



Christmas PaC Adventure!

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CSCI 3308

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What is PaC?

PaC stands for "Point and Click".

Essentially, it means that a player's objective is to point at elements on the screen and click on them to progress the game! Our game integrates both clicking on elements on the screen and an inventory system that requires specific items to be chosen to solve puzzles.





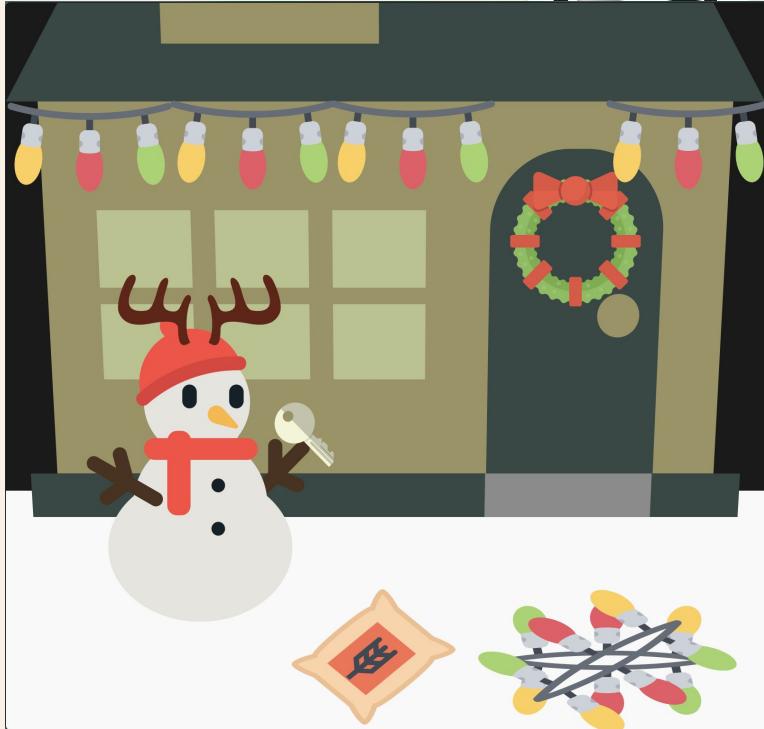
Description



Project and Purpose

Our project is a simple Christmas themed PaC adventure, where users race to solve all puzzles as quickly as possible to be placed at the top of the scoreboard!

The goal of this project is to provide a fun interactive experience for people who enjoy point and click games.

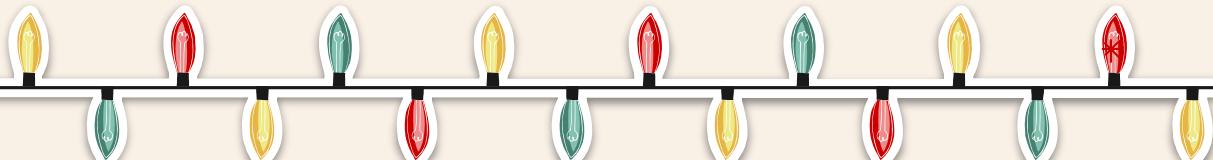
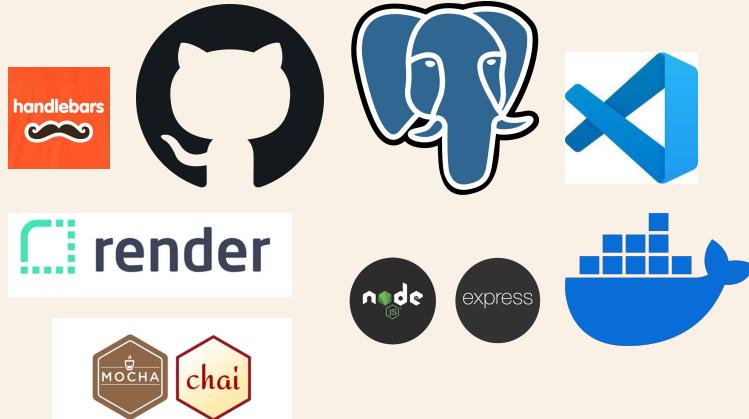




