



Exported for Brian O'Connell on Tue, 27 May 2025 19:22:19 GMT

P1H - Algorithmic Thinking and Representations - Homework

Submit this assignment as a single PDF named *P1H_<first initial of first name><first 4 letters of last name>.pdf*. All algorithms are either typed or drawn using a software (No hand drawn figures).

There is no need to submit different pdfs for each part in this case. You can export images from the recommended flowchart software, then put them all in the same document and print that to pdf. If you collaborate on any part, make clear who you collaborated with.

Part 1: Game Theory-ish

Part 1 was begun as the primary in-class activity. Make sure you credit who you worked with. You should submit your own updated version after you get feedback but we still want to know who you initially worked with as well.

Create a flowchart for solving a puzzle or playing a board/card game. Pick a puzzle game like word searches, sudoku, nonograms, wordle, etc and develop a repeatable algorithm for solving these. In the case of a board or card game, particularly a complex one, you do not need to represent the entirety of the game but just a few initial moves or how to respond to another players move.

- Think and communicate in programming terms.
 - Use the pseudocode syntax demonstrated in class and providing in Programming for Engineers
- Run through your pseudocode with a friend or classmate
 - Ask for feedback
- Update your flowchart based on that interaction
 - Include a short discussion about the feedback and how it influenced any updates you made.

Do not overcomplicate this but also don't oversimplify. You are looking to strike a balance. This is an exercise, a practice attempt, so efficiency or universally applicable is not the goal. The goal is to lay out your logic in a way that takes into account the programming concepts and communicate it using the required course syntax.

To help set a minimum complexity, adhere to the following:

- At least 10 total symbols
 - Your actions can be general but be clear when things are separate actions, even if they happen one after another along the same path
- Must have at least 2 decisions (The diamond symbol)
 - Must account for multiple decision paths based
- Must loop back at least once
 - Can be for some portion of the flowchart, not necessarily from the end to the start

Translations

Translate the given pseudocode into a flowchart and the flowchart into pseudocode for tasks 1 and 2. The goal is to perform a 1-to-1 translation without altering the overall functionality. **This is not** about you developing a program for these problems/tasks but just about you utilizing the course syntax for flowcharts and pseudocode. **DO NOT SIMPLIFY, CHANGE, ALTER, OR DO ANYTHING TO THE LOGIC AT ALL. JUST TRANSLATE.** This is an exercise in interpreting logic given in this form and then communicating that same logic in another. There may be some small variations from person to person but the given logic should be what's communicated.

Part 2: Marble Values

We have marbles in a bag, each with a number written on it. Here is a pseudocode for finding the largest valued marble from the bag:

PROGRAM Largest Marble:

Take out first marble;

Save first marble as largest marble;

DO

Take out new marble;

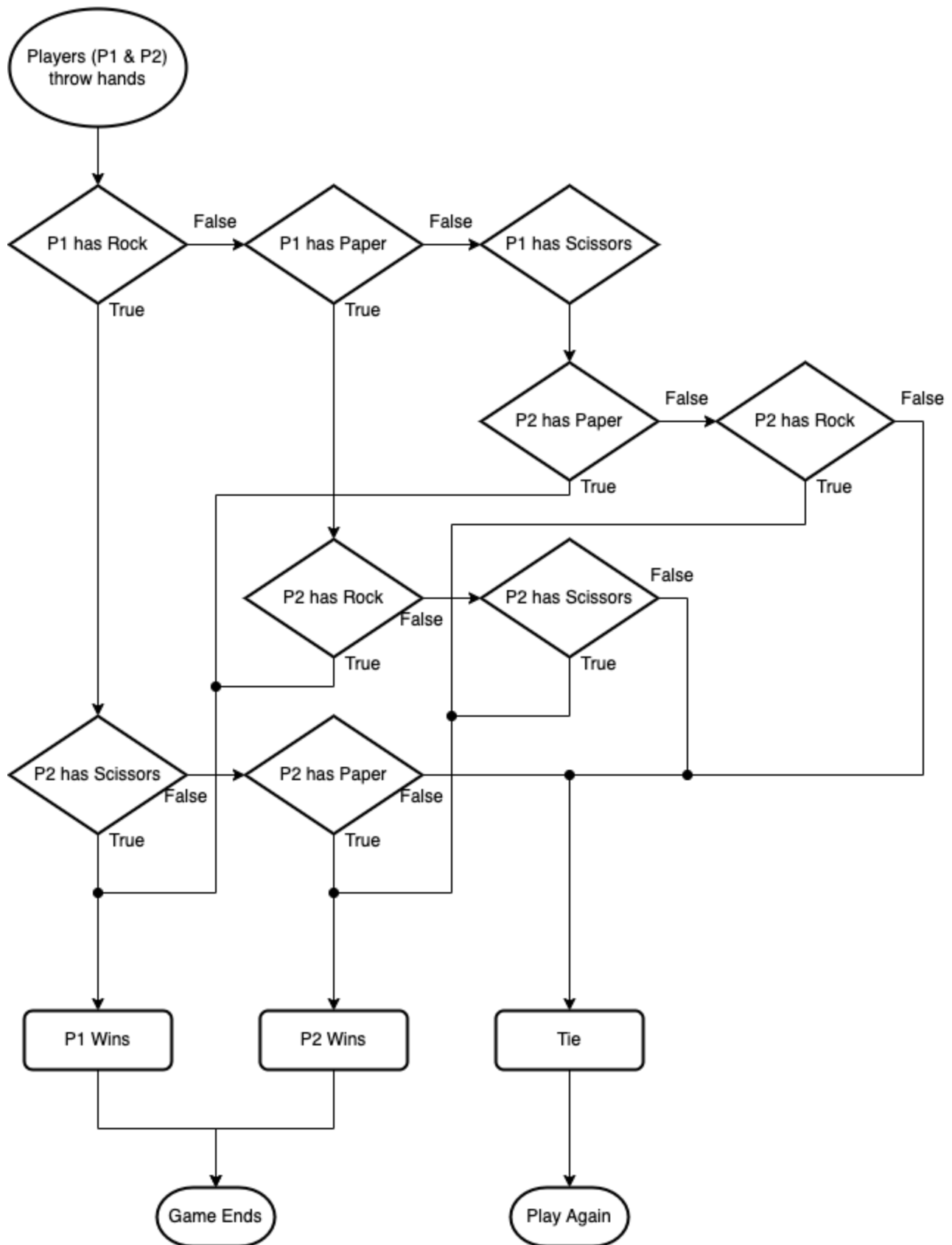
```
    IF new marble value greater than largest marble value THEN
        replace largest marble with new marble;
    ELSE
        Discard new marble;
    ENDIF
WHILE marbles still in bag;
ENDWHILE
END
```

