

TIZEN™

DEVELOPER
CONFERENCE
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Gaming with HTML5 Canvas 2D

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Outline

- Background
- Game with canvas 2D
- Programming tips
- Gaps and Challenges

HTML5 Game

- Game in HTML5 is popular.
 - Many users
 - Write once, run anywhere
 - No third-party plugin need

Game Requirements

- Graphics
- Interaction
- Video/audio
- Performance
- Progress storage
- Network communication

HTML5 offering for game

Graphics	Canvas 2D/3D
Interaction	Keyboard/mouse/touch
Video/audio	Video and audio tag
Performance	Hardware acceleration
Storage	Local storage/ File API
Network	Web socket

Canvas Element

```
<canvas id="canvas1" width="500" height="300">  
  Your browser doesn't support Canvas.  
</canvas>
```

- Drawing on the canvas
 - [Hello world Demo here](#)
- `canvas=document.getElementById("canvas1")`
- `context = canvas.getContext("2d")`
- `context.fillRect(0,0,500,300)`
- `context.strokeRect(5,5,490,290)`
- `context.fillText("Hello, World!", 185, 100)`

Canvas Basic APIs

- Text
- Built-in shape
- path
- Image
- Video
- Transformation
- Color/shadow



API usage in Games

- Combine canvas APIs to draw game scenario
- Example: moving a tank
 - [Step1](#): Draw tank on canvas
 - [Step2](#): Creating a timer loop for animation
 - [Step3](#): moving the position



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Practice tips: UX

- User interaction
 - Portable on different kinds of user input devices
 - Kinds of events on a single device
 - Widget size
- Context awareness
 - Screen size
 - DPI
 - Orientation
 - Sensor Data
 - Battery life ...

Practice tips: Performance 1/3

- Webworker
 - Spawning background scripts
 - Compute-intensive tasks
- Main loop
 - Asynchronous way
 - Never block UI too long

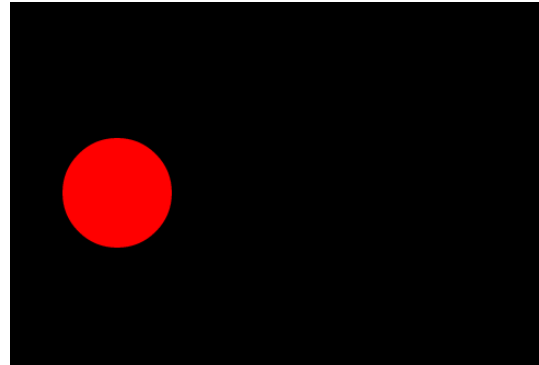
Practice tips: Performance 2/3

- Objects creation and animation
 - Preload canvas resources
 - AppCache
 - requestAnimationFrame
 - Synchronized with browser's repaint loop
 - Specifically designed and intended for animation

Practice tips: Performance

3/3

- Objects rendering
 - Pre-rendering
 - Batch commit
 - Dirty area update



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Gaps and Challenges

- Canvas
 - Redraw dirty areas
 - Performance
- Multi threading
- High efficiency data transfer
- Source protection
- User data privacy

Questions?

References

- **Report on the Workshop on HTML.next for Games**
<http://www.w3.org/2011/09/games/>
- **Build your First Game with HTML5**
<http://net.tutsplus.com/tutorials/html-css-techniques/build-your-first-game-with-html5/>
- **HTML5 Canvas** by Steve Fulton and Jeff Fulton (O'Reilly) Copyright 2011 8bitrocket Studios, 978-1-4493-9390-8.

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