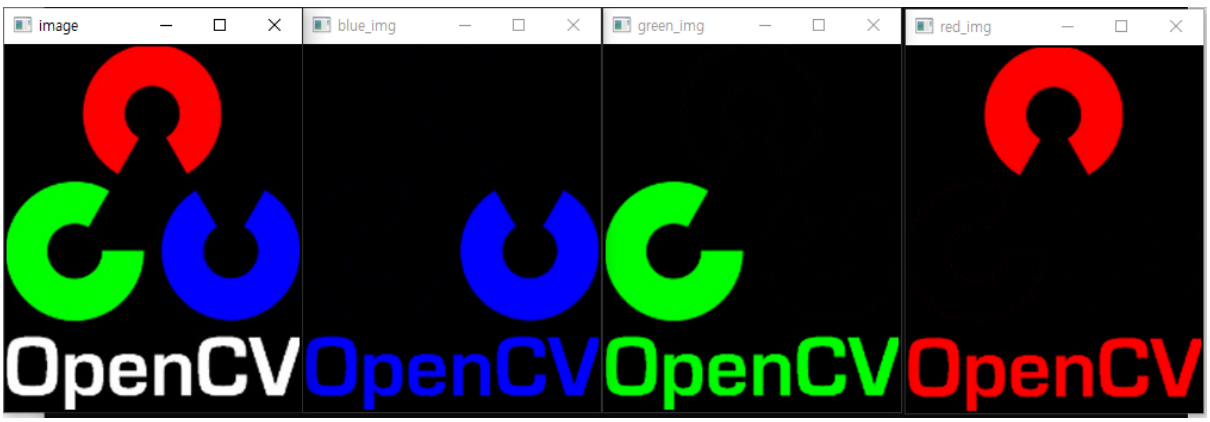
07.OpenCV의 기초(5).pdf 과제 1번

```cpp
#include <opencv2/opencv.hpp>
using namespace cv;
using namespace std;

int main()
{
    Mat image = imread("C:/Users/Chan's Victus/Documents/class/Project/image/logo.jpg", 1);

    Mat bgr[3], blue_img, red_img, green_img, zero(image.size(), CV_8U, Scalar(0));
    split(image, bgr);


    merge(vector<Mat>{bgr[0], zero, zero}, blue_img); // Blue channel
    merge(vector<Mat>{zero, bgr[1], zero}, green_img); // Green channel
    merge(vector<Mat>{zero, zero, bgr[2]}, red_img);   // Red channel

    imshow("image", image);
    imshow("blue_img", blue_img);
    imshow("green_img", green_img);
    imshow("red_img", red_img);
    waitKey(0);

    return 0;
}
```

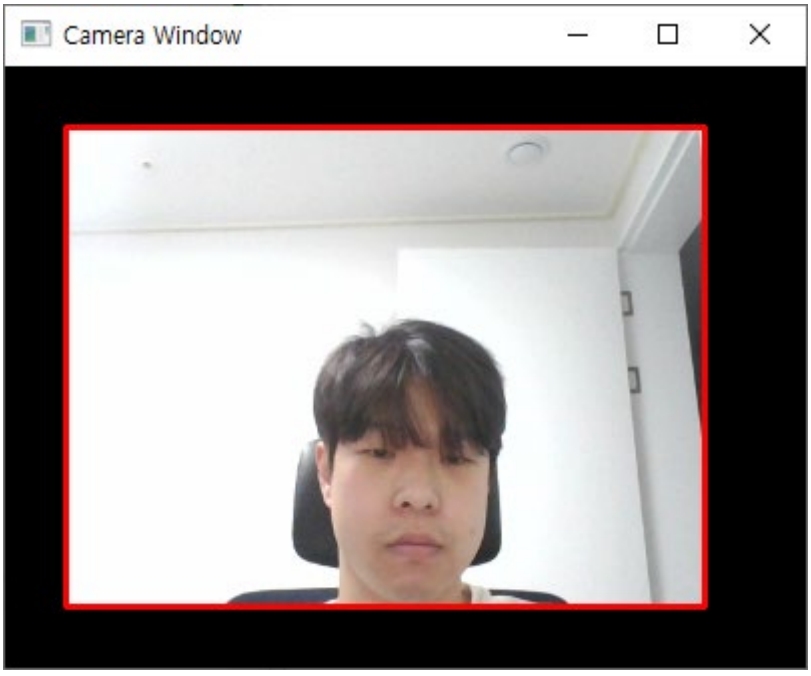
```
1>  3 functions were new in current compilation
1>  6 functions had inline decision re-evaluated but remain unchanged
1>코드를 생성했습니다.
1>Project.vcxproj -> C:\Users\Chan's Victus\Documents\class\Project\x64\Release\Project.exe
========== 빌드: 1개 성공, 0개 실패, 0개 최신 상태, 0개 건너뜀 ==========
========== 빌드이(가) 오후 5:41에 시작되었고 00.939 초이(가) 소요됨 ==========
```



