CompSci 94
Adding a CountDown Timer
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10.0 → 0.0

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Class Today

• How to setup a countdown timer.
Similar to Score
Need a number and 3D-Text

• Create a number variable, \textit{timerNumber}
• Create a 3D text to display the value of the number, \textit{timer} - has a string value
• Create a procedure to initialize both
• Create a procedure to update the timer
  – Timer counts down!

Proc – InitializeTimer, updateTimer

declar procedure InitializeTimer Add Parameter...

do in order

\begin{itemize}
  \item \texttt{this \textcolor{red}{setTimerNumber} \texttt{timerNumber: = 10.0}}
  \item \texttt{this.timer \textcolor{red}{setValue} + \texttt{this.timerNumber}}
\end{itemize}

declar procedure updateTimer Add Parameter...

do in order

\begin{itemize}
  \item \texttt{this \textcolor{red}{setTimerNumber} \texttt{timerNumber: = this.timerNumber - 1.0}}
  \item \texttt{this.timer \textcolor{red}{setValue} + \texttt{this.timerNumber}}
\end{itemize}
Properties

- May also want to add a Boolean variable to turn on when playing game and turn off when game is over
Create a Timer Event Listener

- Create the event
Resulting Event

- Note the time chosen means this event will repeat in that amount of time
  - In this case the event repeats every 1.0 sec
What question do you want to ask each time in the event?

```plaintext
decrease procedure timeElapsed := event getTimeSinceLastFire

do in order
  if this.gameOn is true then
    this.updateTimer
    if this.timerNumber <= 0.001 is true then
      // ran out of time, game over
      this.setGameOn gameOn: false
    else
      drop statement here
  else
    drop statement here
  else
    drop statement here

Stops at 0.0!
```

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Decimal numbers are not stored exactly in a computer

- $1/3 = .3333333333333333333$
- $.25$ might be $.250000000145$

- So NEVER compare if a decimal number is equal to a number, such as:
  - `timerNumber == 0.0`
- INSTEAD ask if `timerNumber >= 0.00001`
Whole Numbers are stored exactly in the computer

• Ok to compare if a whole number is equal to 5 or 0…
This lecture covered

- Setting up a timer to count down
- Event – TimeListener
  - Given a time increment, the event happens over and over in that time increment
- Decimal numbers are not stored exactly in the computer, so should never check if they are equal to a decimal number but instead check if > or < to values.