

영상처리 실제 2주차 실습(1)

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

using namespace std;
using namespace cv;

void page8()
{
    cout << "#####" << endl << endl;
    cout << "                page8" << endl << endl;
    Point_<int> pt1(100, 200);
    Point_<float> pt2(92.3f, 125.23f);
    Point_<double> pt3(100.2, 300.9);

    Point2i pt4(120, 69);
    Point2f pt5(0.3f, 0.f), pt6(0.f, 0.4f);
    Point2d pt7(0.25, 0.6);

    Point pt8 = pt1 + (Point)pt2;
    Point2f pt9 = pt6 * 3.14;
    Point2d pt10 = (pt3 + (Point2d)pt6) * 10;

    cout << "pt8 =" << pt8.x << " , " << pt8.y << endl;
    cout << "[pt9] =" << pt9 << endl;
    cout << "pt2 == pt6 : " << (pt2 == pt6) << endl;
    cout << "pt7과 p8의 내적 : " << pt7.dot(pt8) << endl << endl;
    cout << "#####" << endl << endl;
}

void page13()
{
    cout << "                page13-14" << endl << endl;

    Size_<int> sz1(100, 200);
    Size_<float> sz2(192.3f, 25.3f);
    Size_<double> sz3(100.2, 30.9);

    Size sz4(120, 69);
    Size2f sz5(0.3f, 0.f);
```

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Size2d sz6(0.25, 0.6);

Point2d pt1(0.25, 0.6);
Size2i sz7 = sz1 + (Size2i)sz2;
Size2d sz8 = sz3 - (Size2d)sz4;
Size2d sz9 = sz5 + (Size2f)pt1;

cout << "sz1.width = " << sz1.width;
cout << ", sz1.height = " << sz1.height << endl;
cout << "sz1 넓이 : " << sz1.area() << endl;
cout << "[sz7]" << sz7 << endl;
cout << "[sz8]" << sz8 << endl;
cout << "[sz9]" << sz9 << endl << endl;

cout << "#####" << endl << endl;
}

void page19()
{
    cout << "                page19" << endl << endl;

    Size2d sz(100.5, 60.6);
    Point2f pt1(20.f, 30.f), pt2(100.f, 200.f);

    Rect_<int> rect1(10, 10, 30, 50);
    Rect_<float> rect2(pt1, pt2);
    Rect_<double> rect3(Point2d(20.5, 10), sz);

    Rect rect4 = rect1 + (Point)pt1;
    Rect2f rect5 = rect2 + (Size2f)sz;
    Rect2d rect6 = rect1 & (Rect)rect2;

    cout << "rect3 = " << rect3.x << ", " << rect3.y << ", ";
    cout << rect3.width << "x" << rect3.height << endl;
    cout << "rect4 = " << rect4.tl() << " " << rect4.br() << endl;
    cout << "rect5 크기 = " << rect5.size() << endl;
    cout << "[rect6] = " << rect6 << endl << endl;

    cout << "#####" << endl << endl;
}

void page21()
{

```

```

cout << "                page21" << endl << endl;

Vec <int, 2> v1(5, 12);
Vec <double, 3> v2(40, 130.7, 125.6);
Vec2b v3(10, 10);
Vec6f v4(40.f, 230.25f, 525.6f);
Vec3i v5(200, 230, 250);

Vec3d v6 = v2 + (Vec3d)v5;
Vec2b v7 = (Vec2b)v1 + v3;
Vec6f v8 = v4 * 20.0f;

Point pt1 = v1 + (Vec2i)v7;
//Point3_<int> pt2 = v2; // "cv::Vec<double, 3>"에서 "cv::Point3_<int>"(으)로의 사
용자 정의 변환이 적절하지 않습니다.

cout << "[v3] = " << v3 << endl;
cout << "[v7] = " << v7 << endl;
cout << "[v3 * v7] = " << v3.mul(v7) << endl;
cout << "v8[0] = " << v8[0] << endl;
cout << "v8[1] = " << v8[1] << endl;
cout << "v8[2] = " << v8[2] << endl;

cout << "[v2] = " << v2 << endl;
//cout << "[pt2] = " << pt2 << endl;
}

void page24()
{
    cout << "                page24" << endl << endl;

    Scalar_<uchar> red(0, 0, 255);
    Scalar_<int> blue(255, 0, 0);
    Scalar_<double> color1(500);
    Scalar_<float> color2(100.f, 200.f, 125.9f);

    Vec3d green(0, 0, 300.5);
    Scalar green1 = color1 + (Scalar)green;
    Scalar green2 = color2 + (Scalar_<float>)green;

    cout << "blue = " << blue[0] << ", " << blue[1];
    cout << ", " << blue[1] << ", " << blue[2] << endl;
    cout << "red = " << red << endl;