07.OpenCV의 기초(5).pdf 과제 2번

```cpp
#include <opencv2/opencv.hpp>

using namespace cv;

int main( ) {

    VideoCapture cap(0);
    if (!cap.isOpened( )) {
        std::cerr << "Error: Could not open the camera." << std::endl;
        return -1;
    }

    Mat frame;
    while (true) {

        cap >> frame;

        resize(frame, frame, Size(400, 300));

        Rect roi(30, 30, 320, 240);

        Mat blackImage = Mat::zeros(frame.size( ), frame.type( ));

        frame(roi).copyTo(blackImage(roi));

        rectangle(blackImage, roi, Scalar(0, 0, 255), 2);

        imshow("Camera Window", blackImage);

        char c = (char)waitKey(25);
        if (c == 27)
            break;
    }

    cap.release( );
    destroyAllWindows( );

    return 0;
}
```

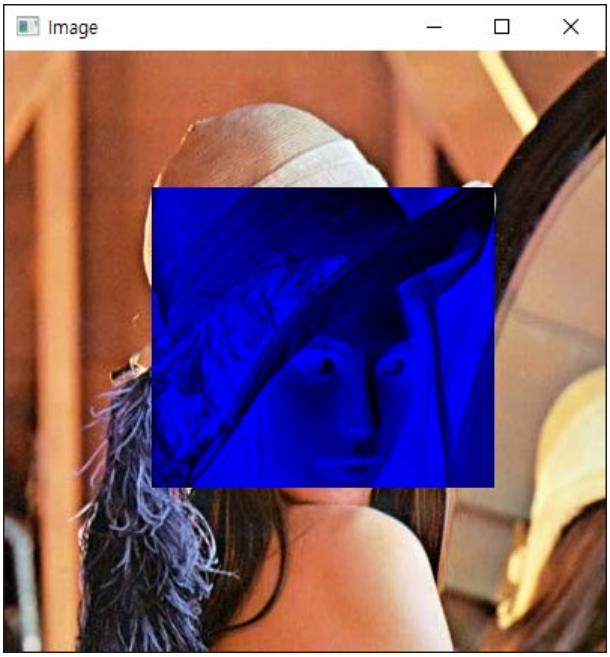
```
1>  5 functions had inline decision re-evaluated but remain unchanged
1>코드를 생성했습니다.
1>Project.vcxproj -> C:\Users\Chan's Victus\Documents\class\Project\x64\Release\Project.exe
1>"Project.vcxproj" 프로젝트를 빌드했습니다.
========== 빌드: 1개 성공, 0개 실패, 0개 최신 상태, 0개 건너뜀 ==========
========== 빌드이(가) 오후 5:47에 시작되었고 02.626 초이(가) 소요됨 ==========
```



