CPSC 100

Computational Thinking

Computational Thinking and Markdown

Instructor: Dr. Firas Moosvi
Department of Computer Science
University of British Columbia

Agenda

- Syllabus Recap
  - Course Breakdown
- Intro to Computational Thinking (CT)
  - CT Skills
  - Class Activity

Welcome New Students!


This is NOT a
"GPA booster class"
A+ is rare in this course

About Tests in this course

- Tests will be happening in the Computer-Based Testing Facility (CBTF): cbtf.ubc.ca

- In general, students will have access to all the class slides and some reference material during their Test

About Tests in this course

- Tests will be 50 mins long
- You can drop your lowest Test (we will count 10/11)
- Take the first one seriously! It's easy marks!
- Tests can be booked from Saturday to Thursday

- **Reservations will become available on Mondays at 10 AM !**

Test 1

- Test 1 will include:
  - questions about the Syllabus
  - One question about the name of your instructor
  - Several questions about Markdown
  - 2 questions about the definition of Computational Thinking and the 6 skills

Book your first Test!

https://us.prairietest.com

Learning Goals

Learning Goals

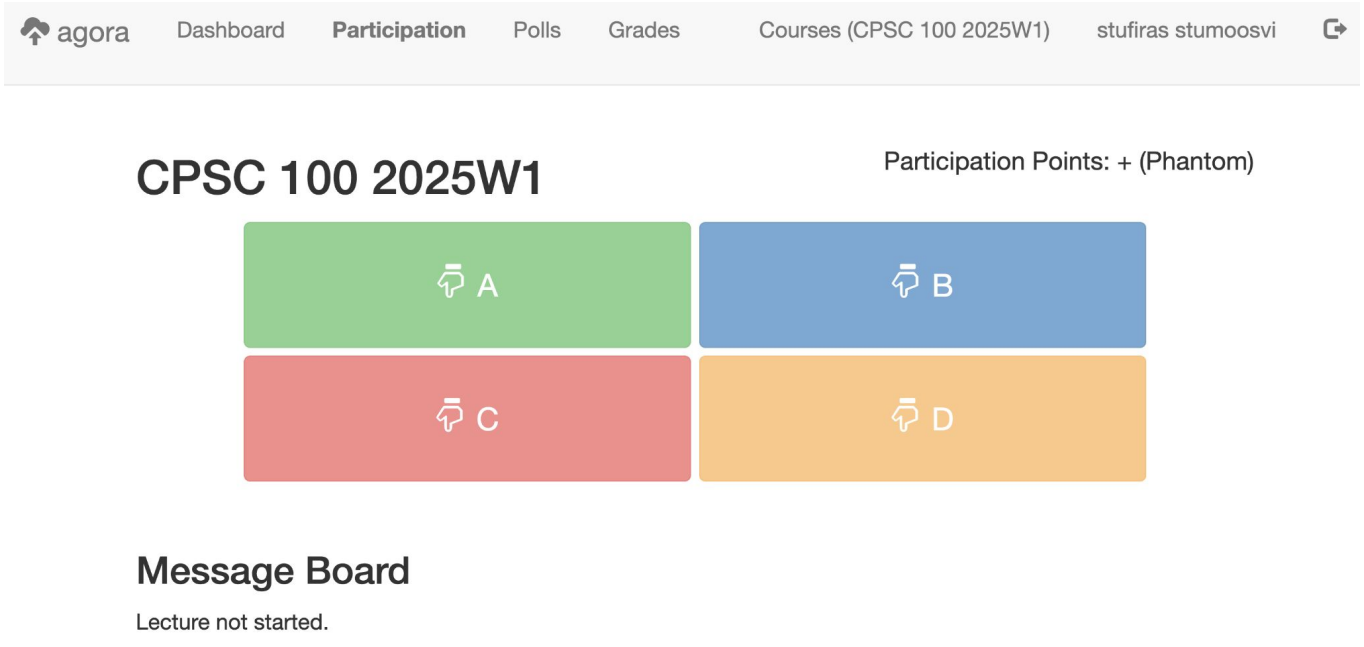
After this lecture, you should be able to:

- 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 the Markdown language

Class Discussion Using Agora

Agora: Discussions and Polling

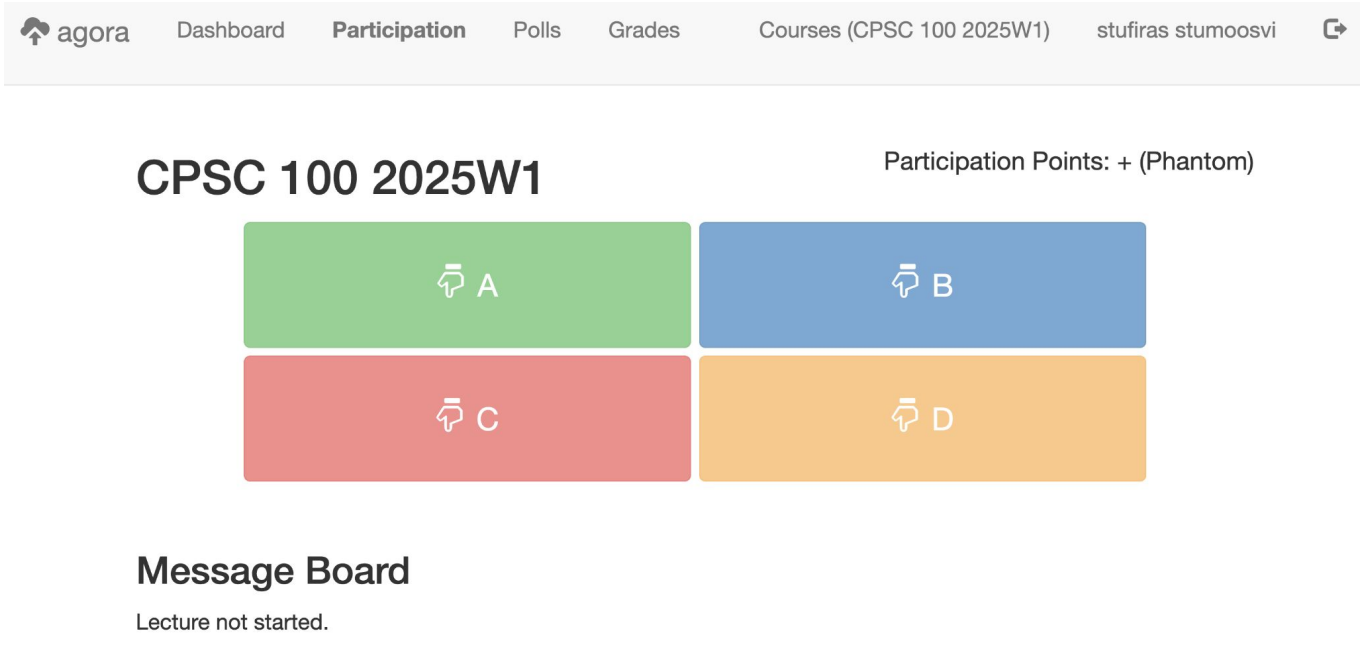
This is what we will use during class to answer poll questions and have discussions!



Agora: Discussions and Polling

Page: agora.students.cs.ubc.ca (login with your CWL)

Enroll code: **psychohistory**



Clicker Question

What year of University are you in?

a) 1st year

b) 2nd year

c) 3rd year

d) 4th year

e) 5th year or higher

Participation Question

Why do people today live longer today than in pre-historic times?

- Fewer Wars
- Science
- Higher Intelligence
- Better Mental Health

Computational Thinking

slido

What do you think Computational Thinking is?

ⓘ Click **Present with Slido** or install our Chrome extension to activate this poll while presenting.

