

Regular Expression Game

Reusable Learning Object for COMPSCI 250

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Overview

- ▶ Why regular expressions?
- ▶ Pre-quiz: 10 questions, identify which string matches the given regular expression.
- ▶ Game: Given include/exclude sets, construct a regular expression that includes all of the include strings but none of the exclude strings. Upon completion, include/exclude sets grow. Must complete 5 levels to proceed.
- ▶ Post-quiz: Identical to pre-quiz, but with fresh questions.
- ▶ Resources [Link Provided]
 - ▶ **Lesson Plan** – Detailed teaching guide
 - ▶ **Codebase** – Source code for the game
 - ▶ **Google Form** for Feedback

Structure

CS 250 Regular Expression Game

Pre-Game Knowledge Check

Before beginning the game, you will take a short quiz to evaluate your current knowledge of the material. You will be able to check the solutions before continuing to the next section. In each question, select the string which can be generated by the given regular expression.

1. **0011010010**

- A) 0011010010 B) 001010010
C) 0011010011 D) 011010010

2. **(101)*1011001**

- A) 1011011011001 B) 101101101111001
C) 101101001 D) 101001

CS 250 Regular Expression Game

Regular Expression Game

At each level of the game, you will input a regular expression which includes or excludes the given strings. Your solution should only include the following characters { 1 , 0 , . , } , * , + }

You must pass at least 5 levels to continue to the Post-Game Knowledge Check, but you are welcome to play for longer.

Your Solution

Level 1

| Include | Exclude |
|------------------|------------------|
| • 1100010011 (✗) | • 0011100001 (✓) |

Continue

► Game Demo

Learning Objectives

- ▶ **Knowledge:** *Know* how regular expressions are defined and how they relate to languages.
- ▶ **Skills:** *Identify* whether a string matches a regular expression, and *construct* a regular expression string to match a pattern.
- ▶ **Disposition:** *Persistence* and *attention to detail* regarding regular expression construction and *logical thinking* in exploration of how changes to patterns affect results.

Accessibility

- ▶ **Color:** All information communicated by color is also plainly communicated in text.
- ▶ **Screen-reader compatibility:** When the screen reader on the computer is enabled, all questions and interface content are audibly presented.
- ▶ **Cross-platform:** Web application for easy access, responsive styling allows for use on desktop and mobile
- ▶ **Validation:** According to AccessibilityChecker.Org, our site had no critical issues and scored 95/100.

Pilot

session_results_rows

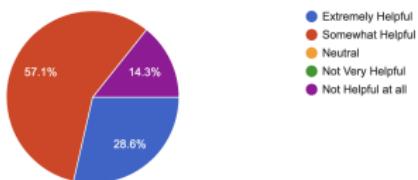
| id | session_id | score_before | score_after | levels_completed | created_at |
|-----------|----------------------|---------------------|--------------------|-------------------------|-------------------------------|
| 16 | mhw4refea1u0b4u365tj | 8 | 0 | 12 | 2025-11-12 15:42:51.005114+00 |
| 17 | mhwca0sdkpebdme6ir9 | 9 | 10 | 7 | 2025-11-13 01:25:41.060723+00 |
| 18 | mhws2cw4q38je4qkwsc | 4 | 0 | 10 | 2025-11-13 01:57:42.878666+00 |
| 19 | mhycrz5wq8qvjbzjn9 | 10 | 4 | 6 | 2025-11-14 04:49:18.026202+00 |
| 20 | mi4zrx82t4r6m8rcjd | 10 | 10 | 6 | 2025-11-18 20:49:38.58649+00 |
| 21 | mi6hpw3pf0attxgi9eg | 5 | 1 | 6 | 2025-11-19 21:11:14.079324+00 |

- ▶ Seven students participated in the Google Form, and six of them submitted their quiz.
- ▶ Overall positive feedback
- ▶ Did not see improvement between pre-quiz and post-quiz
 - ▶ Some students enjoyed the game so much that they forgot to complete the post-quiz and continued playing without pause.
 - ▶ Students reported feeling exhausted by the time they reached the post-quiz, resulting in incomplete submissions.

Feedback

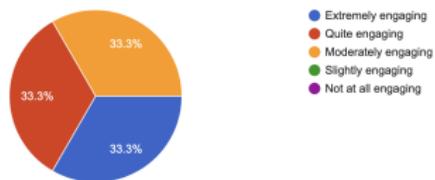
How helpful was the pre-quiz in preparing you for the game?

7 responses



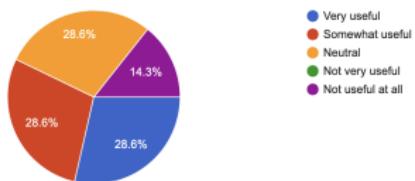
How engaging did you find the Password Game portion?

6 responses



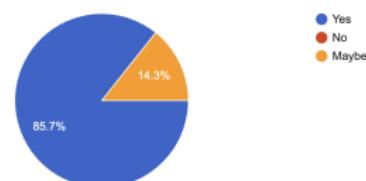
How useful was the post-quiz for assessing your improvement?

7 responses



Would you recommend this game for future students in this course (or a similar course)?

7 responses



► The complete response results are available [here](#)