08-화소처리.pdf 과제1

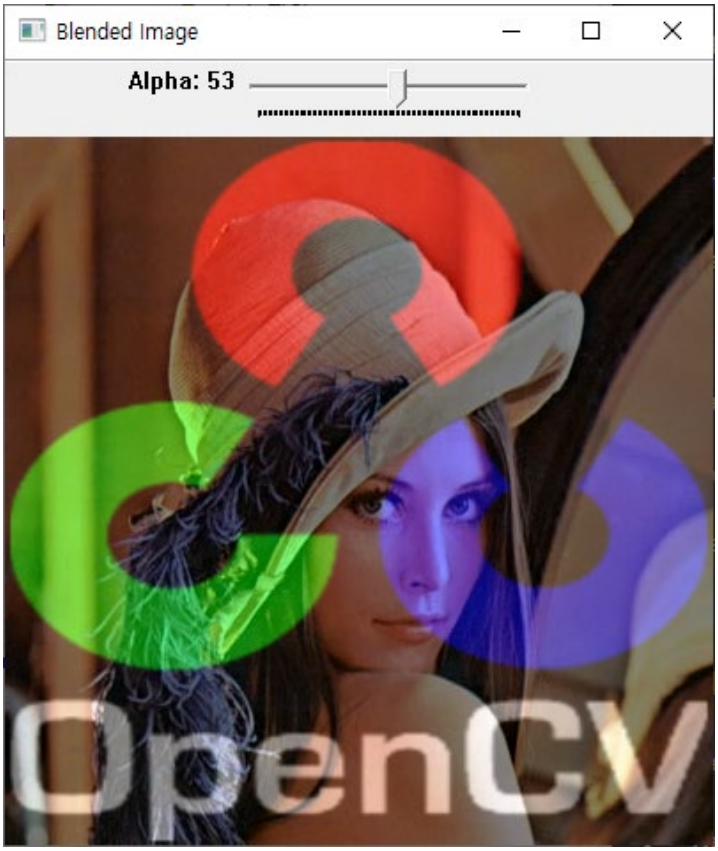
```cpp
#include <opencv2/opencv.hpp>

using namespace cv;
using namespace std;

bool dragging = false;
Point startPoint, endPoint;

void onMouse(int event, int x, int y, int flags, void* param) {
    Mat* image = reinterpret_cast<Mat*>(param);
    switch (event) {
    case EVENT_LBUTTONDOWN:
        dragging = true;
        startPoint = Point(x, y);
        break;

    case EVENT_LBUTTONUP:
        dragging = false;
        endPoint = Point(x, y);
        Rect roi(startPoint, endPoint);
        (*image)(roi) = 255 - (*image)(roi);
        imshow("Image", *image);
        break;
    }
}

int main() {
    Mat image = imread("C:/Users/Chan's Victus/Documents/class/Project/image/lenna.jpg", 1);
    if (image.empty()) {
        cerr << "Error loading the image" << endl;
        return -1;
    }

    namedWindow("Image");
    setMouseCallback("Image", onMouse, &image);

    imshow("Image", image);
    waitKey(0);

    return 0;
}
```

```
1>  0 functions had inline decision re-evaluated but remain unchanged
1>코드를 생성했습니다.
1>Project.vcxproj -> C:\Users\Chan's Victus\Documents\class\Project\x64\Release\Project.exe
1>"Project.vcxproj" 프로젝트를 빌드했습니다.
========== 빌드: 1개 성공, 0개 실패, 0개 최신 상태, 0개 건너뜀 ==========
========== 빌드이(가) 오후 5:53에 시작되었고 02.660 초이(가) 소요됨 ==========
```



```cpp
#include <opencv2/opencv.hpp>

using namespace cv;
using namespace std;

void on_trackbar(int pos, void* param) {
    vector<Mat>* images = reinterpret_cast<vector<Mat>*>(param);
    Mat blended;
    double alpha = pos / 100.0;
    double beta = 1 - alpha;
    addWeighted(images->at(0), alpha, images->at(1), beta, 0, blended);
    imshow("Blended Image", blended);
}

int main() {
    Mat image1 = imread("C:/Users/Chan's Victus/Documents/class/Project/image/lenna.
    Mat image2 = imread("C:/Users/Chan's Victus/Documents/class/Project/image/logo.j

    if (image1.empty() || image2.empty()) {
        cerr << "Error loading the images" << endl;
        return -1;
    }

    resize(image2, image2, image1.size());

    namedWindow("Blended Image");

    int alpha_slider = 50;

    // Create the images vector outside the trackbar creation
    vector<Mat> images = { image1, image2 };
    createTrackbar("Alpha", "Blended Image", &alpha_slider, 100, on_trackbar, &image

    on_trackbar(alpha_slider, &images);

    waitKey(0);

    return 0;
}
```

```
1>  6 functions had inline decision re-evaluated but remain unchanged
1>코드를 생성했습니다.
1>Project.vcxproj -> C:\Users\Chan's Victus\Documents\class\Project\x64\Release\Project.exe
1>"Project.vcxproj" 프로젝트를 빌드했습니다.
========== 빌드: 1개 성공, 0개 실패, 0개 최신 상태, 0개 건너뜀 ==========
========== 빌드이(가) 오후 6:04에 시작되었고 02.736 초이(가) 소요됨 ==========
```