```

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cout << "green = " << green << endl << endl;
cout << "green1 = " << green1 << endl;
cout << "green2= " << green2 << endl << endl;
}

```

void page27()

```

{
    Scalar blue(255, 0, 0), red(0, 0, 255), green(0, 255, 0);
    Scalar white = Scalar(255, 255, 255);
    Scalar yellow(0, 255, 255);

    Mat image(400, 600, CV_8UC3, white);
    Point pt1(50, 130), pt2(200, 300), pt3(300, 150), pt4(400, 50);
    Rect rect(pt3, Size(200, 150));

    line(image, pt1, pt2, red);
    line(image, pt3, pt4, green, 2, LINE_AA);
    line(image, pt3, pt4, green, 3, LINE_8, 1);

    rectangle(image, rect, blue, 2);
    rectangle(image, rect, blue, FILLED, LINE_4, 1);
    rectangle(image, pt1, pt2, red, 3);

    imshow("직선&사각형", image);
    waitKey(0);
}

```

void page34()

```

{
    Scalar orange(0, 165, 255), blue(255, 0, 0), magenta(255, 0, 255);
    Mat image(300, 500, CV_8UC3, Scalar(255, 255, 255));

    Point center = (Point)image.size() / 2;
    Point pt1(70, 50), pt2(350, 220);

    circle(image, center, 100, blue);
    circle(image, pt1, 80, orange, 2);
    circle(image, pt2, 60, magenta, -1);

    int font = FONT_HERSHEY_COMPLEX;
    putText(image, "center_blue", center, font, 1.2, blue);
    putText(image, "pt1_orange", pt1, font, 0.8, orange);
    putText(image, "pt2_magenta", pt2+Point(2,2), font, 0.5, Scalar(0,0,0), 2);
}

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        putText(image, "pt2_magenta", pt2, font, 0.5, magenta, 1);

        imshow("원그리기", image);
        waitKey(0);
    }

    void page39()
    {
        Mat image = Mat(400, 600, CV_8UC3, Scalar(0, 0, 0));

        line(image, Point(100, 100), Point(300, 300), Scalar(0, 0, 255), 7);
        rectangle(image, Point(250, 30), Point(450, 200), Scalar(0, 255, 0), 5);
        circle(image, Point(100, 300), 60, Scalar(255, 0, 0), 3);
        ellipse(image, Point(300, 350), Point(100, 60), 45, 130, 270, Scalar(255, 255, 255),
5);

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

    int main()
    {
        page8();
        page13();
        page19();
        page21();
        page24();
        page27();
        page34();
        page39();

        return 0;
    }

```

```

Microsoft Visual Studio 디버그 콘솔

#####

page8

pt8 =192 , 325
[pt9] =[0, 1.256]
pt2 == pt6 : 0
pt7과 p8의 내적 : 243

#####

page13-14

sz1.width = 100, sz1.height = 200
sz1 넓이 : 20000
[sz7][292 x 225]
[sz8][-19.8 x -38.1]
[sz9][0.55 x 0.6]

