

Parson's Puzzle Library



COMS 3998
Spring 2019

Calvin Goah



Introduction

1. Parson's Puzzle Game Creation
2. Identifying Bugs in SAGE Dev.
3. Field Testing



Introduction: Looping Games & Bugs

Child (12)

- ✓ 486 changing the title of a Game Des...
Updated 4/18/2019, ● New
- ✓ 500 Adding students to class
Updated 4/18/2019, ● New
- ✓ 496 Code blocked by dialogue box
Updated 4/18/2019, ● New
- ✓ 501 Deleted Work
Updated 4/25/2019, ● New
- ✓ 504 Extra game created
Updated 4/25/2019, ● New
- ✓ 503 Freezing
Updated 4/25/2019, ● New
- ✓ 505 Negative Points
Updated 4/25/2019, ● New
- ✓ 497 Nonautomatic point update
Updated 4/18/2019, ● New
- ✓ 498 Not able to get rid of variables i...
Updated 4/18/2019, ● New
- ✓ 499 Text description not properly dis...
Updated 4/18/2019, ● New
- ✓ 502 Variables can't be dragged
Updated 4/25/2019, ● New
- ✓ 468 Point Deduction On Drop
Updated 3/21/2019, ● Resolved

Quest Management

Basics of Looping

Quest Description











Counting Loops: Easy, Medium, Hard
Sentinel Loops: Easy, Medium, Hard
Conditional Loops: Easy, Medium, Hard
Extra: Fencepost Loop

UPDATE QUEST

Games and Objectives in this Quest

Order	Game Description	Design	Objective	Instruction	Delete
1 ▾	Counting Loops (Easy)	UPDATE	UPDATE	UPDATE	DELETE
1 ▾	Counting Loops (Medium)	UPDATE	UPDATE	UPDATE	DELETE
1 ▾	Counting Loops (Hard)	UPDATE	UPDATE	UPDATE	DELETE
2 ▾	Sentinel Loops (Easy)	UPDATE	UPDATE	UPDATE	DELETE
2 ▾	Sentinel Loops (Medium)	UPDATE	UPDATE	UPDATE	DELETE
2 ▾	Sentinel Loops (Hard)	UPDATE	UPDATE	UPDATE	DELETE
3 ▾	Conditional Loops (Easy)				

Background: Parson's Puzzle

Feature	▼  Parson's Puzzle Library	● New	Business		
	User Story	 Parson's Puzzle Design: Sequences	... ● New	Business	Game Design
	User Story	 Parson's Puzzle Design: Loops	... ● New	Business	Game Design
	User Story	 Parson's Puzzle Design: Events	● New	Business	Game Design
	User Story	 Parson's Puzzle Design: Parallelism	● New	Business	Game Design
	User Story	 Parson's Puzzle Design: Conditionals	● New	Business	Game Design
	User Story	 Parson's Puzzle Design: Operators	● New	Business	Game Design
	User Story	 Parson's Puzzle Design: Data	● New	Business	Game Design



Design Concept Goals

1. Computational Thinking
2. Intuition Building
3. Fun



Design & Implementation of Looping Concepts

Counting Loops: Easy, Medium, Hard

Sentinel Loops: Easy, Medium, Hard

Conditional Loops: Easy, Medium, Hard

Extra: Fencepost Loop

Counting Loops



The image shows the Scratch programming environment. On the left, the 'Scripts' tab is selected, displaying a list of block categories: Motion, Looks, Sound, Pen, Data, Events, Control, Sensing, Operators, More Blocks, and Parsons. Below this list, it says 'Stage selected: No motion blocks'. The main workspace on the right contains a script starting with a 'when green flag clicked' event block. This is followed by three 'set' blocks: 'set counter to 0', 'set clock to 0', and 'set counter to 0'. Then, a 'repeat until' loop block is used, with the condition 'counter = 5'. Inside the loop, there is a 'repeat' block set to 5 iterations, containing a 'change clock by 1' block and a 'change counter by 1' block. After the loop, there is a 'show variable counter' block.