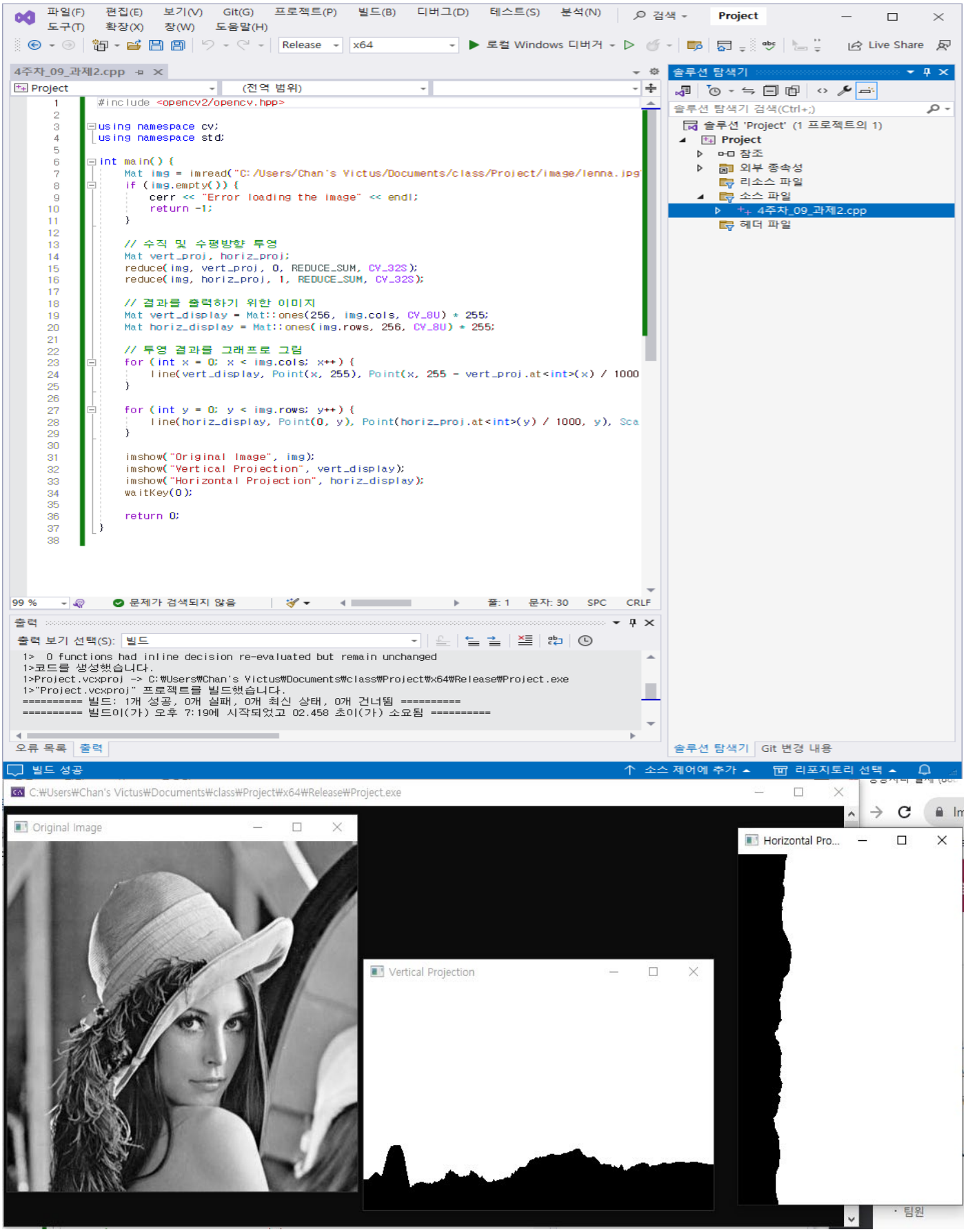
09.히스토그램.pdf 과제1.