Tools and Methodologies

Tools

- * Github 4/5 (Pull requests worse than GitLab)
- * Postgresql Database 3/5 (Lack of triggers, as opposed to MySQL)
- * VS Code 5/5 (integration with github, merge conflict editor)
- * Handlebars 5/5
- * HTML, CSS 5/5
- * Render 5/5
- * Mocha, Chai 5/5
- * NodeJS 5/5
- * Axios 5/5
- * Docker 5/5



Project Management/Methodologies

- * **Agile** (% was difficult for integration)
- * **Github Projects** % (a simple todo list was more helpful to see everything at once)
- * **Weekly weekend meetings** to discuss what to do in the upcoming week
- * **Zoom calls/pair programming** for debugging

A screenshot of a digital project management board with four vertical columns: "Ice Box", "Todo", "In Progress", and "Done".

- Ice Box:** Contains three items:
 - SoftwareDevTeamProject #27: Animations when finishing puzzle (Gameplay)
 - Draft: Message bar has white strip underneath (interfering with background)
 - Draft: Replace incorrect inventory item pictures
- Todo:** Contains one item:
 - SoftwareDevTeamProject #7: Call top users from the SQL Database to display on the scoreboard
- In Progress:** Contains one item:
 - SoftwareDevTeamProject #28: Stopwatch that records gameplay time (Scoring/Speedrunning System)
- Done:** Contains 19 items:
 - SoftwareDevTeamProject #26: Hilight interactive objects when hovered over (Gameplay)
 - SoftwareDevTeamProject #24: implement integration between database and gameplay (Gameplay)
 - SoftwareDevTeamProject #19: Inventory Bar Display Items (Item Interaction)
 - SoftwareDevTeamProject #5: Items interacting with the world (Item Interaction)
 - SoftwareDevTeamProject #30: inventory shouldn't show on login/register page
 - SoftwareDevTeamProject #33: Add a game complete screen
 - SoftwareDevTeamProject #10: Get/Post for All Pages Working (All Links Work According to Plan)
 - SoftwareDevTeamProject #1: Register/Login (+ Add item)



Challenges

Challenges: Rendering the game

* How to position game objects & how to detect mouse click?

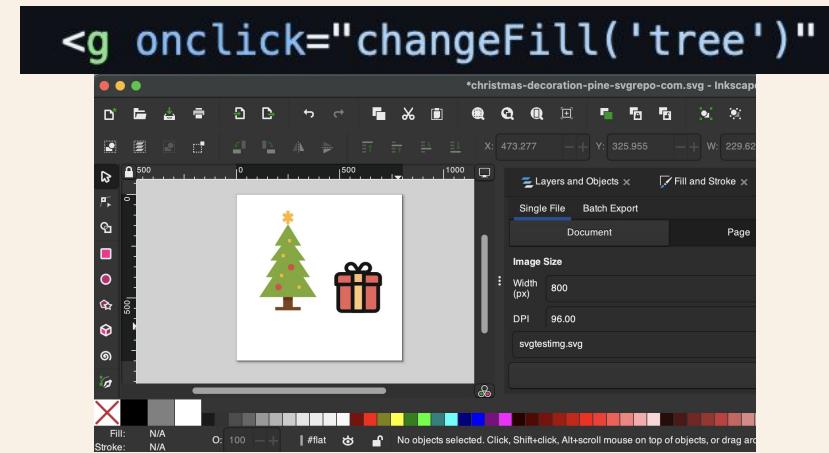


```
var tree_path = new Path2D("M 31,2 V 4.1320312 L 29.555,3.1679688 28.445,4.8320312 Z");
ctx.fillStyle = "black";
ctx.fill(tree_path);

var tree_img = new Image(5, 5);
tree_img.src = "https://www.svgrepo.com/show/422269/christmas-decoration-pine.svg";
ctx.drawImage(tree_img, 0, 0, 64, 64);

canvas.addEventListener('click', function(event) {
  const isPointInPath = ctx.isPointInPath(tree_path, event.offsetX, event.offsetY);
  if (isPointInPath) {
    ctx.clearRect(0, 0, canvas.width, canvas.height);
    ctx.fill(tree_path);
    if (!tree_showing){
      tree_showing = true
      ctx.drawImage(tree_img, 0, 0, 64, 64);
    } else {
      tree_showing = false
    }
  }
});
```

* Bootstrap Cards: Difficult positioning
HTML Canvas: Difficult but precise
positioning & difficult mouse click



SVG: Position in image editing software
& use onclick event



Challenges: Saving game state

- * How to save the game state across pages?

