**CHALLENGE 11**

**REPORT**

**Introduction**:

This study is regarding scraping information from a website.

Automated browsing is used to visit a desired page.

Using ‘inspect’ to view the construction of a web page, a user can view the material and its location on the ‘page’, as preliminary assessment of portions to be ‘scraped’.

Then, a Beautiful Soup object is created and used to extract text elements from the website.

**Data**:

**Part 1**

[News - Mars Exploration Program (bc-edx.com)](https://static.bc-edx.com/data/web/mars_news/index.html) is visited using automated browsing.

Titles and previews of all the news on the page scraped.

A list is created, in which every element is a dictionary with keys: ‘title’ and ‘preview’, and the values: texts for ‘title’ and ‘preview’, respectively.

**Part 2**

Using automated browsing: <https://static.bc-edx.com/data/web/mars_facts/temperature.html> is opened.

A Beautiful Soup object is used to scrape data from a table that has data obtained by Curiosity rover sent by NASA.

The data collected by Curiosity at its location on Mars over a period of 5 ½ years ( 2012-08-16 to

2018-02-27 ) is recorded in the table. The table contains the minimum temperature in °C per Martian day (‘Sol’), pressure in Pascals, terrestrial dates, and Martian days ‘Sol’.

Data is scaped row-wise and recorded in a pandas data-frame. The following is a sample of the data scraped:

A number of numbers and symbols

Description automatically generated with medium confidence

Analysis and calculations of the data shows that there are 12 months on Mars as on Earth, but duration of each month differs significantly from that of an Earthly month.

Data collected by Curiosity is over a period of 2.72 Martian years.

A plot of average minimum temperature per Martian month shows that the coldest month is the 3rd month, and the warmest month is the 8th month. The temperature throughout the year, however, remains below – 60 °C.

A graph of a number of green bars

Description automatically generated with medium confidence

A graph of a temperature

Description automatically generated with medium confidence

A graph of a number of orange lines

Description automatically generated with medium confidence

The average monthly pressure at the location of Curiosity varies between 700 Pa and 900 Pa, a variation of ~ 200 Pa.

A graph of a number of blue lines

Description automatically generated with medium confidence

Analysis of daily (Marian) minimum temperature shows variation of temperature over a span of 2 ¾ Martian years.

A graph showing the temperature of a plane

Description automatically generated with medium confidence

The plot shows the time in a year when the temperature peaks to the time of the next temperature crest. From separation in ‘Sols’, the days in a Martian year can be estimated. An average of the separation of highest temperature yields 668 ‘sols’ in a Martian year. Similarly, the troughs and their separation in ‘sols’ yields 659 ‘sols’ as a Marian year.

A close up of text

Description automatically generated

**Conclusion**:

This study is to understand and use automatic web browser and Beautiful Soup to extract and parse data from a website.

In Part 1, text from major news items related to Mars is scraped and parsed.

In Part 2 data is scraped from a table describing Martian atmosphere. Data is subsequently reshaped for the ease of analysis.

The analysis resulted in the following conclusions:

* The atmospheric pressure on Mars is < 1% that on Earth.
* Martian temperatures are too cold for human survival. The warmest temperature is ~ − 65 °C ( ~ − 85 °F)!

Thus, Mars is not suitable for human life.