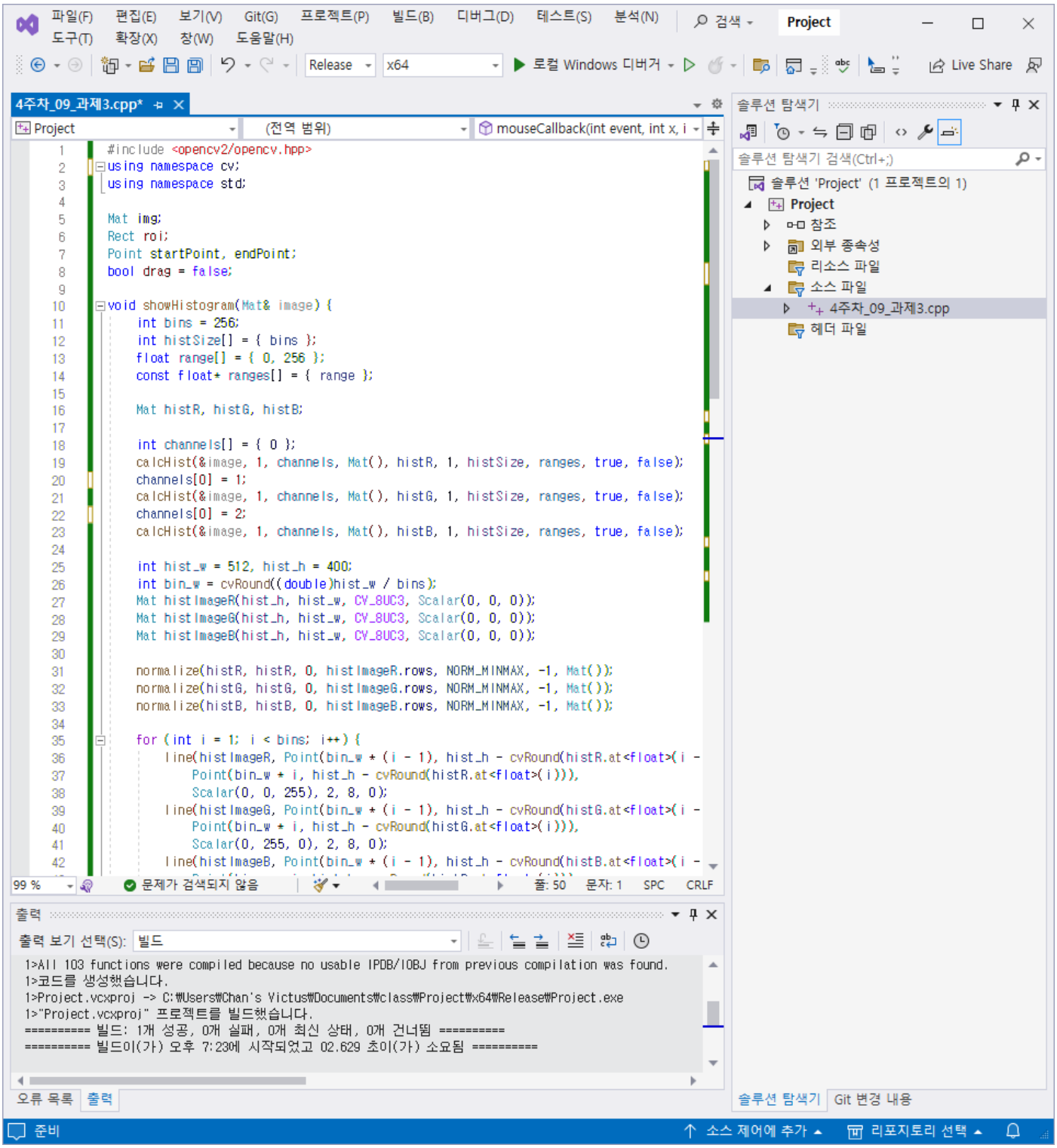
원래값	
화소값	화소수
0	0
1	0
2	50
3	60
4	50
5	20
6	10
7	0