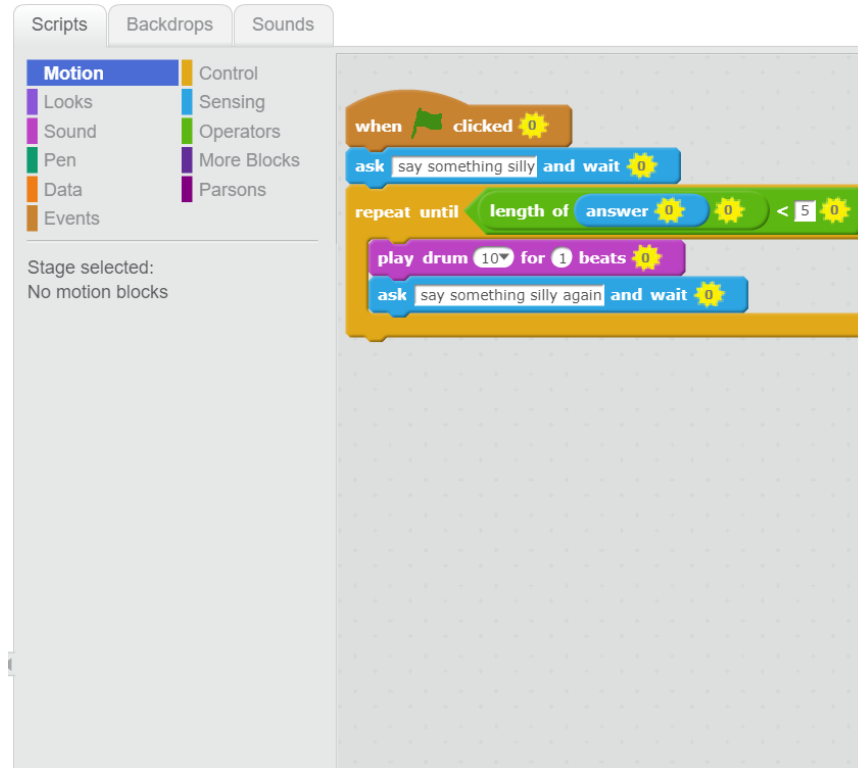
Scripts Backdrops Sounds

Motion Control
Looks Sensing
Sound Operators
Pen More Blocks
Data Parsons
Events

Stage selected:
No motion blocks

when green flag clicked 0
set counter to 0 5
set clock to 0 5
repeat until counter 0 = 5 0 10
repeat 5 5
change clock by 1 5
change counter by 1 5
show variable counter 1

Sentinel Loops



The image shows the Scratch script editor interface. On the left, the 'Scripts' tab is selected, displaying a block palette with categories: Motion, Looks, Sound, Pen, Data, Events, Control, Sensing, Operators, More Blocks, and Parsons. Below the palette, it says 'Stage selected: No motion blocks'. The main workspace contains a script starting with a 'when green flag clicked' block, followed by an 'ask say something silly and wait' block. A 'repeat until' loop follows, with the condition 'length of answer < 5'. Inside the loop, there is a 'play drum 10 for 1 beats' block and another 'ask say something silly again and wait' block.

