# NTNU
Kunnskap for en bedre verden

# Assignment 2 - Prodled Bros

*Authors:*

Aaryan Neupane

Anne Torgersen

Tora Kristine Løtveit

Date: 19.02.2024

# Table of Contents

# 1    Markdown Language

We have adopted Gruber's Markdown language as the foundation for our own Markdown-inspired language. Our goal is to faithfully recreate Markdown's functionality while also introducing additional features to meet our specific needs.

The table below outlines the key features of our Markdown-inspired language along with their corresponding syntax:

| Feature | Syntax |
|---|---|
| Heading | # |
| Section Heading | ## |
| Unordered List | -/* |
| Ordered List | n. $n \in \mathbb{R}$ |
| Images | |

Table 1: Features of the Markdown-Inspired Language

These are the core functionalities supported by our Markdown-inspired language. With these features, users can effectively structure and format their documents in a clear and concise manner.

Please note that while our Markdown-inspired language supports the inclusion of images using the syntax "", this functionality is currently not supported for DOCX documents due to an issue with the 'python-docx' library's 'add_picture' function, which does not function as documented. As a result, images cannot be added to DOCX documents using our current implementation.

# 2    Data Structures

We have implemented the following data structures in order to store documents written in our language.

## 2.1    Paragraph

A paragraph data structure is used to store a block of text. It typically consists of one or more sentences that convey a unified idea or topic.

## 2.2    List

The List class provides a data structure for representing lists within a document. It can be either unordered or ordered and contains a collection of items.

## 2.3    Figure

A figure data structure is utilized to represent graphical elements within a document. It can include images, charts, diagrams, or any other visual component intended to enhance understanding or illustrate concepts.

## 2.4   Section

A section data structure is employed to organize content hierarchically within a document. It serves as a container for related paragraphs, figures, allowing for logical segmentation and structuring of the document's content.

## 2.5   Document

A document data structure encapsulates the entire content of a written work. It serves as the top-level structure, containing sections, paragraphs, figures, and any other elements necessary to represent the complete document. This data structure enables the management and manipulation of the entire document as a cohesive unit.

Additionally, a section can consist of multiple data structures such as paragraphs, lists (unordered or ordered), figures, and more, providing flexibility in organizing and presenting content.

# 3 Experiments

## 3.1 Evaluation of Parser Functionality

The aim of this experiment was to evaluate the performance of our parser, specifically its capability to manage diverse content structures, including paragraphs and lists (unordered or ordered) within the same section. The objective was to ensure the parser's output aligned with our expected outcomes.

```
# Sample Markdown Document

## Lists
Here are some unordered and ordered lists:

### Unordered List
Here are a couple of items in an unordered list:
* Item 1
* Item 2
* Item 3
* Item 4

### Ordered List
Here are a couple of items in an ordered list:
1. First item
2. Second item


## Links and Images (Not Supported yet)¢
[Link to example website](https://example.com)
![Example Image](https://example.com/image.jpg)
```

(a) Sample Markdown Text

```
Document Title: Sample Markdown Document

Section Title: Lists
<class 'modules.paragraph.Paragraph'>: Here are some unordered and ordered lists:

Section Title: Unordered List
<class 'modules.paragraph.Paragraph'>: Here are a couple of items in an unordered list:
<class 'modules.list.List'>: unordered list ['Item 1', 'Item 2', 'Item 3', 'Item 4']

Section Title: Ordered List
<class 'modules.paragraph.Paragraph'>: Here are a couple of items in an ordered list:
<class 'modules.list.List'>: ordered list ['First item', 'Second item']

Section Title: Links and Images (Not Supported yet)
<class 'modules.paragraph.Paragraph'>: [Link to example website](https://example.com)
<class 'modules.paragraph.Paragraph'>: ![Example Image](https://example.com/image.jpg)
```

(b) Parser Output

Figure 1: Comparison of Sample Markdown Text with Parser Output

As illustrated in Figure [1], our experiment yielded successful results. The parser effectively reproduced the desired format, demonstrating its ability to handle multiple data structures within a single section. This outcome affirms the parser's reliability and suitability for processing diverse content formats.

## 3.2 Evaluation of Docx Compilation

In order to thoroughly assess the capabilities of our Docx Compiler, we conducted a comprehensive test using the following text sample:

```
markdown_text = """
# Sample Markdown Document

## Lists
Here are some unordered and ordered lists:

### Unordered List
Here are a couple of items in an unordered list:
* Item 1
* Item 2
* Item 3
* Item 4

### Ordered List
Here are a couple of items in an ordered list:
1. First item
2. Second item
"""
```

(a) Sample Markdown Text

**Sample Markdown Document**

**Lists**
Here are some unordered and ordered lists:

**Unordered List**
Here are a couple of items in an unordered list:

- Item 1
- Item 2
- Item 3
- Item 4

**Ordered List**
Here are a couple of items in an ordered list:

1. First item
2. Second item

(b) Resulting Docx Document

This text sample was chosen to encompass all the necessary functionalities we expect our language to support. Subsequently, the compilation process produced a Docx file, the visual representation of which is depicted in Figure [2b].