히스토그램 스트레칭	
화소값	화소수
0	50
1	0
2	60
3	0
4	50
5	20
6	0
7	10

히스토그램 평활화	
화소값	화소수
0	96
1	96
2	223
3	255
4	223
5	159
6	128
7	96

09.히스토그램.pdf 과제2




파일(F) 편집(E) 보기(V) Git(G) 프로젝트(P) 빌드(B) 디버그(D) 테스트(S) 분석(N)
도구(T) 확장(X) 창(W) 도움말(H)
검색
Project
Release
x64
로컬 Windows 디버거
Live Share
4주차_09_과제3.cpp*
Project
(전역 범위)
mouseCallback(int event, int x, i
#include <opencv2/opencv.hpp>
using namespace cv;
using namespace std;
Mat img;
Rect roi;
Point startPoint, endPoint;
bool drag = false;
void showHistogram(Mat& image) {
int bins = 256;
int histSize[] = { bins };
float range[] = { 0, 256 };
const float* ranges[] = { range };
Mat histR, histG, histB;
int channels[] = { 0 };
calcHist(&image, 1, channels, Mat(), histR, 1, histSize, ranges, true, false);
channels[0] = 1;
calcHist(&image, 1, channels, Mat(), histG, 1, histSize, ranges, true, false);
channels[0] = 2;
calcHist(&image, 1, channels, Mat(), histB, 1, histSize, ranges, true, false);
int hist_w = 512, hist_h = 400;
int bin_w = cvRound((double)hist_w / bins);
Mat histImageR(hist_h, hist_w, CV_8UC3, Scalar(0, 0, 0));
Mat histImageG(hist_h, hist_w, CV_8UC3, Scalar(0, 0, 0));
Mat histImageB(hist_h, hist_w, CV_8UC3, Scalar(0, 0, 0));
normalize(histR, histR, 0, histImageR.rows, NORM_MINMAX, -1, Mat());
normalize(histG, histG, 0, histImageG.rows, NORM_MINMAX, -1, Mat());
normalize(histB, histB, 0, histImageB.rows, NORM_MINMAX, -1, Mat());
for (int i = 1; i < bins; i++) {
line(histImageR, Point(bin_w * (i - 1), hist_h - cvRound(histR.at<float>(i -
Point(bin_w * i, hist_h - cvRound(histR.at<float>(i))),
Scalar(0, 0, 255), 2, 8, 0);
line(histImageG, Point(bin_w * (i - 1), hist_h - cvRound(histG.at<float>(i -
Point(bin_w * i, hist_h - cvRound(histG.at<float>(i))),
Scalar(0, 255, 0), 2, 8, 0);
line(histImageB, Point(bin_w * (i - 1), hist_h - cvRound(histB.at<float>(i -
99 %
문제가 검색되지 않음
줄: 50 문자: 1 SPC CRLF
솔루션 탐색기
솔루션 탐색기 검색(Ctrl+;)
솔루션 'Project' (1 프로젝트의 1)
Project
참조
외부 종속성
리소스 파일
소스 파일
4주차_09_과제3.cpp
헤더 파일
출력
출력 보기 선택(S): 빌드
1>All 103 functions were compiled because no usable IPDB/IOBJ from previous compilation was found.
1>코드를 생성했습니다.
1>Project.vcxproj -> C:\Users\Chan's Victus\Documents\class\Project\x64\Release\Project.exe
1>"Project.vcxproj" 프로젝트를 빌드했습니다.
========== 빌드: 1개 성공, 0개 실패, 0개 최신 상태, 0개 건너뜀 ==========
========== 빌드이(가) 오후 7:23에 시작되었고 02.629 초이(가) 소요됨 ==========
오류 목록
출력
솔루션 탐색기
Git 변경 내용
준비
소스 제어에 추가
리포지토리 선택