Scripts Backdrops Sounds

Motion Control
Looks Sensing
Sound Operators
Pen More Blocks
Data Parsons
Events

Stage selected:
No motion blocks

when green flag clicked

ask say something silly and wait

repeat until length of answer < 5

play drum 10 for 1 beats

ask say something silly again and wait

Conditional Loops

Scripts Backdrops Sounds

Motion
Looks
Sound
Pen
Data
Events

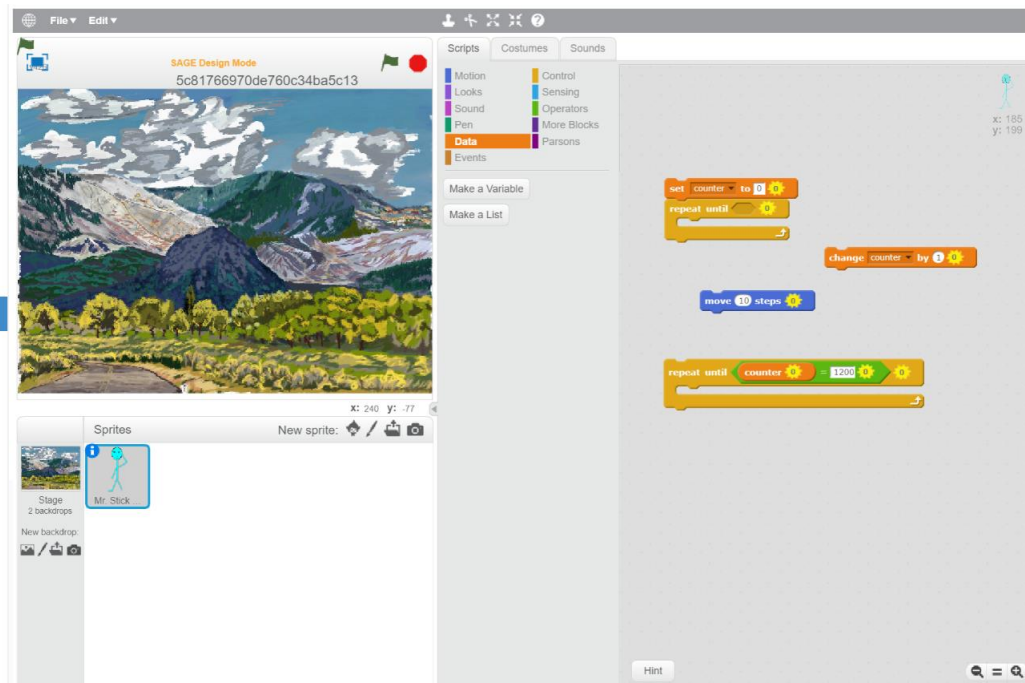
Control
Sensing
Operators
More Blocks
Parsons

Stage selected:
No motion blocks

The image shows a Scratch script editor with a script area containing the following blocks:

- when clicked
- ask say something silly and wait
- repeat until length of answer < 5
- play drum 10 for 1 beats
- set counter to 0
- set clock to 0
- repeat until counter = 5
 - repeat 5
 - change clock by 1
 - change counter by 1
- ask say something silly again and wait

Issues/ Challenges



Child (12)

- 486 changing the title of a Game Des...
Updated 4/18/2019, ● New
- 500 Adding students to class
Updated 4/18/2019, ● New
- 496 Code blocked by dialogue box
Updated 4/18/2019, ● New
- 501 Deleted Work
Updated 4/25/2019, ● New
- 504 Extra game created
Updated 4/25/2019, ● New
- 503 Freezing
Updated 4/25/2019, ● New
- 505 Negative Points
Updated 4/25/2019, ● New
- 497 Nonautomatic point update
Updated 4/18/2019, ● New
- 498 Not able to get rid of variables i...
Updated 4/18/2019, ● New
- 499 Text description not properly dis...
Updated 4/18/2019, ● New
- 502 Variables can't be dragged
Updated 4/25/2019, ● New
- 468 Point Deduction On Drop
Updated 3/21/2019, ● Resolved



Demo



Field Testing: PS76

5th & 6th Grade Students



Student Questions

1. What grade are you in?
2. Did you understand the games?
3. What did you learn/understand?
4. What would make the games easier to understand?
5. Would you play this game for fun, why/why not?



Teacher Questions

https://docs.google.com/forms/d/e/1FAIpQLScPmpYggM6mSfO5n_hEsYXI0JGmFhDCuGx9EvxUXK4ZnS_tg/viewform



Future Work

1. Other Games
2. More developed Games
3. Field Testing
4. Illustration



Thank You!



References

1. http://chortle.ccsu.edu/assemblytutorial/Chapter-18/ass18_10.html
2. <https://dl.acm.org/citation.cfm?id=2401798>