

# Interaction

---

321190  
2011년 봄학기  
3/29/2011  
박경신

## Overview

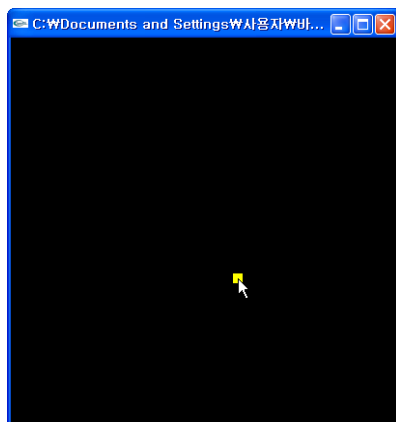
---

- GLUT Devices & Event-driven programming
  - 마우스, 키보드, 메뉴, 조이스틱, 테블렛, ..
- 디스플레이 리스트 (Display lists)
  - 유지모드 그래픽스 (Retained mode graphics) 방식
- 지적 (Picking)
  - 화면상의 한 객체를 사용자가 식별 할 수 있도록 하는 입력연산

## Mouse

---

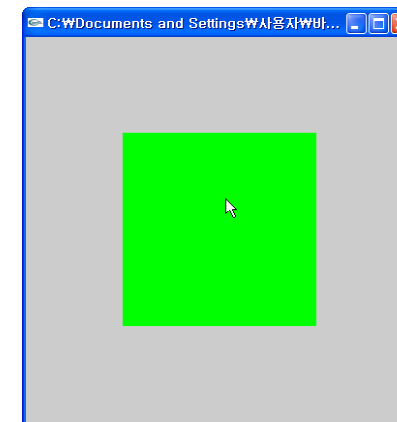
- Draw a moving square by a mouse point



## Keyboard

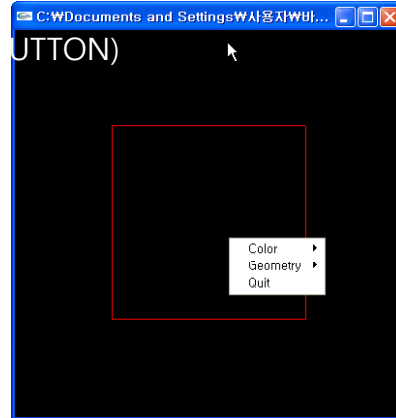
---

- Draw a solid colored square
  - Black, red, green, blue, magenta, cyan, yellow, white
- KeyboardFunc
  - Red by r-key
  - Green by g-key
  - Blue by b-key
- KeyboardUpFunc
  - Reset color

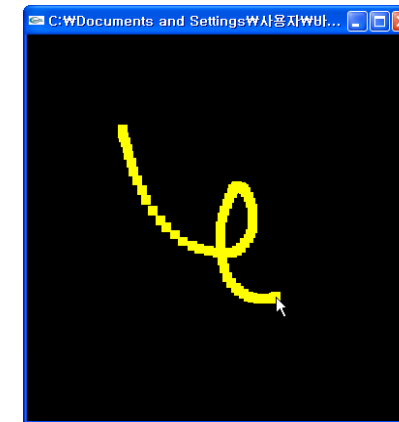


## Menu

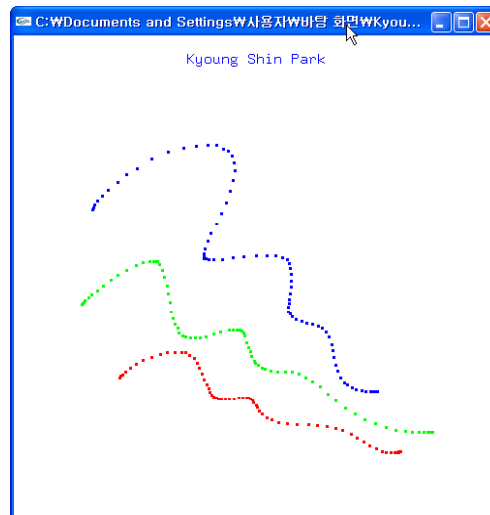
- Menu (LEFT\_MOUSE\_BUTTON)
  - Color – red, green, blue
  - Geometry – Points, Lines, Line loop, Quads
  - Quit
- Menu (RIGHT\_MOUSE\_BUTTON)
  - Exit



