)

```
l list5=[]
 2 for i in range(0,len(list4)):
        for n in range(0,len(list4[i])):
            if len(list4[i][n]):
                list5.append(list4[i][n])
 6 print(list5)
['02 September 2023', ' ', 'PSLV-C57/Aditya-L1 Mission ',
                                                                                              ', '30 July 2023', ' ', 'PSLV-
C56/DS-SAR Mission ', '
                                                       ', '14 July 2023', ' ', 'LVM3 M4 / Chandrayaan-3 Mission ', '
', '29 May 2023', 'GSLV-F12/NVS-01 Mission', '
                                                                                 ', '22 April 2023', ' PSLV-C55/TeLEOS-2 Missi
                                      ', '02 April 2023', '
                                                                                             Reusable Launch Vehicle Autonomo
us Landing Mission (RLV LEX) ', '
                                                                 ', '26 March 2023', '
                                                                                                                         LVM3
M3 / OneWeb India-2 Mission ', '
                                                                 ', '10 February 2023', '
                                                                                                                          SSL
V-D2/EOS-07 MISSION', '
                                                       ', '26 November 2022', '
                                                                                                                 PSLV-C54/E0S
-06 Mission', '
                                               ', '23 October 2022', '
                                                                                                        LVM3 M2 / OneWeb Indi
                                               ', '07 August 2022', 'SSLV-D1/EOS-02 Mission ', '30 Jun 2022', 'PSLV-C53/DS-EO
a-1 Mission', '
Mission ', '23 Jun 2022', 'GSAT-24', '14 February 2022', 'PSLV-C52/EOS-04', '12 August 2021 ', ' GSLV-F10/EOS-03', '28 Febr
uary 2021', 'PSLV-C51/ Amazonia-1', '17 December 2020 PSLV-C50/CMS-01', '07 November 2020', 'PSLV-C49/EOS-01', '17 January 20
20 ', 'GSAT-30', '11 December 2019', 'PSLV-C48/RISAT-2BR1', '27 November 2019', 'PSLV-C47/Cartosat-3', '22 July 2019', 'GSLV-
Mk III-M1/Chandrayaan-2', '22 May 2019', 'PSLV-C46/RISAT-2B', '01 April 2019', 'PSLV-C45/ EMISAT', '06 February 2019', 'GSAT-
31', '24 January 2019 PSLV-C44/ Microsat-R', '19 December 2018', 'GSLV-F11/GSAT-7A', '05 December 2018', "GSAT-11 - India's h
eaviest communication", '29 November 2018', 'PSLV-C43/HysIS', '14 November 2018', 'GSLV MkIII-D2 successfully launches', '
GSAT-29', '16 Sep 2018', 'PSLV-C42 Mission', ' 12 Apr 2018', 'PSLV-C41/IRNSS-1I', ' 29 Mar 2018', 'GSLV-F08/GSAT-6A', '12 Jan
```

# \* SPLIT THE DATA HAVING ('') A SPACE USING RE.SPLIT PUNCTION

```
l list6 = []
2 for i in range(0,len(list5)):
      list6.append(re.split(' ',list5[i]))
  print(list6)
```