Your task is to create a corresponding flowchart from this pseudocode.

DO NOT SIMPLIFY, CHANGE, ALTER, OR DO ANYTHING TO THE LOGIC AT ALL. JUST TRANSLATE IT FROM PSEUDOCODE TO A FLOWCHART. This is an exercise in interpreting logic given in this form and then communicating that same logic in another.

Part 3: Rock, Paper, Scissors

The majority of people are familiar with this game. Here is a flowchart describing a round of the game:



Your task is to create pseudocode from flowchart.

DO NOT SIMPLIFY, CHANGE, ALTER, OR DO ANYTHING TO THE LOGIC AT ALL. JUST TRANSLATE IT FROM A FLOWCHART TO PSEUDOCODE. This is an exercise in interpreting logic given in this

form and then communicating that same logic in another.

Submissions

- I expect submissions to be computer generated.
 - You can type the pseudo code easily enough.
 - As for the flow charts, it is recommended these made using digital tools like shapes in *Diagram.net* on Google drive to create an easily readable version of your flowchart.
 - **DO NOT SCREENSHOT THESE FOR SUBMISSIONS.** Export them to images instead and put those in your document.
 - If something is unreadable, then it can't even be assessed for other criteria.
- Use the proper formats
 - Use the pseudocode syntax required
 - include proper indentation (tabbing)
 - Use the flowchart shapes required
- Everything should be in **a single PDF** using the naming convention: *P1H_<first initial of first name><first 4 letters of last name>.pdf*

Content Overview

- 1: Game Theory-ish
 - SHORT discussion on feedback
 - Flowchart representing puzzle, card, or board game
- 2: Marble Values
 - Flowchart based on the provided pseudocode
- 3: Rock, Paper, Scissors
 - Pseudocode based on the provided flowchart

Rubric

Course syntax required for all pseudocode and flowcharts. All flowcharts should be created digitally

- 1: Game Theory-ish

- 15% - Flowchart is logically sound
 - Doesn't have to be perfect for full credit but can't be too oversimplified
- 15% - Discussion shows meaningful evaluation of the logic
- 10% - Legibility of the flowchart
 - If done by hand, must be CLEARLY legible. Create digitally if necessary
 - If unreadable, the other elements can not be assessed and will be 0s
- 2: Marble Values
 - 15% - Flowchart represents same logic as provided pseudocode
 - 10% - Correct Syntax - Uses symbols appropriately
 - 10% - Legibility of the flowchart
 - If done by hand, must be CLEARLY legible. Create digitally if necessary
 - If unreadable, the other elements can not be assessed and will be 0s
- 3: Rock, Paper, Scissors
 - 15% - Pseudocode represents same logic as provided flowchart
 - 10% - Correct Syntax - Uses course syntax and tabbing

The following survey is for my reference to help improve future assignments. The results are not checked until after the semester is completed and participation is not required.



Study with Ace