Jump

```
// Quick note:
// This is implemented with only physics scheme and not interpolation
// since I want to prioritize module 3.

float r = 30; // radius
float ms; // millis()
float t; // time since last draw
PVector pos; // position
PVector acc; // acceleration
PVector vel; // velocity
PVector jumpVel = new PVector(0, -3); // jump velocity
PVector gravity = new PVector(0, 0.03); // gravity
float accSpeed = 0.05; // acceleration speed
float maxSpeed = 3; // max speed
int jump; // jump counter
boolean airborn; // if ball is in air

void setup() {
 size(800, 600);
 ms = millis();
 pos = new PVector(width/2, height/2);
 acc = new PVector(0, 0);
 vel = new PVector(0, 0);
}

void draw() {
 background(10, 10, 50);

 t = millis()-ms; // resets the timer
 t = t/1000;      // to seonds
 print("\n" + t);

 ms = millis();

 ellipse(pos.x, pos.y, r*2, r*2);
 stroke(255);
 line(0, height/2+r, width, height/2+r);

 if(airborn){ // if ball is in the air
  if(vel.y > 0){ // if ball is going downwards
```

```
     vel.y += gravity.y - vel.y/100; // hang-time
   } else { // if ball is going upwards
     vel.add(gravity);
   }

   if(pos.y >= height/2){ // if back on ground or under
     vel.y = 0;
     pos.y = height/2;
     airborn = false;
   }
 } else { // if on ground
   gravity = new PVector(0, 0.03); // resets the gravity when on ground
   jump = 0;
 }

 move();
 checkEdges();

}

void move(){
 pos.add(new PVector(vel.x*(1+t), vel.y*(1+t)));
}

void keyPressed(){
 if (key == CODED) {
   if (keyCode == LEFT){
     acc = new PVector(-accSpeed, 0);
     vel.add(acc.mult(1+t));
     vel.limit(maxSpeed);
     acc = new PVector(0, 0);

   } else if (keyCode == RIGHT){
     acc = new PVector(accSpeed, 0);
     vel.add(acc.mult(1+t));
     vel.limit(maxSpeed);
     acc = new PVector(0, 0);

   } else if (keyCode == UP){
     if(jump < 2){
       vel.y = 0;
```

```
    if(jump == 0){ // first jump
     vel.add(jumpVel);
    } else { // second jump
     vel.add(new PVector(0, jumpVel.y*0.6));
    }
    pos.y += jumpVel.y;
    airborn = true;
    gravity = new PVector(0, 0.03);
    jump++;
   }

  } else if (keyCode == DOWN){
   gravity = new PVector(0, 0.16);
  }

 }
}

void checkEdges(){
 if(pos.x > width){
  pos.x = pos.x = 0;
 } else if (pos.x < 0) {
  pos.x = pos.x = width;
 }
}
```