CPSC 100

Computational Thinking

Computational Thinking and Markdown

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Agenda

- Syllabus Recap

  – Course Breakdown

- Intro to Computational Thinking (CT)

  – CT Skills

  – Class Activity

Welcome New Students!

Learning Goals

Learning Goals

After this lecture, you should be able to:

- Explain the concept of **C**omputational **T**hinking (CT)
  - Describe the relevance of CT in real-world contexts

- Identify the subskills that comprise CT

- Apply CT subskills to design and execute a structured solution

- Explain the key components of Markdown

Computational Thinking

What is Computational Thinking?

"Computational thinking is the thought processes involved in formulating problems and their solutions so that the solutions are in a form that can be effectively carried out by an information-processing agent"

[Cuny, Snyder, Wing]

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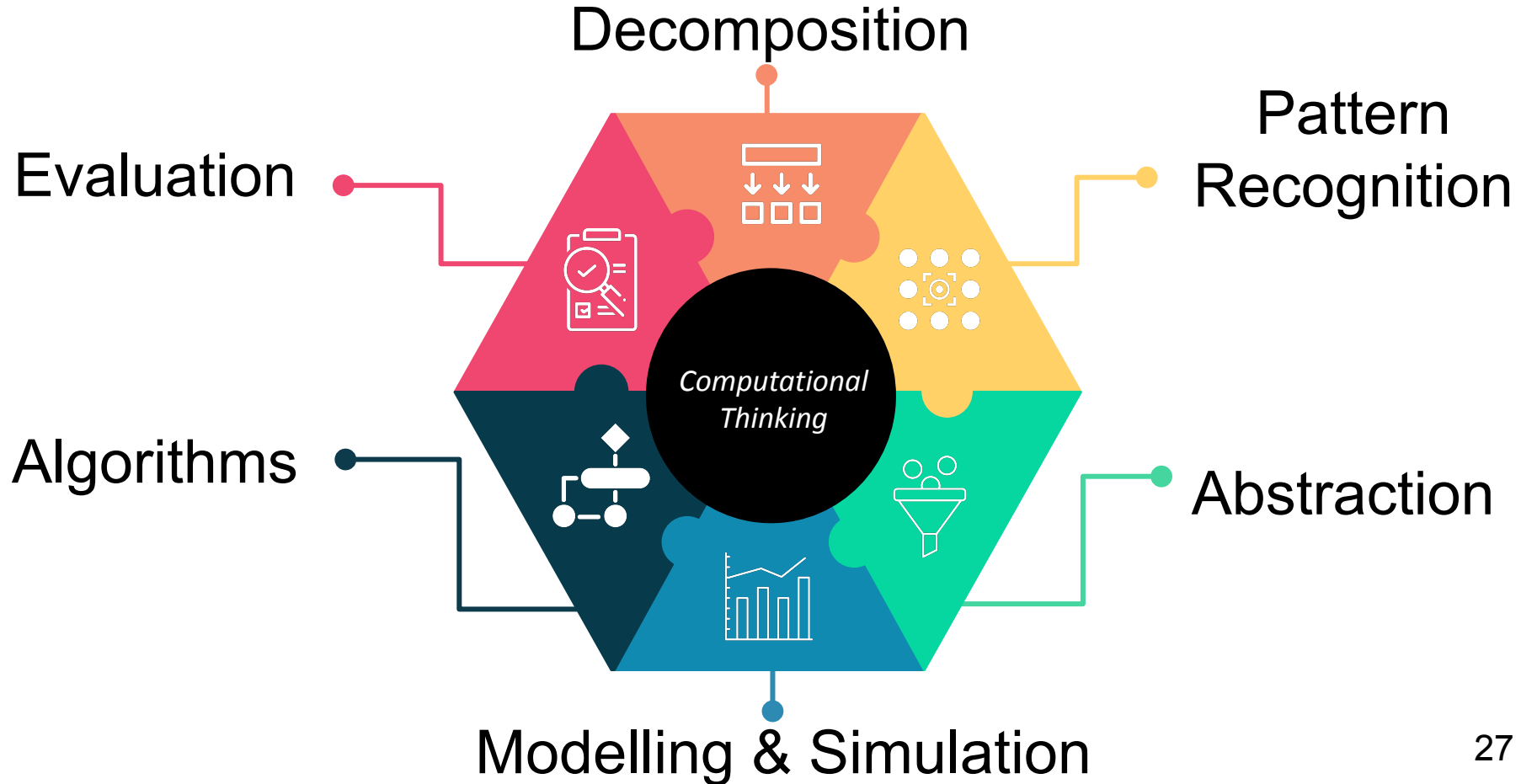
[Cuny, Snyder, Wing]