#### \* Remove the (") BLANK QUOTES USING REMOVE

for i in range(0,len(list6)):

```
for n in range(len(list6[i])-1,-1,-1):
            if list6[i][n]=='':
                list6[i].remove('')
    print(list6)
[['02', 'September', '2023'], [], ['PSLV-C57/Aditya-L1', 'Mission'], [], ['30', 'July', '2023'], [], ['PSLV-C56/DS-SAR', 'Mis
sion'], [], ['14', 'July', '2023'], [], ['LVM3', 'M4', '/', 'Chandrayaan-3', 'Mission'], [], ['29', 'May', '2023'], ['GSLV-F1
2/NVS-01', 'Mission'], [], ['22', 'April', '2023'], ['PSLV-C55/TeLEOS-2', 'Mission'], [], ['02', 'April', '2023'], ['Reusabl
e', 'Launch', 'Vehicle', 'Autonomous', 'Landing', 'Mission', '(RLV', 'LEX)'], [], ['26', 'March', '2023'], ['LVM3', 'M3',
'/', 'OneWeb', 'India-2', 'Mission'], [], ['10', 'February', '2023'], ['SSLV-D2/E0S-07', 'MISSION'], [], ['26', 'November',
'2022'], ['PSLV-C54/EOS-06', 'Mission'], [], ['23', 'October', '2022'], ['LVM3', 'M2', '/', 'OneWeb', 'India-1', 'Mission'],
[], ['07', 'August', '2022'], ['SSLV-D1/EOS-02', 'Mission'], ['30', 'Jun', '2022'], ['PSLV-C53/DS-E0', 'Mission'], ['23', 'Jun', '2022'],
n', '2022'], ['GSAT-24'], ['14', 'February', '2022'], ['PSLV-C52/EOS-04'], ['12', 'August', '2021'], ['GSLV-F10/EOS-03'], ['2
8', 'February', '2021'], ['PSLV-C51/', 'Amazonia-1'], ['17', 'December', '2020', 'PSLV-C50/CMS-01'], ['07', 'November', '202
0'], ['PSLV-C49/EOS-01'], ['17', 'January', '2020'], ['GSAT-30'], ['11', 'December', '2019'], ['PSLV-C48/RISAT-2BR1'], ['27',
'November', '2019'], ['PSLV-C47/Cartosat-3'], ['22', 'July', '2019'], ['GSLV-Mk', 'III-M1/Chandrayaan-2'], ['22', 'May', '201
9'], ['PSLV-C46/RISAT-2B'], ['01', 'April', '2019'], ['PSLV-C45/', 'EMISAT'], ['06', 'February', '2019'], ['GSAT-31'], ['24',
'January', '2019', 'PSLV-C44/', 'Microsat-R'], ['19', 'December', '2018'], ['GSLV-F11/GSAT-7A'], ['05', 'December', '2018'].
['GSAT-11', '-', "India's", 'heaviest', 'communication'], ['29', 'November', '2018'], ['PSLV-C43/HysIS'], ['14', 'November',
'2018'], ['GSLV', 'MkIII-D2', 'successfully', 'launches'], ['GSAT-29'], ['16', 'Sep', '2018'], ['PSLV-C42', 'Mission'], ['1
2', 'Apr', '2018'], ['PSLV-C41/IRNSS-11'], ['29', 'Mar', '2018'], ['GSLV-F08/GSAT-6A'], ['12', 'Jan', '2018'], ['PSLV-C40',
'/', 'Cartosat-2', 'Series', 'Satellite'], ['Mission'], ['31', 'August', '2017'], ['PSLV-C39/IRNSS-1H'], ['29', 'June', '201
7'], ['GSAT-17'], ['23', 'June', '2017'], ['PSLV-C38/', 'Cartosat-2'], ['05', 'June', '2017'], ['GSLV-Mk', 'III-D1/GSAT-19'],
```

### \* Remove the data having 0 length using pop punction

for i in range(len(list6)-1,-1,-1):
 if len(list6[i])==0:

```
list6.pop(i)
 4 print(list6)
[['02', 'September', '2023'], ['PSLV-C57/Aditya-L1', 'Mission'], ['30', 'July', '2023'], ['PSLV-C56/DS-SAR', 'Mission'], ['1
4', 'July', '2023'], ['LVM3', 'M4', '/', 'Chandrayaan-3', 'Mission'], ['29', 'May', '2023'], ['GSLV-F12/NVS-01', 'Mission'],
['22', 'April', '2023'], ['PSLV-C55/TeLEOS-2', 'Mission'], ['02', 'April', '2023'], ['Reusable', 'Launch', 'Vehicle', 'Autono
mous', 'Landing', 'Mission', '(RLV', 'LEX)'], ['26', 'March', '2023'], ['LVM3', 'M3', '/', 'OneWeb', 'India-2', 'Mission'],
['10', 'February', '2023'], ['SSLV-D2/EOS-07', 'MISSION'], ['26', 'November', '2022'], ['PSLV-C54/EOS-06', 'Mission'], ['23',
'October', '2022'], ['LVM3', 'M2', '/', 'OneWeb', 'India-1', 'Mission'], ['07', 'August', '2022'], ['SSLV-D1/EOS-02', 'Missio
n'], ['30', 'Jun', '2022'], ['PSLV-C53/DS-E0', 'Mission'], ['23', 'Jun', '2022'], ['GSAT-24'], ['14', 'February', '2022'],
['PSLV-C52/EOS-04'], ['12', 'August', '2021'], ['GSLV-F10/EOS-03'], ['28', 'February', '2021'], ['PSLV-C51/', 'Amazonia-1'],
['17', 'December', '2020', 'PSLV-C50/CMS-01'], ['07', 'November', '2020'], ['PSLV-C49/E0S-01'], ['17', 'January', '2020'],
['GSAT-30'], ['11', 'December', '2019'], ['PSLV-C48/RISAT-2BR1'], ['27', 'November', '2019'], ['PSLV-C47/Cartosat-3'], ['22',
'July', '2019'], ['GSLV-Mk', 'III-M1/Chandrayaan-2'], ['22', 'May', '2019'], ['PSLV-C46/RISAT-2B'], ['01', 'April', '2019'],
['PSLV-C45/', 'EMISAT'], ['06', 'February', '2019'], ['GSAT-31'], ['24', 'January', '2019', 'PSLV-C44/', 'Microsat-R'], ['1
9', 'December', '2018'], ['GSLV-F11/GSAT-7A'], ['05', 'December', '2018'], ['GSAT-11', '-', "India's", 'heaviest', 'communica
tion'], ['29', 'November', '2018'], ['PSLV-C43/HysIS'], ['14', 'November', '2018'], ['GSLV', 'MkIII-D2', 'successfully', 'lau
```

