Snakes on a Sphere

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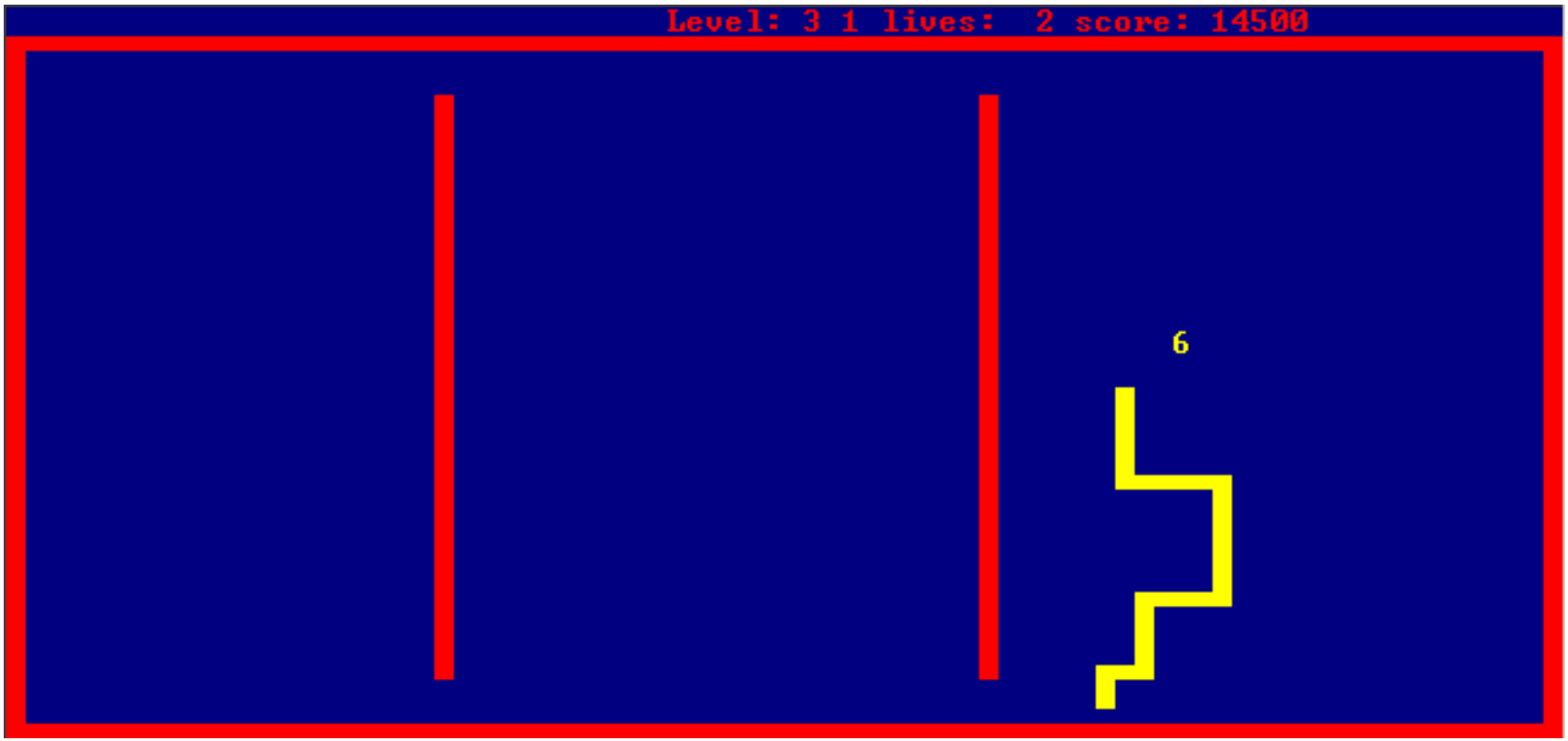
CS123: Snakes on a Sphere

Snakes on a Plane:



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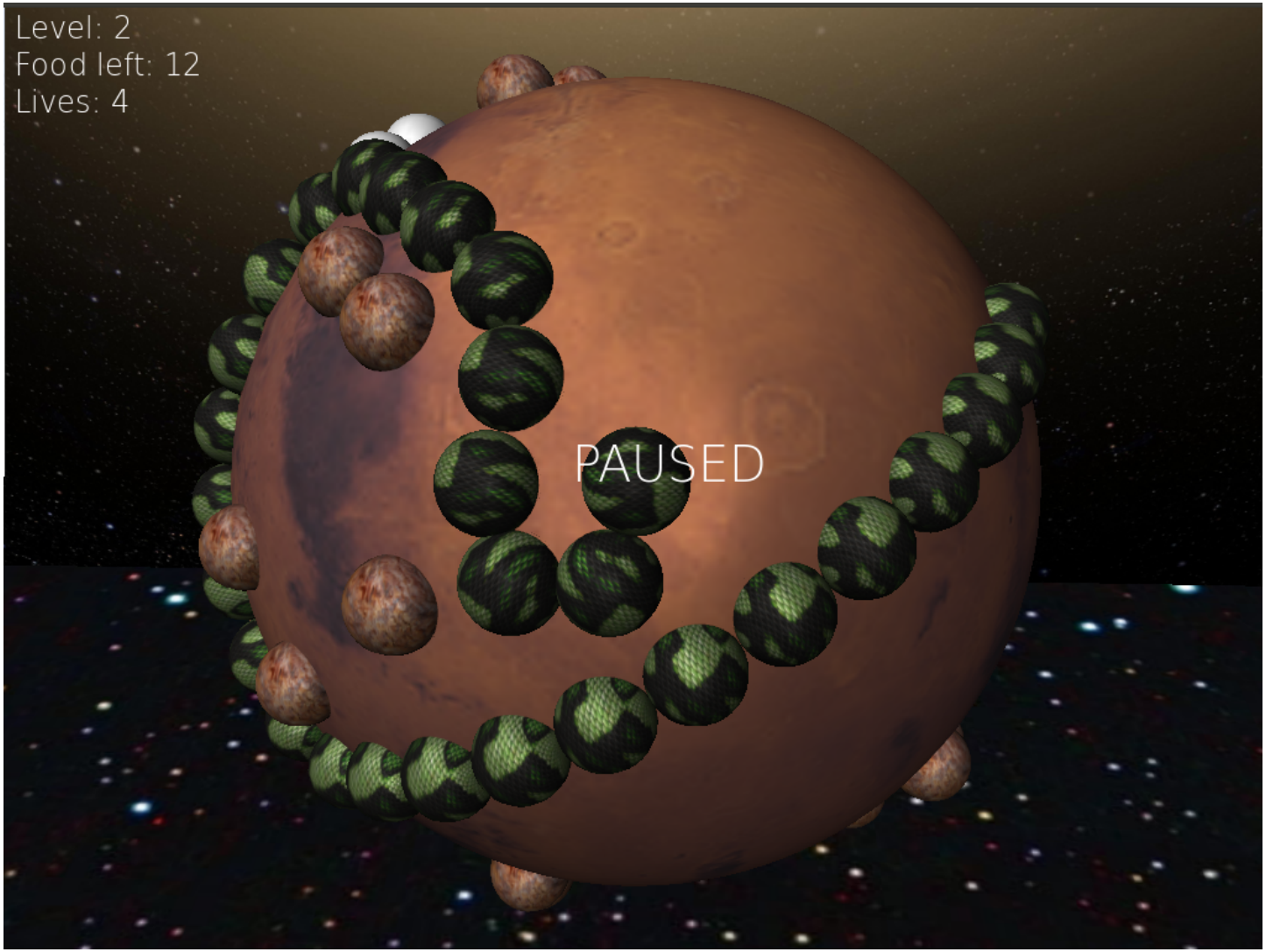
. . . now on a sphere!



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Features

- Texture mapping
- Procedural spheres
- Skybox
- Interactivity
- Collision detection
- Scene graph
- Camera tracking plus interaction
- Simple physics
- Curve Resampling

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Snake Model

- A head that user navigates
- A sequence of spheres for body and tail
- Pose of the the body and tail follows the head
- Head direction is always tangent to the sphere
- Length grows as more food is eaten
- Body spheres are found by linear interpolation of the path

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World Model

- Space scene for skybox
- High-res Mars and rock texture map
- Choose obstacles to avoid impossible games
- Don't flatten scene graph
- Allow insertion, deletion and modification

Camera Model

- Always look at head
- Orient camera up vector to follow snake direction
- Track snakes head with the camera
- Also allow zoom and rotation about one axis

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Interaction

- Allow user to rotate camera orthogonal to normal/velocity plane
- Allow user to zoom camera toward and away from the head
- Allow user to navigate the snake in the plane tangent to the sphere

Gameplay

- Finite number of lives
- Speed, obstacles, food, world size increase with level