## Paint

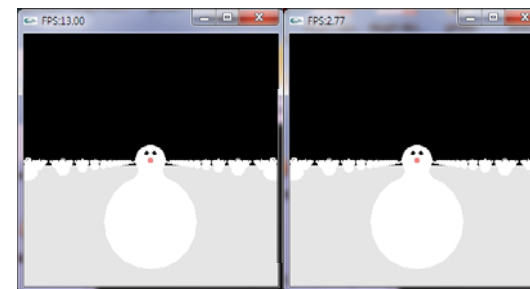


## Scribble



## Display Lists

- Draw snowmen with vs. without DL
  - 3600개 눈사람을 그렸을 경우 렌더링 속도에 큰 차이를 보임



FPS: 13.00

FPS: 2.77

```
GLuint createDL()
{
    GLuint snowManDL, loopDL;
    snowManDL = glGenLists(1);
    loopDL = glGenLists(1);

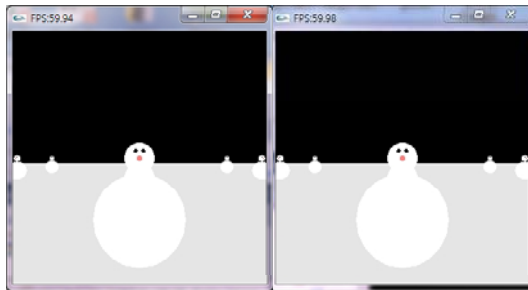
    glBegin(GL_POINTS);
    for(int i = -30; i < 30; i++) {
        for(int j = -30; j < 30; j++) {
            glVertex3f(i*10.0, 0, j * 10.0);
        }
    }
    glEndList();

    return(loopDL);
}
```

## Display Lists

### □ Draw snowmen with vs. without DL

- 36개 눈사람을 그렸을 경우 렌더링 속도에 차이를 보이지 않음



FPS: 59.94

FPS: 59.98

```
GLuint createDL()
{
    GLuint snowManDL, loopDL;
    snowManDL = glGenLists(1);
    loopDL = glGenLists(1);

    glBegin(GL_TRIANGLES);
    glVertex3f(-10, 0, 0);
    glVertex3f(10, 0, 0);
    glVertex3f(0, 10, 0);
    glEnd();

    glNewList(snowManDL, GL_COMPILE);
    drawSnowMan();
    glEndList();

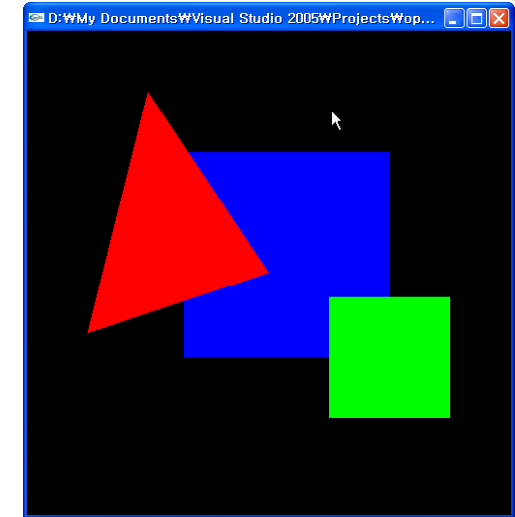
    glNewList(loopDL, GL_COMPILE);
    for(int i = -3; i < 3; i++) {
        for(int j = -3; j < 3; j++) {
            glPushMatrix();
            glTranslatef(i*10.0, j * 10.0);
            glBegin(GL_TRIANGLES);
            glVertex3f(-10, 0, 0);
            glVertex3f(10, 0, 0);
            glVertex3f(0, 10, 0);
            glEnd();
            glPopMatrix();
        }
    }
    glEndList();

    return(loopDL);
}
```

## Picking

### □ Picking an object

- Selection mode
- Bounding box
- Back buffer



## OpenGL Tutorials

### □ OpenGL display lists tutorial

- <http://www.lighthouse3d.com/opengl/displaylists/>
- <http://nehe.gamedev.net/data/lessons/lesson.asp?lesson=12>

### □ OPENGL picking tutorial

- <http://www.lighthouse3d.com/opengl/picking/>
- <http://nehe.gamedev.net/data/lessons/lesson.asp?lesson=32>