#####

page19

rect3 = 20.5, 10, 100.5x60.6
rect4 = [30, 40] [60, 90]
rect5 크기 = [180.5 x 230.6]
[rect6] = [20 x 30 from (20, 30)]

#####

page21

[v3] = [10, 10]
[v7] = [15, 22]
[v3 * v7] = [150, 220]
v8[0] = 800
v8[1] = 4605
v8[2] = 10512
[v2] = [40, 130.7, 125.6]

page24

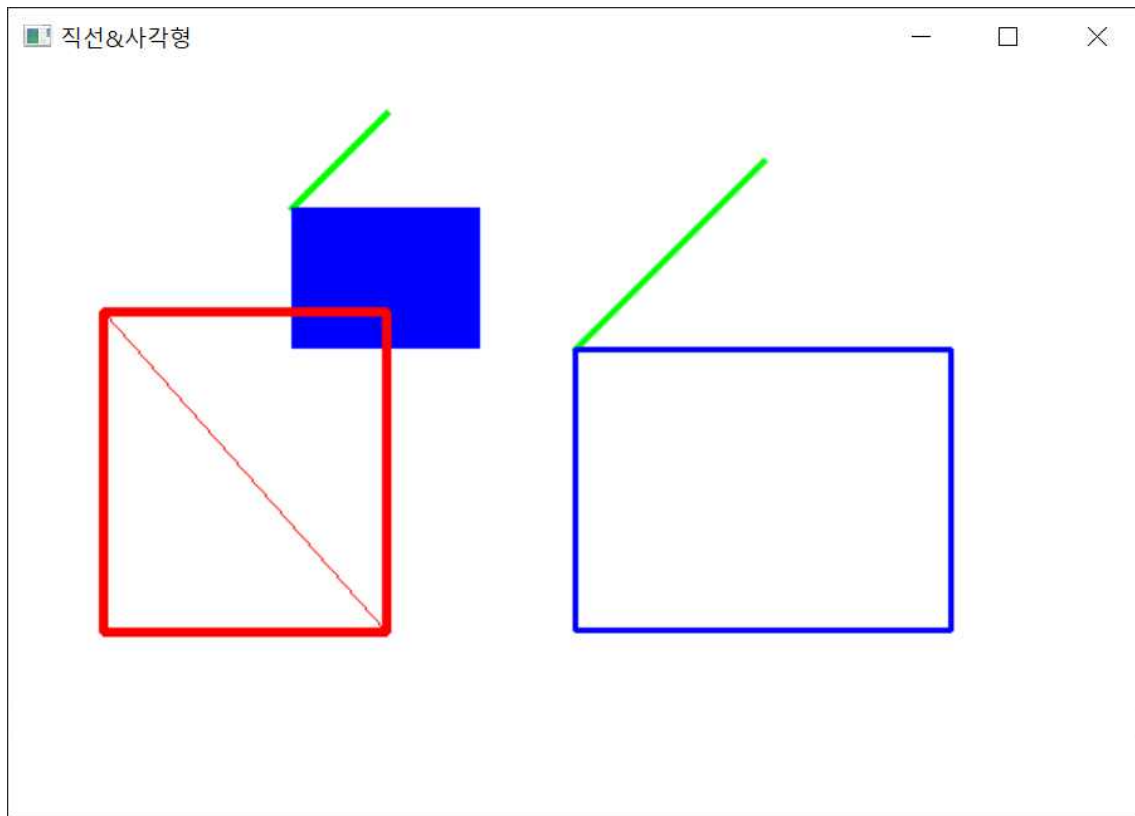
blue = 255, 0, 0, 0
red = [0, 0, 255, 0]
green = [0, 0, 300.5]

green1 = [500, 0, 300.5, 0]
green2= [100, 200, 426.4, 0]

D:\WC++\Project_week2\64\Release\Project_week2.exe(프로세

```

page27 결과화면



page34 결과화면