Solution: Store the visible/hidden items in a database and load it up when the page loads.

```
 {{> svgsettings}}
 {{> scene1 }}

{{#if scene_1_visible_items}}
<script>
  var items = ({{{scene_1_visible_items}}});
  items.forEach((obj, i) => {
    document.getElementById(obj.object).style.visibility = obj.visible_state;
  })
</script>
{{/if}}

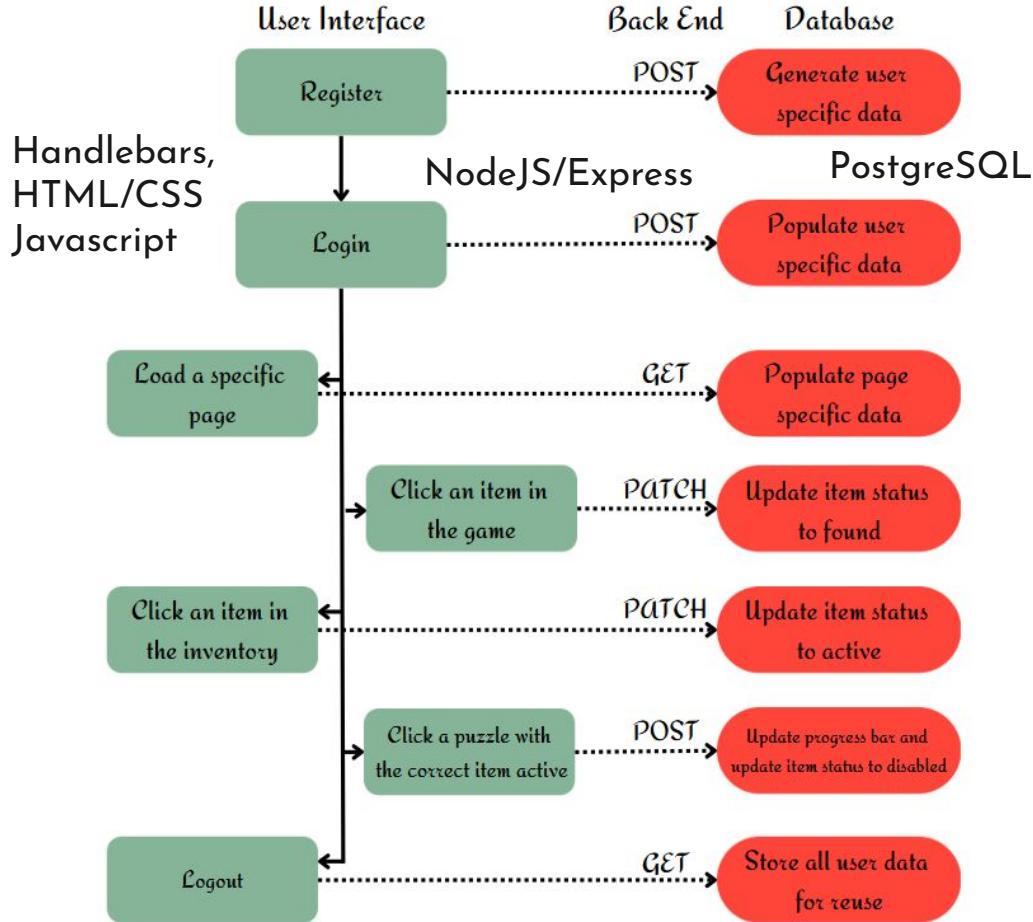

</svg>
```





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Architecture Diagram





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Live Demo

Sofia



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Enhancements



Enhancements



1. Clearer goal

What's the goal of the game? Maybe have a character that needs help, like Santa, and completing all the puzzles helps the character.



3. Speedrunning experience

Have an option to reset the game after finishing it to make speedrunning easier and encourage people to do it.

2. Animations

Animations when finishing puzzles to add to the user experience.

4. Auto-store timer

Once the game is beaten, have the timer save automatically without the need to logout.

5. Stop timer upon completion

Once the game is beaten, stop the timer from counting down automatically.





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Questions?

Sofia