Upon review, the generated document met our expectations in terms of formatting and content representation. Given the satisfactory outcome, we concluded that a predefined template for the compiler was deemed unnecessary.

## 3.3  Evaluation of HTML Compiler

The evaluation of our HTML Compiler involved utilizing the same markdown example text used in previous experiments to create an HTML file. The objective was to assess the compiler's ability to accurately convert markdown content into HTML format.

```
markdown_text = """
# Sample Markdown Document

## Lists
Here are some unordered and ordered lists:

### Unordered List
Here are a couple of items in an unordered list:
* Item 1
* Item 2
* Item 3
* Item 4

### Ordered List
Here are a couple of items in an ordered list:
1. First item
2. Second item
"""
```

(a) Sample Markdown Text

# Sample Markdown Document

## Lists

Here are some unordered and ordered lists:

## Unordered List

Here are a couple of items in an unordered list:

- Item 1
- Item 2
- Item 3
- Item 4

## Ordered List

Here are a couple of items in an ordered list:

1. First item
2. Second item

(b) Resulting HTML Document

As demonstrated in Figure [3b], the HTML Compiler successfully transformed the markdown content into an HTML document. The resulting HTML file accurately reflected the formatting and structure of the original markdown text.

Upon thorough review, we were pleased with the outcome of the HTML compilation process. The

generated HTML document met our expectations in terms of fidelity to the original markdown content and adherence to HTML formatting standards.

Overall, the successful conversion of markdown to HTML reaffirmed the effectiveness and reliability of our HTML Compiler, providing confidence in its capability to handle diverse content formats effectively.

## 3.4 Extensive Test for a Blog Post

To thoroughly evaluate the practical functionality of the parser and both the HTML and DOCX compilers, we opted to create a blog post detailing a trip to New York City, written in our Markdown language. Below this page, you'll find the resulting HTML and DOCX files in PDF format.

We are extremely pleased with the results and have concluded that our Markdown language adequately encompasses the required functionality to effectively fulfill the assignment.

# Travel Blog: Exploring New York City

## Introduction

Welcome to my travel blog! In this post, I'll share my recent adventures in New York City.

## Highlights

Exploring Central Park

- Central Park was breathtaking with its lush greenery and tranquil lakes. I spent hours wandering through the park, taking in the beauty of nature in the heart of the city.

Times Square at Night

- Times Square dazzled with its bright lights and bustling energy. The iconic billboards and lively atmosphere made for an unforgettable experience.

## Must-Try Foods

New York Style Pizza

- I couldn't visit New York without indulging in some authentic New York style pizza. The thin crust and generous toppings were absolutely delicious.

Bagels from a Local Deli

- No trip to New York is complete without sampling the city's famous bagels. I grabbed a fresh bagel from a local deli and savored every bite.

## Exploring Museums

1. The Metropolitan Museum of Art was a cultural treasure trove. I explored its vast collection of art spanning centuries, from ancient artifacts to contemporary masterpieces
2. The American Museum of Natural History was a fascinating journey through natural history. I marveled at dinosaur skeletons, intricate dioramas, and interactive exhibits

## Capturing Memories

Statue of Liberty

- I snapped a photo of the Statue of Liberty standing tall against the New York skyline. It was a symbol of freedom and a reminder of the city's rich history.

Brooklyn Bridge

- Walking across the Brooklyn Bridge offered stunning views of the city skyline. I captured the iconic bridge in the golden hour, creating a memorable photo.

# Conclusion

Exploring New York City was an incredible adventure filled with unforgettable experiences. From iconic landmarks to delicious foods, the city has something for everyone. I can't wait to visit again soon!

# Travel Blog: Exploring New York City

## Introduction
Welcome to my travel blog! In this post, I'll share my recent adventures in New York City.

## Highlights
Exploring Central Park

- Central Park was breathtaking with its lush greenery and tranquil lakes. I spent hours wandering through the park, taking in the beauty of nature in the heart of the city.

Times Square at Night

- Times Square dazzled with its bright lights and bustling energy. The iconic billboards and lively atmosphere made for an unforgettable experience.

## Must-Try Foods
New York Style Pizza

- I couldn't visit New York without indulging in some authentic New York style pizza. The thin crust and generous toppings were absolutely delicious.

Bagels from a Local Deli

- No trip to New York is complete without sampling the city's famous bagels. I grabbed a fresh bagel from a local deli and savored every bite.

## Exploring Museums
1. The Metropolitan Museum of Art was a cultural treasure trove. I explored its vast collection of art spanning centuries, from ancient artifacts to contemporary masterpieces
2. The American Museum of Natural History was a fascinating journey through natural history. I marveled at dinosaur skeletons, intricate dioramas, and interactive exhibits

## Capturing Memories
Statue of Liberty

- I snapped a photo of the Statue of Liberty standing tall against the New York skyline. It was a symbol of freedom and a reminder of the city's rich history.

Brooklyn Bridge

- Walking across the Brooklyn Bridge offered stunning views of the city skyline. I captured the iconic bridge in the golden hour, creating a memorable photo.

## Conclusion

Exploring New York City was an incredible adventure filled with unforgettable experiences. From iconic landmarks to delicious foods, the city has something for everyone. I can't wait to visit again soon!