

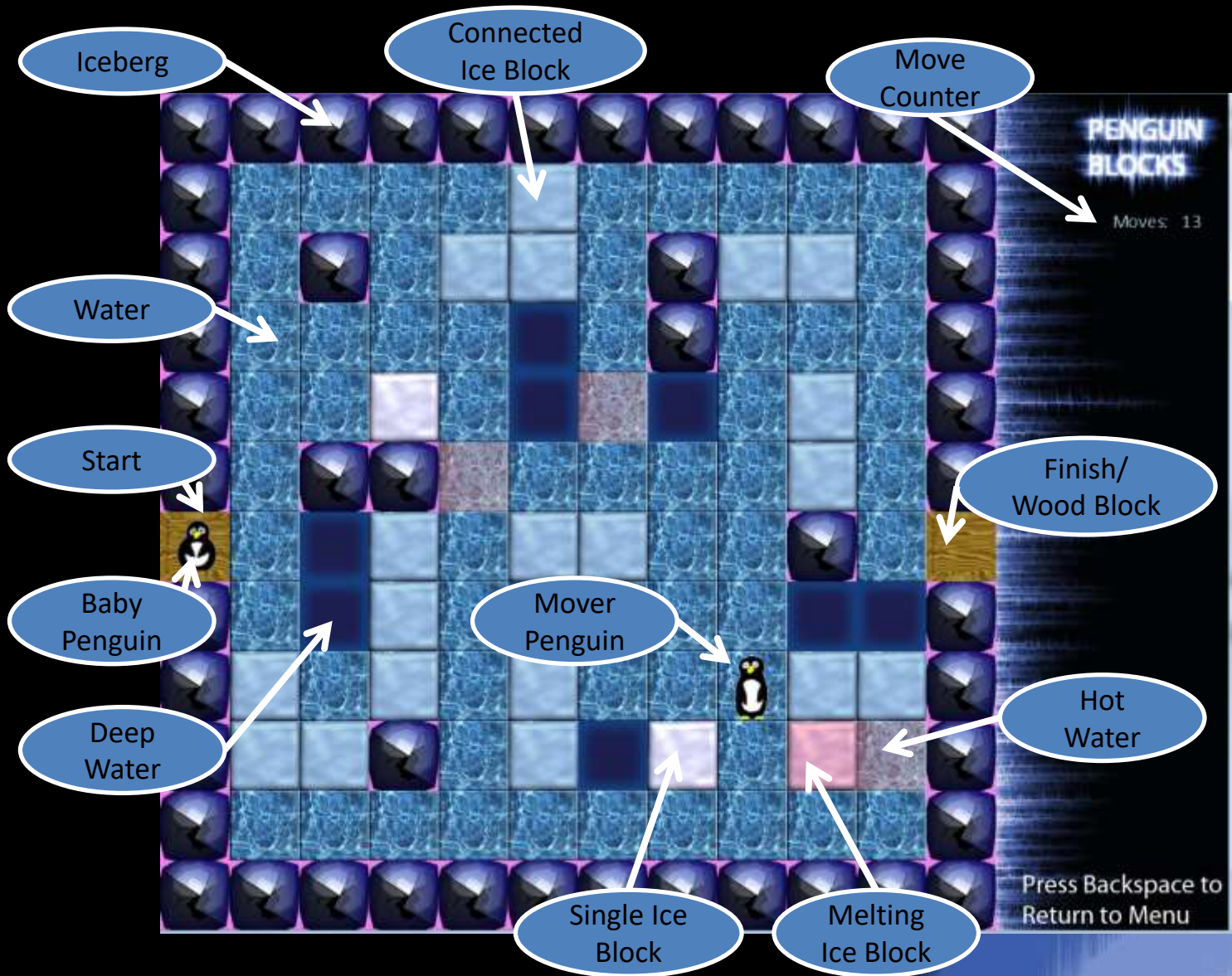
PENGUIN BLOCKS

Sean O'Neill, Chad McRann, and Justin Loyd
Department of Computer Science
University of Wyoming

The Idea

- Originality
- Puzzle Genre
- Xbox/PC
- Difficulty
- Focus on User Experience

The Game



What we Thought was Easy

- XNA
- Most of the object interactions
 - Penguin -> Grid Square
 - Penguin -> Ice Block
 - Ice Block -> Grid Square
- Single Ice Block Movement
- Dark water/hot water events
- Path Detection (TSP)
 - Keep track of directions traversed

XNA

- Microsoft Visual Studio is our development environment, using XNA framework
- XNA allows developers to create a game project, and has a library of game functions to make development “quick” and “easy”
- Allows us to deploy the project on PC and Xbox

And to the Hard Stuff...

- 3D graphics
- Differentiating between connect/not connected ice blocks
- Moving connected ice blocks
- Splitting connected ice blocks

Graphics

- 3D graphics
 - Displaying was easy
 - But having the interactions between objects work properly was difficult
 - Decided to use 2D textures so we could progress through game play and game logic

Different Ice Blocks

- Single (1x1) ice blocks were easy to implement
- Creating different shaped ice blocks was a different story
 - All connected ice blocks needed to know every single ice block it was connected to
 - Tried to recurse through the ice block array to do this, but this made movement difficult
 - Solution: Each ice block gets a unique group identifier!

Moving Connected Ice Blocks

- Problem: How do we move an entire ice block structure in 1 motion?
- We had to find which direction we were trying to move it
- Then we had to figure out if each individual block could safely move
- If 1 fails they all fail, so how do we know if it fails?

Moving Connected Ice Blocks...

- Had to move outermost ice block first
- Solution: A series of loops which was smart enough to find us this block

Splitting Connected Ice Blocks

- Problem: Splitting an ice block into 2 separate ice blocks
- Solution: Use Properties to keep track of connections

Game Play

- Demo