The Game

- Player controls snake with directional buttons
- Goal is to eat apples while avoiding obstacles
- Apples cause snake to grow, until a new level is reached
Snake Representation

- **BRAM**
  - length 736 (32 x 23)
  - width 15
    - 4 bits orientation (1111 represents empty)
    - 1 bit parity (1 => odd, 0 => even)
    - 10 bits next location (1111111111 represents tail)

- head register
- tail register
- length register
Snake Movement

- Snake moves on enable
- Parity of each location switches
- Head register points to new location with next pointing to previous head
- Tail is removed (set to all 1s)
- Location with next pointing to previous tail is set to tail (next set to all 1s)
Snake Growth

- Snake grows upon collision with apple
- Parity of each location switches
- Head register points to new location with next pointing to previous head's head
- No change to tail
Collisions

- **Snake**
  - determined in snake module
  - signaled to game logic – lose a life

- **Wall**
  - determined using head location and level map
  - lose a life

- **Apple**
  - determined using head and apple locations
  - grow snake
Schedule

- Monday, November 20
  - snake module complete
  - game logic module complete
  - randomizer complete
  - timer complete
  - rudimentary graphics engine

- Monday, November 27
  - image processor complete
  - graphics draws correct image at each tick

- Monday, December 4
  - graphics draws smooth transitions between ticks

- Final Week
  - finish report
  - work out bugs