nches'], ['GSAT-29'], ['16', 'Sep', '2018'], ['PSLV-C42', 'Mission'], ['12', 'Apr', '2018'], ['PSLV-C41/IRNSS-1I'], ['29', 'Mar', '2018'], ['GSLV-F08/GSAT-6A'], ['12', 'Jan', '2018'], ['PSLV-C40', '/', 'Cartosat-2', 'Series', 'Satellite'], ['Mission'], ['31', 'August', '2017'], ['PSLV-C39/IRNSS-1H'], ['29', 'June', '2017'], ['GSAT-17'], ['23', 'June', '2017'], ['PSLV-C38/', 'Cartosat-2'], ['05', 'June', '2017'], ['GSLV-Mk', 'III-D1/GSAT-19'], ['05', 'May', '2017'], ['GSLV-F09/GSAT-9'], ['15', 'May', '2017'], ['May', '201

### \* JOIN THE DATA BACK WITH A (' ') SPACE USING JOIN PUNCTION

```
for i in range(0,len(list6)):
    list6[i]=' '.join(list6[i])
print(list6)
```

'02 September 2023', 'PSLV-C57/Aditya-L1 Mission', '30 July 2023', 'PSLV-C56/DS-SAR Mission', '14 July 2023', 'LVM3 M4 / Cha ndrayaan-3 Mission', '29 May 2023', 'GSLV-F12/NVS-01 Mission', '22 April 2023', 'PSLV-C55/TeLEOS-2 Mission', '02 April 2023', 'Reusable Launch Vehicle Autonomous Landing Mission (RLV LEX)', '26 March 2023', 'LVM3 M3 / OneWeb India-2 Mission', '10 Febr uary 2023', 'SSLV-D2/EOS-07 MISSION', '26 November 2022', 'PSLV-C54/EOS-06 Mission', '23 October 2022', 'LVM3 M2 / OneWeb Ind ia-1 Mission', '07 August 2022', 'SSLV-D1/EOS-02 Mission', '30 Jun 2022', 'PSLV-C53/DS-EO Mission', '23 Jun 2022', 'GSAT-24', '14 February 2022', 'PSLV-C52/E0S-04', '12 August 2021', 'GSLV-F10/E0S-03', '28 February 2021', 'PSLV-C51/ Amazonia-1', '17 D ecember 2020 PSLV-C50/CMS-01', '07 November 2020', 'PSLV-C49/EOS-01', '17 January 2020', 'GSAT-30', '11 December 2019', 'PSLV -C48/RISAT-2BR1', '27 November 2019', 'PSLV-C47/Cartosat-3', '22 July 2019', 'GSLV-Mk III-M1/Chandrayaan-2', '22 May 2019', 'PSLV-C46/RISAT-2B', '01 April 2019', 'PSLV-C45/ EMISAT', '06 February 2019', 'GSAT-31', '24 January 2019 PSLV-C44/ Microsat-R', '19 December 2018', 'GSLV-F11/GSAT-7A', '05 December 2018', "GSAT-11 - India's heaviest communication", '29 November 201 8', 'PSLV-C43/HysIS', '14 November 2018', 'GSLV MkIII-D2 successfully launches', 'GSAT-29', '16 Sep 2018', 'PSLV-C42 Missio n', '12 Apr 2018', 'PSLV-C41/IRNSS-1I', '29 Mar 2018', 'GSLV-F08/GSAT-6A', '12 Jan 2018', 'PSLV-C40 / Cartosat-2 Series Satel lite', 'Mission', '31 August 2017', 'PSLV-C39/IRNSS-1H', '29 June 2017', 'GSAT-17', '23 June 2017', 'PSLV-C38/ Cartosat-2', '05 June 2017', 'GSLV-Mk III-D1/GSAT-19', '05 May 2017', 'GSLV-F09/GSAT-9', '15 February 2017', 'PSLV-C37/Cartosat-2 series', 'satellite', '07 December 2016', 'PSLV-C36/RESOURCESAT-2A', '05 October 2016', 'GSAT-18', '26 September 2016', 'PSLV-C35/SCAT SAT-1', '08 September 2016', 'GSLV-F05/INSAT-3DR', '28 August 2016', 'ISRO Scramjet Engine Technology Demonstrator', '22 June 2016', 'PSLV-C34/Cartosat-2', '23 May 2016', 'RLV-TD', '28 April 2016', 'PSLV-C33/IRNSS-1G', '10 March 2016', 'PSLV-C32/IRNSS -1F'. '20 January 2016', 'PSLV-C31/IRNSS-1E', '16 December 2015', 'PSLV-C29/TeLEOS-1', '11 November 2015', 'GSAT-15', '28 Sep



