```
// Project 11

int redPin = 2;
int yellowPin = 3;
int greenPin = 4;
int aPin = 6;
int bPin = 7;
int buttonPin = 5;

int state = 0;
int longPeriod = 5000; // Time at green or red
int shortPeriod = 700; // Time period when changing
int targetCount = shortPeriod;
int count = 0;

void setup()
{
  pinMode(aPin, INPUT);
  pinMode(bPin, INPUT);
  pinMode(buttonPin, INPUT);
  pinMode(redPin, OUTPUT);
  pinMode(yellowPin, OUTPUT);
  pinMode(greenPin, OUTPUT);
}

void loop()
{
  count++;
  if (digitalRead(buttonPin))
```

```
  {
    setLights(HIGH, HIGH, HIGH);
  }
  else
  {
    int change = getEncoderTurn();
    int newPeriod = longPeriod + (change * 1000);
    if (newPeriod >= 1000 && newPeriod <= 10000)
    {
      longPeriod = newPeriod;
    }
    if (count > targetCount)
    {
      setState();
      count = 0;
    }
  }
  delay(1);
}

int getEncoderTurn()
{
  // return -1, 0, or +1
  static int oldA = LOW;
  static int oldB = LOW;
  int result = 0;
  int newA = digitalRead(aPin);
  int newB = digitalRead(bPin);
  if (newA != oldA || newB != oldB)
```

```
  {
    // something has changed
    if (oldA == LOW && newA == HIGH)
    {
      result = -(oldB * 2 - 1);
    }
  }
  oldA = newA;
  oldB = newB;
  return result;
}

int setState()
  {
    if (state == 0)
    {
      setLights(HIGH, LOW, LOW);
      targetCount = longPeriod;
      state = 1;
    }
    else if (state == 1)
    {
      setLights(HIGH, HIGH, LOW);
      targetCount = shortPeriod;
      state = 2;
    }
    else if (state == 2)
    {
      setLights(LOW, LOW, HIGH);
```

```
      targetCount = longPeriod;
      state = 3;
    }
    else if (state == 3)
    {
      setLights(LOW, HIGH, LOW);
      targetCount = shortPeriod;
      state = 0;
    }
  }

void setLights(int red, int yellow, int green)
{
  digitalWrite(redPin, red);
  digitalWrite(yellowPin, yellow);
  digitalWrite(greenPin, green);
}
```

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