Computational Thinking Skills

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Class Activity

Class Activity: Sort the Cards

Imagine a robot must arrange a set of cards in ascending order (Ace to King, Same suit).

The robot can only follow your instructions.

Task [Groups of 2-3]

Create a clear set of steps/instructions to sort the cards

Class Discussion

Markdown

Markdown Syntax - Headings

Headings

To create a heading, add number signs (#) in front of a word or phrase. The number of number signs you use should correspond to the heading level. For example, to create a heading level three (<h3>), use three number signs (e.g., `### My Header`).

Markdown	HTML	Rendered Output
`# Heading level 1`	`<h1>Heading level 1</h1>`	Heading level 1
`## Heading level 2`	`<h2>Heading level 2</h2>`	Heading level 2
`### Heading level 3`	`<h3>Heading level 3</h3>`	Heading level 3
`#### Heading level 4`	`<h4>Heading level 4</h4>`	Heading level 4
`##### Heading level 5`	`<h5>Heading level 5</h5>`	Heading level 5
`###### Heading level 6`	`<h6>Heading level 6</h6>`	Heading level 6

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Resources for Learning Markdown

- [Markdown Cheat Sheet](#)

- [CommonMark Tutorial](#)

  - You will be doing this for Lab 0 this week (on your own)

Markdown Syntax - Bold Text

Bold

To bold text, add two asterisks or underscores before and after a word or phrase. To bold the middle of a word for emphasis, add two asterisks without spaces around the letters.

Markdown	HTML	Rendered Output
I just love **bold text**.		I just love **bold text**.
I just love __bold text__.		I just love **bold text**.
Love**is**bold		Love**is**bold

You can learn about HTML on your own!

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Markdown Syntax - Italics Text

Italic

To italicize text, add one asterisk or underscore before and after a word or phrase. To italicize the middle of a word for emphasis, add one asterisk without spaces around the letters.

Markdown	HTML	Rendered Output
Italicized text is the *cat's meow*.		Italicized text is the *cat's meow*.
Italicized text is the _cat's meow_.		Italicized text is the *cat's meow*.
A*cat*meow		A*cat*meow

You can learn about HTML on your own!

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Markdown Syntax - Blockquotes

Blockquotes

To create a blockquote, add a > in front of a paragraph.

```
> Dorothy followed her through many of the beautiful rooms in her castle.
```

The rendered output looks like this:

> Dorothy followed her through many of the beautiful rooms in her castle.

Markdown Syntax - Blockquotes

Blockquotes with Multiple Paragraphs

Blockquotes can contain multiple paragraphs. Add a > on the blank lines between the paragraphs.

```
> Dorothy followed her through many of the beautiful rooms in her castle.
>
> The Witch bade her clean the pots and kettles and sweep the floor and keep the fire fed with
```

The rendered output looks like this:

> Dorothy followed her through many of the beautiful rooms in her castle.
>
> The Witch bade her clean the pots and kettles and sweep the floor and keep the fire fed with wood.