## \* SPLIT THE DATA HAVING ('') A SPACE USING RE.SPLIT AND APPEND IT TO A LIST

```
1 list7 = []
 2 for i in range(0,len(list6)):
        list7.append(re.split(' ',list6[i]))
 4 print(list7)
[['02', 'September', '2023'], ['PSLV-C57/Aditya-L1', 'Mission'], ['30', 'July', '2023'], ['PSLV-C56/DS-SAR', 'Mission'], ['1
4', 'July', '2023'], ['LVM3', 'M4', '/', 'Chandrayaan-3', 'Mission'], ['29', 'May', '2023'], ['GSLV-F12/NVS-01', 'Mission'],
['22', 'April', '2023'], ['PSLV-C55/TeLEOS-2', 'Mission'], ['02', 'April', '2023'], ['Reusable', 'Launch', 'Vehicle', 'Autono
mous', 'Landing', 'Mission', '(RLV', 'LEX)'], ['26', 'March', '2023'], ['LVM3', 'M3', '/', 'OneWeb', 'India-2', 'Mission'],
['10', 'February', '2023'], ['SSLV-D2/EOS-07', 'MISSION'], ['26', 'November', '2022'], ['PSLV-C54/EOS-06', 'Mission'], ['23',
'October', '2022'], ['LVM3', 'M2', '/', 'OneWeb', 'India-1', 'Mission'], ['07', 'August', '2022'], ['SSLV-D1/EOS-02', 'Missio
n'], ['30', 'Jun', '2022'], ['PSLV-C53/DS-E0', 'Mission'], ['23', 'Jun', '2022'], ['GSAT-24'], ['14', 'February', '2022'],
['PSLV-C52/EOS-04'], ['12', 'August', '2021'], ['GSLV-F10/EOS-03'], ['28', 'February', '2021'], ['PSLV-C51/', 'Amazonia-1'],
['17', 'December', '2020', 'PSLV-C50/CMS-01'], ['07', 'November', '2020'], ['PSLV-C49/E0S-01'], ['17', 'January', '2020'],
[['GSAT-30'], ['11', 'December', '2019'], ['PSLV-C48/RISAT-2BR1'], ['27', 'November', '2019'], ['PSLV-C47/Cartosat-3'], ['22',
'July', '2019'], ['GSLV-Mk', 'III-M1/Chandrayaan-2'], ['22', 'May', '2019'], ['PSLV-C46/RISAT-2B'], ['01', 'April', '2019'],
['PSLV-C45/', 'EMISAT'], ['06', 'February', '2019'], ['GSAT-31'], ['24', 'January', '2019', 'PSLV-C44/', 'Microsat-R'], ['1
9', 'December', '2018'], ['GSLV-F11/GSAT-7A'], ['05', 'December', '2018'], ['GSAT-11', '-', "India's", 'heaviest', 'communica
tion'], ['29', 'November', '2018'], ['PSLV-C43/HysIS'], ['14', 'November', '2018'], ['GSLV', 'MkIII-D2', 'successfully', 'lau
nches'], ['GSAT-29'], ['16', 'Sep', '2018'], ['PSLV-C42', 'Mission'], ['12', 'Apr', '2018'], ['PSLV-C41/IRNSS-1I'], ['29', 'M
ar', '2018'], ['GSLV-F08/GSAT-6A'], ['12', 'Jan', '2018'], ['PSLV-C40', '/', 'Cartosat-2', 'Series', 'Satellite'], ['Missio
n'], ['31', 'August', '2017'], ['PSLV-C39/IRNSS-1H'], ['29', 'June', '2017'], ['GSAT-17'], ['23', 'June', '2017'], ['PSLV-C3
8/', 'Cartosat-2'], ['05', 'June', '2017'], ['GSLV-Mk', 'III-D1/GSAT-19'], ['05', 'May', '2017'], ['GSLV-F09/GSAT-9'], ['15',
```