파일(F) 편집(E) 보기(V) Git(G) 프로젝트(P) 빌드(B) 디버그(D) 테스트(S) 분석(N) 검색 Project
도구(T) 확장(X) 창(W) 도움말(H)

Release x64 로컬 Windows 디버거 Live Share

4주차_09_과제3.cpp*

Project (전역 범위) mouseCallback(int event, int x, i

```
43                  Point(bin_w * i, hist_h - cvRound(histB.at<float>(i))),
44                  Scalar(255, 0, 0), 2, 8, 0);
45          }
46          imshow("Red Histogram", histImageR);
47          imshow("Green Histogram", histImageG);
48          imshow("Blue Histogram", histImageB);
49      }
50  void mouseCallback(int event, int x, int y, int flags, void* userdata) {
51      if (event == EVENT_LBUTTONDOWN) {
52          startPoint = Point(x, y);
53          drag = true;
54      }
55      else if (event == EVENT_LBUTTONUP) {
56          endPoint = Point(x, y);
57          roi = Rect(startPoint, endPoint);
58          Mat selectedRegion = img(roi);
59          showHistogram(selectedRegion);
60          drag = false;
61      }
62      else if (drag && event == EVENT_MOUSEMOVE) {
63          Mat tempImg = img.clone();
64          rectangle(tempImg, startPoint, Point(x, y), Scalar(0, 255, 0), 2);
65          imshow("Image", tempImg);
66      }
67  }
68  int main() {
69      img = imread("C:/Users/Chan's Victus/Documents/class/Project/image/lenna.jpg");
70      if (img.empty()) {
71          cerr << "Error loading the image" << endl;
72          return -1;
73      }
74      namedWindow("Image", WINDOW_AUTOSIZE);
75      imshow("Image", img);
76      setMouseCallback("Image", mouseCallback);
77
78      waitKey(0);
79      return 0;
80  }
81
```

99 % 문제가 검색되지 않음 줄: 50 문자: 1 SPC CRLF

출력

출력 보기 선택(S): 빌드

```
1>All 103 functions were compiled because no usable IPDB/IOBJ from previous compilation was found.
1>코드를 생성했습니다.
1>Project.vcxproj -> C:\Users\Chan's Victus\Documents\class\Project\x64\Release\Project.exe
1>"Project.vcxproj" 프로젝트를 빌드했습니다.
========== 빌드: 1개 성공, 0개 실패, 0개 최신 상태, 0개 건너뜀 ==========
========== 빌드이(가) 오후 7:23에 시작되었고 02.629 초이(가) 소요됨 ==========
```

오류 목록 출력

솔루션 탐색기

솔루션 탐색기 검색(Ctrl+;)

- 솔루션 'Project' (1 프로젝트의 1)
  - Project
    - 참조
    - 외부 종속성
    - 리소스 파일
    - 소스 파일
      - 4주차_09_과제3.cpp
    - 헤더 파일

솔루션 탐색기 Git 변경 내용

준비 소스 제어에 추가 리포지토리 선택