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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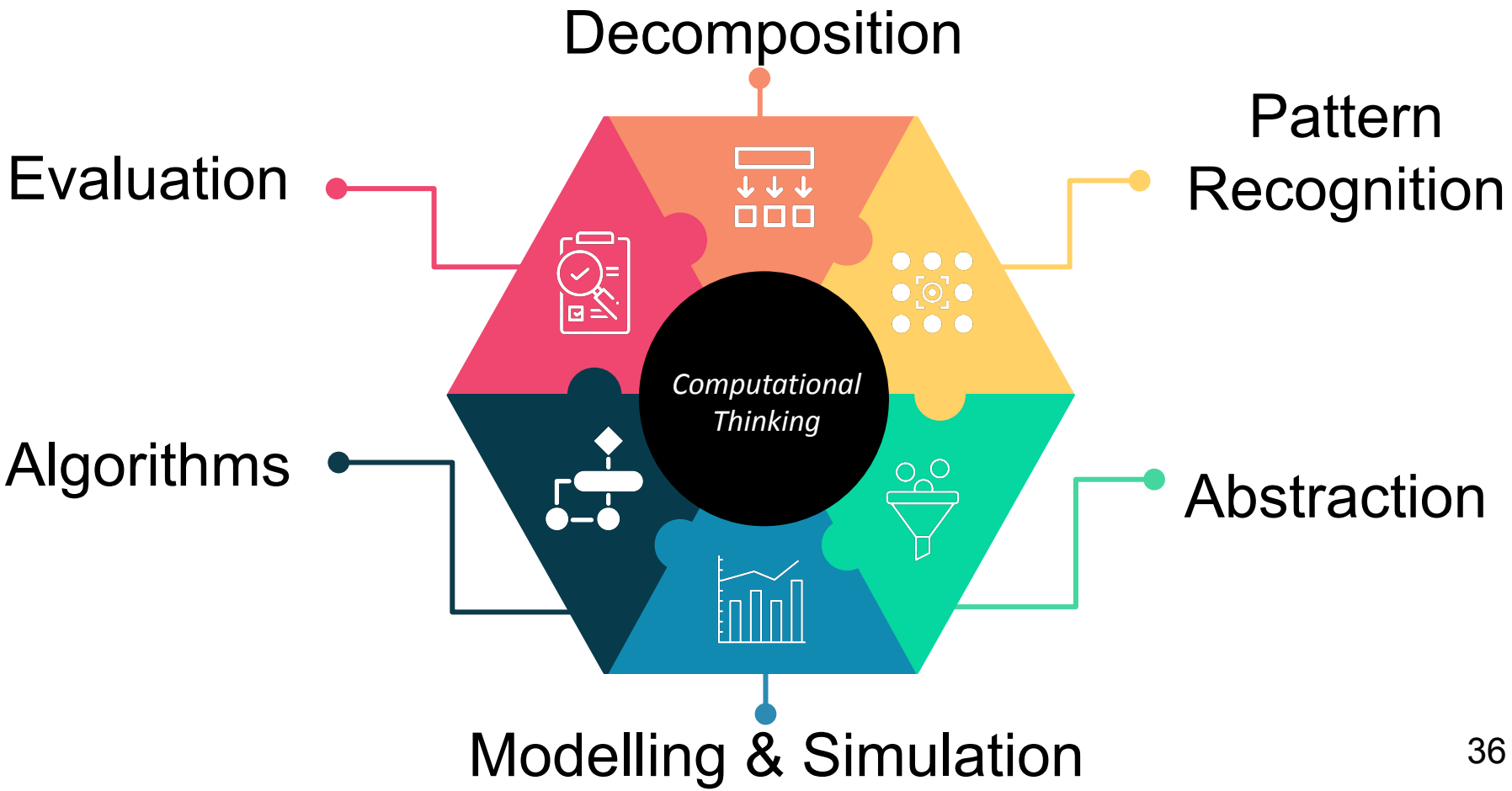
Computational Thinking Skills



Markdown

What is a Markup Language? #10

Gurfathe Brar
22 hours ago in Content Support

PIN STAR WATCH 118 VIEWS

Question Number
What is the lecture number/section, question number, label, or identifier ?

For example: "Lecture 2A section on Absolute/Relative Paths"

Lab 0

Question Text
Please include the full question text, as a copy/paste or as a screenshot.

What is the definition of a markup language? I am new to coding and do not really understand the principle of a markup language. Why do they exist? What is the difference between a "markup" vs other languages? Why are we learning this first, is this significant somehow?

What problem are you having and what have you tried so far?

Describe the problem in detail and include any relevant screenshots, error messages and small snippets of code as needed.

I have tried searching this up on the internet, but it has not answered my questions.

Comment Edit Delete Endorse •••

Firas Moosvi **INSTRUCTOR**
16 hours ago

Great questions! Let me try answering them:

What is the definition of a markup language?

> A markup language is a way to add formatting and structure to plain text. For example, "marking up" text can include anything from making text **bold**, *italics*, appear larger in font size, change the font colour, etc...
>
> Think about a an essay that you submit for a class - your grader will then "mark up" the text by adding circles, underlines, highlights, and other annotations. This is just another example of "markup".
>
> The most famous example of a Markup language is "HTML" - that's what makes up all the websites on the internet. HTML stands for hypertext markup language.

Why do [markup languages] exist?

> They exist because people always want to add formatting and markup to text to spice it up! It's also a way of representing textual data that is rich and dynamic, and allows for people to read content that's formatted instead a wall of text.

What is the difference between a "markup" vs other languages?

> In the computer science world, there are other types of languages as well. For example, "programming" language, "scripting language", "query language", "assembly language" etc...
>
> You don't really need to know what the other languages are or do, but briefly, you can think of programming (or scripting) languages as ones that provide instructions to a computer on what it needs to do whereas a markup language just dictates how text is displayed or presented.

Why are we learning this first, is this significant somehow?

> Very insightful question! We are learning how to use a markup language (markdown) so that we can use it in this course on the class activities, learning logs, and eventually, on tests.

Reference: Geeks for Geeks

Difference Between Programming, Scripting, and Markup Languages

Last Updated : 11 Jul, 2025

When it comes to making a website or app, coding involves basically **three types of languages, i.e the programming language, Scripting Language and Markup Language**. There are a lot of people who consider coding as just developing or making a website, but they need to understand that every single language fits into a particular category, and we need to know which category that language fits into.

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

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!

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!

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`
		1. First item
		2. Second item
		3. Third item
		4. Fourth item

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

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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:

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:

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 3-4]

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

Participation Question

Did you come up with a list of steps to sort cards?

Successful: What worked?	Unsuccessful: Where did it fail ?
Logistics	Counter Example

Wrap up