## \* SPLIT THE UNPILTERED DATA USING .ISNUMERIC() AND SLICING

```
[['02', 'September', '2023'], ['PSLV-C57/Aditya-L1', 'Mission'], ['30', 'July', '2023'], ['PSLV-C56/DS-SAR', 'Mission'], ['1 4', 'July', '2023'], ['LVM3', 'M4', '/', 'Chandrayaan-3', 'Mission'], ['29', 'May', '2023'], ['GSLV-F12/NVS-01', 'Mission'], ['22', 'April', '2023'], ['Reusable', 'Launch', 'Vehicle', 'Autono mous', 'Landing', 'Mission', '(RLV', 'LEX)'], ['26', 'March', '2023'], ['LVM3', 'M3', '/', 'OneWeb', 'India-2', 'Mission'], ['10', 'February', '2023'], ['SSLV-D2/EOS-07', 'MISSION'], ['26', 'November', '2022'], ['PSLV-C54/EOS-06', 'Mission'], ['23', 'October', '2022'], ['LVM3', 'M2', '/', 'OneWeb', 'India-1', 'Mission'], ['07', 'August', '2022'], ['SSLV-D1/EOS-02', 'Mission'], ['30', 'Jun', '2022'], ['PSLV-C53/DS-EO', 'Mission'], ['23', 'Jun', '2022'], ['GSAT-24'], ['14', 'February', '2022'], ['PSLV-C52/EOS-04'], ['12', 'August', '2021'], ['GSLV-F10/EOS-03'], ['28', 'February', '2021'], ['PSLV-C51/', 'Amazonia-1'], ['17', 'December', '2020'], ['PSLV-C50/CMS-01'], ['07', 'November', '2020'], ['PSLV-C49/EOS-01'], ['17', 'January', '2020'], ['GSAT-30'], ['11', 'December', '2019'], ['PSLV-C48/RISAT-2BR1'], ['27', 'November', '2019'], ['PSLV-C47/Cartosat-3'], ['22', 'May', '2019'], ['PSLV-C46/RISAT-2B'], ['01', 'April', '2019'], ['PSLV-C45/', 'EMISAT'], ['06', 'February', '2019'], ['GSAT-31'], ['24', 'January', '2019'], ['PSLV-C44/', 'Microsat-R'], ['19', 'December', '2018'], ['GSLV-F11/GSAT-7A'], ['05', 'December', '2018'], ['GSAT-11', '-', "India's", 'heaviest', 'communication'], ['29', 'November', '2018'], ['PSLV-C42/', 'Mission'], ['14', 'November', '2018'], ['PSLV-C41/IRNSS-11'], ['29', 'May', '2018'], ['GSAT-29'], ['16', 'Sep', '2018'], ['PSLV-C42', 'Mission'], ['12', 'Apr', '2018'], ['PSLV-C41/IRNSS-11'], ['29', 'May', '2018'], ['GSAT-29'], ['16', 'Sep', '2018'], ['PSLV-C42', 'Mission'], ['12', 'Apr', '2018'], ['PSLV-C41/IRNSS-11'], ['29', 'May', '2018'], ['GSAT-29'], ['16', 'Sep', '2018'], ['PSLV-C42', 'Mission'], ['12', 'Apr', '2018'], ['PSLV-C41/IRNSS-11'], ['29', 'May', '2018'], ['PSLV-C41/IRNS
```

#### \* Remove the (") BLANK QUOTES USING REMOVE

1 for i in range(0,len(list7)):

```
for n in range(len(list7[i])-1,-1,-1):
            if list7[i][n]=='':
                list7[i].remove('')
    print(list7)
[['02', 'September', '2023'], ['PSLV-C57/Aditya-L1', 'Mission'], ['30', 'July', '2023'], ['PSLV-C56/DS-SAR', 'Mission'], ['1
4', 'July', '2023'], ['LVM3', 'M4', '/', 'Chandrayaan-3', 'Mission'], ['29', 'May', '2023'], ['GSLV-F12/NVS-01', 'Mission'],
['22', 'April', '2023'], ['PSLV-C55/TeLEOS-2', 'Mission'], ['02', 'April', '2023'], ['Reusable', 'Launch', 'Vehicle', 'Autono
mous', 'Landing', 'Mission', '(RLV', 'LEX)'], ['26', 'March', '2023'], ['LVM3', 'M3', '/', 'OneWeb', 'India-2', 'Mission'],
['10', 'February', '2023'], ['SSLV-D2/EOS-07', 'MISSION'], ['26', 'November', '2022'], ['PSLV-C54/EOS-06', 'Mission'], ['23',
'October', '2022'], ['LVM3', 'M2', '/', 'OneWeb', 'India-1', 'Mission'], ['07', 'August', '2022'], ['SSLV-D1/EOS-02', 'Missio
n'], ['30', 'Jun', '2022'], ['PSLV-C53/DS-E0', 'Mission'], ['23', 'Jun', '2022'], ['GSAT-24'], ['14', 'February', '2022'],
['PSLV-C52/EOS-04'], ['12', 'August', '2021'], ['GSLV-F10/EOS-03'], ['28', 'February', '2021'], ['PSLV-C51/', 'Amazonia-1'],
['17', 'December', '2020'], ['PSLV-C50/CMS-01'], ['07', 'November', '2020'], ['PSLV-C49/E0S-01'], ['17', 'January', '2020'].
['GSAT-30'], ['11', 'December', '2019'], ['PSLV-C48/RISAT-2BR1'], ['27', 'November', '2019'], ['PSLV-C47/Cartosat-3'], ['22',
'July', '2019'], ['GSLV-Mk', 'III-M1/Chandrayaan-2'], ['22', 'May', '2019'], ['PSLV-C46/RISAT-2B'], ['01', 'April', '2019'],
['PSLV-C45/', 'EMISAT'], ['06', 'February', '2019'], ['GSAT-31'], ['24', 'January', '2019'], ['PSLV-C44/', 'Microsat-R'], ['1
9', 'December', '2018'], ['GSLV-F11/GSAT-7A'], ['05', 'December', '2018'], ['GSAT-11', '-', "India's", 'heaviest', 'communica
tion'], ['29', 'November', '2018'], ['PSLV-C43/HysIS'], ['14', 'November', '2018'], ['GSLV', 'MkIII-D2', 'successfully', 'lau
nches'], ['GSAT-29'], ['16', 'Sep', '2018'], ['PSLV-C42', 'Mission'], ['12', 'Apr', '2018'], ['PSLV-C41/IRNSS-1I'], ['29', 'M
ar', '2018'], ['GSLV-F08/GSAT-6A'], ['12', 'Jan', '2018'], ['PSLV-C40', '/', 'Cartosat-2', 'Series', 'Satellite'], ['Missio
n'], ['31', 'August', '2017'], ['PSLV-C39/IRNSS-1H'], ['29', 'June', '2017'], ['GSAT-17'], ['23', 'June', '2017'], ['PSLV-C3
8/', 'Cartosat-2'], ['05', 'June', '2017'], ['GSLV-Mk', 'III-D1/GSAT-19'], ['05', 'May', '2017'], ['GSLV-F09/GSAT-9'], ['15',
```

