

Essential Computing Fall 2025

Mini-Project: Fighting Wildfires

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Description

The purpose of this project is to develop and test a Java program that implements a single-player game where the player has to fight a forest fire by strategically dropping water.

Rules

1. The game is played on a board (grid) consisting of 10×8 cells.
2. The computer randomly places 55 trees, 10 rocks, and 5 waters onto the grid.
3. Initially, 12 randomly selected cells containing a tree are burning.
4. In each turn, the player enters the row and column of a cell to drop water into. If that cell is on fire, it is extinguished immediately, and the cell now contains water.
5. Additionally, water spreads from the chosen cell in all cardinal directions (N/E/S/W), where
 - fire is extinguished (turns into water) on any cells passing through,
 - the spread stops when hitting a rock, a water cell, or the edge of the board,
 - trees and empty cells remain unchanged by water passing through.
6. Afterwards, the board is updated as follows, where all changes happen synchronously (at the same time):
 - A burning cell becomes empty.
 - A cell containing a tree that has a neighbouring cell (in N/E/S/W direction) which is on fire ignites itself with a 75% probability.
7. Cells that are empty or that contain rocks or water never burn.
8. The game ends if there are no more fires. The number of remaining trees is displayed as score.