Markdown Syntax - Blockquotes

Nested Blockquotes

Blockquotes can be nested. Add a >> in front of the paragraph you want to nest.

```
> Dorothy followed her through many of the beautiful rooms in her castle.
>
>> The Witch bade her clean the pots and kettles and sweep the floor and keep the fire fed witl
```

The rendered output looks like this:

> Dorothy followed her through many of the beautiful rooms in her castle.
>
>> The Witch bade her clean the pots and kettles and sweep the floor and keep the fire fed with wood.

Markdown Syntax - Ordered Lists

Ordered Lists

To create an ordered list, add line items with numbers followed by periods. The numbers don't have to be in numerical order, but the list should start with the number one.

Markdown	HTML	Rendered Output
1. First item 2. Second item 3. Third item 4. Fourth item	You can learn about HTML on your own!	1. First item 2. Second item 3. Third item 4. Fourth item
1. First item 1. Second item 1. Third item 1. Fourth item		1. First item 2. Second item 3. Third item 4. Fourth item

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Markdown	HTML	Rendered Output

```1. First item``` ```2. Second item``` ```3. Third item``` ``` 1. Indented item``` ``` 2. Indented item``` ```4. Fourth item```	You can learn about HTML on your own!	1. First item
		2. Second item
		3. Third item
		   1. Indented item
		   2. Indented item
		4. Fourth item

Markdown Syntax - Ordered Lists

Unordered Lists

To create an unordered list, add dashes (–), asterisks (∗), or plus signs (+) in front of line items. Indent one or more items to create a nested list.

Markdown	HTML	Rendered Output
– First item – Second item – Third item – Fourth item	You can learn about HTML on your own!	• First item • Second item • Third item • Fourth item
∗ First item ∗ Second item ∗ Third item ∗ Fourth item		• First item • Second item • Third item • Fourth item

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Markdown	HTML	Rendered Output

`- First item`
`- Second item`
`- Third item`
`    - Indented item`
`    - Indented item`
`- Fourth item`
	`<ul>`
	`  <li>First item</li>`
	`  <li>Second item</li>`
	`  <li>Third item`
	`    <ul>`
	`      <li>Indented item</li>`
	`      <li>Indented item</li>`
	`    </ul>`
	`  </li>`
	`  <li>Fourth item</li>`
	`</ul>`
		• First item
		• Second item
		• Third item
		   ◦ Indented item
		   ◦ Indented item
		• Fourth item

Markdown Syntax - Horizontal Lines

Horizontal Rules

To create a horizontal rule, use three or more asterisks (***), dashes (---), or underscores (___) on a line by themselves.

```
***

---

_____
```

The rendered output of all three looks identical:

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Markdown Syntax - Links

Links

To create a link, enclose the link text in brackets (e.g., `[Duck Duck Go]`) and then follow it immediately with the URL in parentheses (e.g., `(https://duckduckgo.com)`).

```
My favorite search engine is [Duck Duck Go](https://duckduckgo.com).
```

The rendered output looks like this:

My favorite search engine is Duck Duck Go.

Markdown Syntax - Tables

Tables

To add a table, use three or more hyphens (---) to create each column's header, and use pipes (|) to separate each column. For compatibility, you should also add a pipe on either end of the row.

```
| Syntax     | Description |
| ---------- | ----------- |
| Header     | Title       |
| Paragraph  | Text        |
```

The rendered output looks like this:

Syntax	Description
Header	Title
Paragraph	Text

Markdown Syntax - Images

Images

To add an image, add an exclamation mark (!), followed by alt text in brackets, and the path or URL to the image asset in parentheses. You can optionally add a title in quotation marks after the path or URL.

```
![The San Juan Mountains are beautiful!](/assets/images/san-juan-mountains.jpg "San Juan Mounta
```

The rendered output looks like this:

Wrap up

Wrap Up

- Markdown

- Reminder: No labs this week

- Remember: Learning Log and Test 0!

- Reminder: Join Ed Discussion board (link on canvas)