## \* Remove the Data Having O Length Using Pop Punction

```
for i in range(len(list7)-1,-1,-1):
    if len(list7[i])==0:
        list7.pop(i)
print(list7)
```

```
[['02', 'September', '2023'], ['PSLV-C57/Aditya-L1', 'Mission'], ['30', 'July', '2023'], ['PSLV-C56/DS-SAR', 'Mission'], ['1
4', 'July', '2023'], ['LVM3', 'M4', '/', 'Chandrayaan-3', 'Mission'], ['29', 'May', '2023'], ['GSLV-F12/NVS-01', 'Mission'],
['22', 'April', '2023'], ['PSLV-C55/TeLEOS-2', 'Mission'], ['02', 'April', '2023'], ['Reusable', 'Launch', 'Vehicle', 'Autono
mous', 'Landing', 'Mission', '(RLV', 'LEX)'], ['26', 'March', '2023'], ['LVM3', 'M3', '/', 'OneWeb', 'India-2', 'Mission'],
['10', 'February', '2023'], ['SSLV-D2/EOS-07', 'MISSION'], ['26', 'November', '2022'], ['PSLV-C54/EOS-06', 'Mission'], ['23',
'October', '2022'], ['LVM3', 'M2', '/', 'OneWeb', 'India-1', 'Mission'], ['07', 'August', '2022'], ['SSLV-D1/EOS-02', 'Missio
n'], ['30', 'Jun', '2022'], ['PSLV-C53/DS-E0', 'Mission'], ['23', 'Jun', '2022'], ['GSAT-24'], ['14', 'February', '2022'],
['PSLV-C52/EOS-04'], ['12', 'August', '2021'], ['GSLV-F10/EOS-03'], ['28', 'February', '2021'], ['PSLV-C51/', 'Amazonia-1'],
['17', 'December', '2020'], ['PSLV-C50/CMS-01'], ['07', 'November', '2020'], ['PSLV-C49/E0S-01'], ['17', 'January', '2020'],
['GSAT-30'], ['11', 'December', '2019'], ['PSLV-C48/RISAT-2BR1'], ['27', 'November', '2019'], ['PSLV-C47/Cartosat-3'], ['22',
'July', '2019'], ['GSLV-Mk', 'III-M1/Chandrayaan-2'], ['22', 'May', '2019'], ['PSLV-C46/RISAT-2B'], ['01', 'April', '2019'],
['PSLV-C45/', 'EMISAT'], ['06', 'February', '2019'], ['GSAT-31'], ['24', 'January', '2019'], ['PSLV-C44/', 'Microsat-R'], ['1
9', 'December', '2018'], ['GSLV-F11/GSAT-7A'], ['05', 'December', '2018'], ['GSAT-11', '-', "India's", 'heaviest', 'communica
tion'], ['29', 'November', '2018'], ['PSLV-C43/HysIS'], ['14', 'November', '2018'], ['GSLV', 'MkIII-D2', 'successfully', 'lau
nches'], ['GSAT-29'], ['16', 'Sep', '2018'], ['PSLV-C42', 'Mission'], ['12', 'Apr', '2018'], ['PSLV-C41/IRNSS-1I'], ['29', 'M
ar', '2018'], ['GSLV-F08/GSAT-6A'], ['12', 'Jan', '2018'], ['PSLV-C40', '/', 'Cartosat-2', 'Series', 'Satellite'], ['Missio
n'], ['31', 'August', '2017'], ['PSLV-C39/IRNSS-1H'], ['29', 'June', '2017'], ['GSAT-17'], ['23', 'June', '2017'], ['PSLV-C3
8/', 'Cartosat-2'], ['05', 'June', '2017'], ['GSLV-Mk', 'III-D1/GSAT-19'], ['05', 'May', '2017'], ['GSLV-F09/GSAT-9'], ['15',
```

## \* JOIN THE DATA BACK WITH A (' ') SPACE USING JOIN PUNCTION

```
for i in range(0,len(list7)):
    list7[i]=' '.join(list7[i])
print(list7)
```

['02 September 2023', 'PSLV-C57/Aditya-L1 Mission', '30 July 2023', 'PSLV-C56/DS-SAR Mission', '14 July 2023', 'LVM3 M4 / Cha ndrayaan-3 Mission', '29 May 2023', 'GSLV-F12/NVS-01 Mission', '22 April 2023', 'PSLV-C55/TeLEOS-2 Mission', '02 April 2023', 'Reusable Launch Vehicle Autonomous Landing Mission (RLV LEX)', '26 March 2023', 'LVM3 M3 / OneWeb India-2 Mission', '10 Febr uary 2023', 'SSLV-D2/EOS-07 MISSION', '26 November 2022', 'PSLV-C54/EOS-06 Mission', '23 October 2022', 'LVM3 M2 / OneWeb Ind ia-1 Mission', '07 August 2022', 'SSLV-D1/EOS-02 Mission', '30 Jun 2022', 'PSLV-C53/DS-EO Mission', '23 Jun 2022', 'GSAT-24', '14 February 2022', 'PSLV-C52/EOS-04', '12 August 2021', 'GSLV-F10/EOS-03', '28 February 2021', 'PSLV-C51/ Amazonia-1', '17 D ecember 2020', 'PSLV-C50/CMS-01', '07 November 2020', 'PSLV-C49/EOS-01', '17 January 2020', 'GSAT-30', '11 December 2019', 'P SLV-C48/RISAT-2BR1', '27 November 2019', 'PSLV-C47/Cartosat-3', '22 July 2019', 'GSLV-Mk III-M1/Chandrayaan-2', '22 May 201 9', 'PSLV-C46/RISAT-2B', '01 April 2019', 'PSLV-C45/ EMISAT', '06 February 2019', 'GSAT-31', '24 January 2019', 'PSLV-C44/ Mi crosat-R', '19 December 2018', 'GSLV-F11/GSAT-7A', '05 December 2018', "GSAT-11 - India's heaviest communication", '29 Novemb er 2018', 'PSLV-C43/HysIS', '14 November 2018', 'GSLV MkIII-D2 successfully launches', 'GSAT-29', '16 Sep 2018', 'PSLV-C42 Mi ssion', '12 Apr 2018', 'PSLV-C41/IRNSS-1I', '29 Mar 2018', 'GSLV-F08/GSAT-6A', '12 Jan 2018', 'PSLV-C40 / Cartosat-2 Series S atellite', 'Mission', '31 August 2017', 'PSLV-C39/IRNSS-1H', '29 June 2017', 'GSAT-17', '23 June 2017', 'PSLV-C38/ Cartosat-2', '05 June 2017', 'GSLV-Mk III-D1/GSAT-19', '05 May 2017', 'GSLV-F09/GSAT-9', '15 February 2017', 'PSLV-C37/Cartosat-2 seri es', 'satellite', '07 December 2016', 'PSLV-C36/RESOURCESAT-2A', '05 October 2016', 'GSAT-18', '26 September 2016', 'PSLV-C3 5/SCATSAT-1', '08 September 2016', 'GSLV-F05/INSAT-3DR', '28 August 2016', 'ISRO Scramjet Engine Technology Demonstrator', '2 2 June 2016', 'PSLV-C34/Cartosat-2', '23 May 2016', 'RLV-TD', '28 April 2016', 'PSLV-C33/IRNSS-1G', '10 March 2016', 'PSLV-C3 2/IRNSS-1F', '20 January 2016', 'PSLV-C31/IRNSS-1E', '16 December 2015', 'PSLV-C29/TeLEOS-1', '11 November 2015', 'GSAT-15'





```
for i in range(0,len(list7)):
    if list7[i][0].isnumeric() and list7[i+1][0].isnumeric() and i<=len(list7)-2:
        print(list7[i], list7[i+1])
        list7[i] = [list7[i], list7[i+1]]
        list7.remove(list7[i+1])</pre>
07 December 1995 15 October 1994
```

### \* JOIN THE STRINGS IP A PARTICULAR MISSION HAS SPLITED DATA

```
for i in range(0,len(list7)):
    if list7[i][0].upper()>='A' and list7[i+1][0].upper()>='A'and i<=len(list7)-2:
        print(list7[i], list7[i+1])
        list7[i] = [list7[i], list7[i+1]]
        list7.remove(list7[i+1])

GSLV MkIII-D2 successfully launches GSAT-29
PSLV-C40 / Cartosat-2 Series Satellite Mission
PSLV-C37/Cartosat-2 series satellite
Rohini Satellite completes Mission launch</pre>
```

### \* APPEND THE DATE AND MISSION IN SEPARATE LISTS

```
date = []
mission = []
for i in range(0,len(list7)):
    if i%2==0 or i==0:
        date.append(list7[i])
else:
    mission.append(list7[i])
print(date)
print(mission)
```

['02 September 2023', '30 July 2023', '14 July 2023', '29 May 2023', '22 April 2023', '02 April 2023', '26 March 2023', '10 F ebruary 2023', '26 November 2022', '23 October 2022', '07 August 2022', '30 Jun 2022', '23 Jun 2022', '14 February 2022', '12 August 2021', '28 February 2021', '17 December 2020', '07 November 2020', '17 January 2020', '11 December 2019', '27 November 2019', '22 July 2019', '22 May 2019', '01 April 2019', '06 February 2019', '24 January 2019', '19 December 2018', '05 December 2018', '29 November 2018', '14 November 2018', '16 Sep 2018', '12 Apr 2018', '29 Mar 2018', '12 Jan 2018', '31 August 2017', '29 June 2017', '23 June 2017', '05 June 2017', '05 May 2017', '15 February 2017', '07 December 2016', '05 October 2016', '26 September 2016', '08 September 2016', '28 August 2016', '22 June 2016', '23 May 2016', '28 April 2016', '10 March 2016', '20 January 2016', '16 December 2015', '11 November 2015', '28 September 2016', '27 August 2015', '10 July 2015', '28 March 2015', '18 December 2014', '07 December 2014', '16 October 2014', '30 June 2014', '04 April 2014', '05 January 2014', '05 November 2013', '30 August 2013', '26 July 2013', '02 July 2013', '25 February 2013', '29 September 2012', '09 September 2012', '12 October 2011', '15 July 2011', '21 May 2011', '20 April 2011', '25 December 2010', '27 November 2010', '12 July 2010', '15 April 2010', '23 September 2009', '20 April 2009', '20 October 2008', '28 April 2008', '21 January 2008', '02 September 2007', '23 April 2007', '12 March 2007', '22 January 2007', '10 January 2007', '10 July 2006', '22 December 2005', '05 May 2005', '20 September 2004', '17 October 2003', '28 September 2003', '08 May 2003', '10 April 2003', '12 September 2003', '28 September 2003', '10 April 2003', '12 September 2003', '10 September 2003', '10 April 2003', '12 September 2003', '10 September 2003

PRINT THE LENGTH OF DATE AND MISSION TO MAKE SURE THEY ARE EQUAL

```
print(len(date))
print(len(mission))
```

144

## \* IMPORT PANDAS TO SET THE DATA IN A TABULAR STRUCTURE

```
import pandas as pd
 2 ISRO = pd.DataFrame({'Date': date, 'Mission': mission},index= range(101,len(date)+101))
    print(ISRO)
                                                          Mission
                  Date
101 02 September 2023
                                       PSLV-C57/Aditya-L1 Mission
102
          30 July 2023
                                          PSLV-C56/DS-SAR Mission
103
          14 July 2023
                                  LVM3 M4 / Chandrayaan-3 Mission
104
           29 May 2023
                                          GSLV-F12/NVS-01 Mission
105
         22 April 2023
                                        PSLV-C55/TeLEOS-2 Mission
240
                            TERLS dedicated to the United Nations
      02 February 1968
241
      01 January 1967
                       Satellite Telecommunication Earth Station
242
       01 January 1965
                                               - SSTC established
243
      21 November 1963
                                   - First sounding rocket launch
244
                  1962
                                     - INCOSPAR formed by the DAE
[144 rows x 2 columns]
```



### \* EXPORT THE DATA INTO A CSV FILE AND READ

```
import os
os.getcwd()
ISRO.to_csv('Esha-ISRO-Web_Scraping',index=range(101,len(date)+101))
pd.read_csv('Esha-ISRO-Web_Scraping')
```

Mission	Date	Unnamed: 0	
PSLV-C57/Aditya-L1 Mission	02 September 2023	101	0
PSLV-C56/DS-SAR Mission	30 July 2023	102	1
LVM3 M4 / Chandrayaan-3 Mission	14 July 2023	103	2
GSLV-F12/NVS-01 Mission	29 May 2023	104	3
PSLV-C55/TeLEOS-2 Mission	22 April 2023	105	4
TERLS dedicated to the United Nations	02 February 1968	240	139
Satellite Telecommunication Earth Station	01 January 1967	241	140
- SSTC established	01 January 1965	242	141
- First sounding rocket launch	21 November 1963	243	142
- INCOSPAR formed by the DAE	1962	244	143

#### CONCLUSION

- \* INDIA'S JOURNEY IN SPACE TECHNOLOGY HAS BEEN NOTHING SHORT OF REMARKABLE.
- \* FROM LAUNCHING ITS PIRST SATELLITE TO UNDERTAKING LUNAR AND MARS MISSIONS, INDIA'S ACHIEVEMENTS HAVE PLACED IT AS A PROMINENT PLAYER IN THE GLOBAL SPACE ARENA.
- +\* IT IS WELL-POSITIONED TO CONTINUE TO MAKE MORE IMPORTANT BREAKTHROUGHS.

